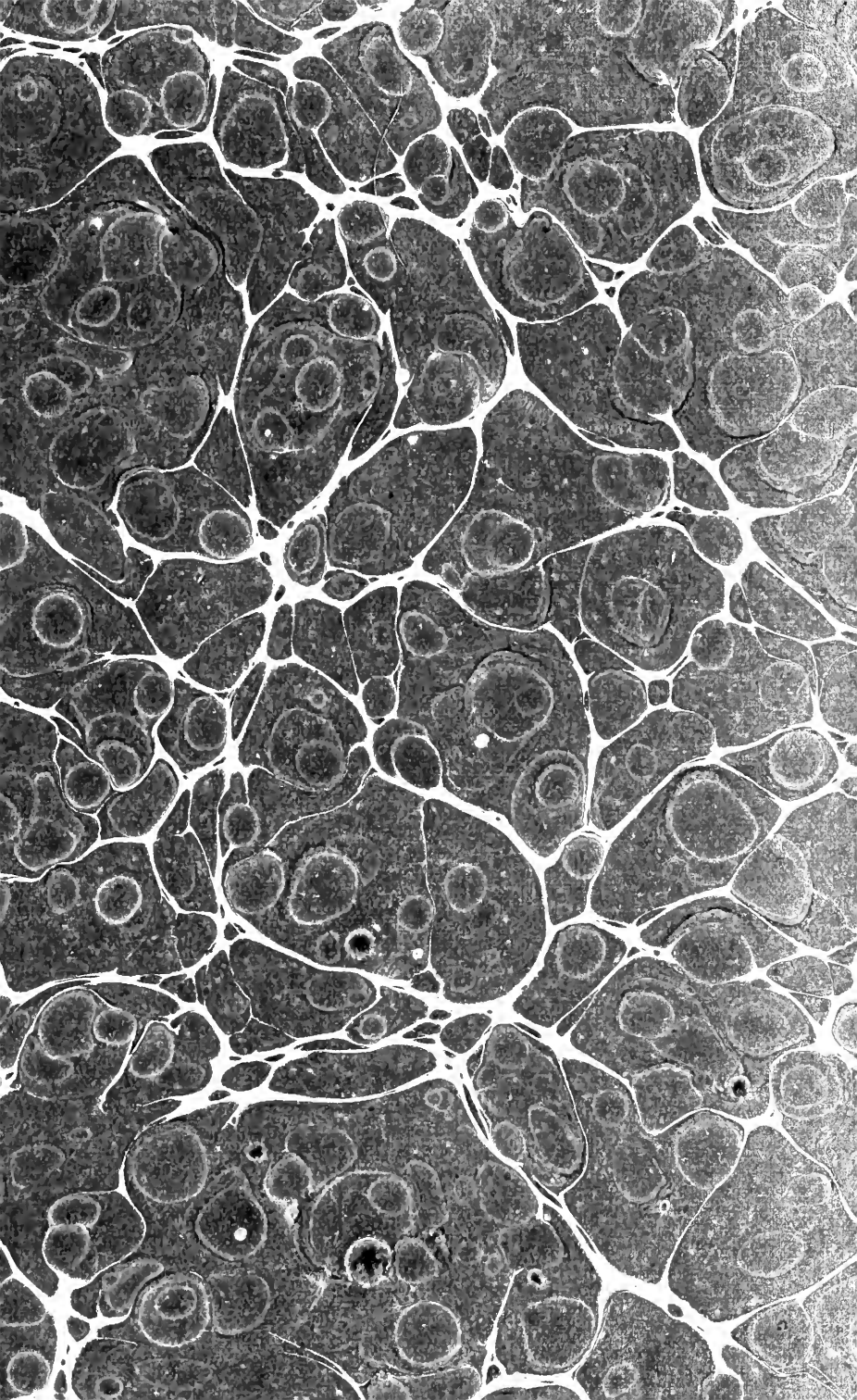


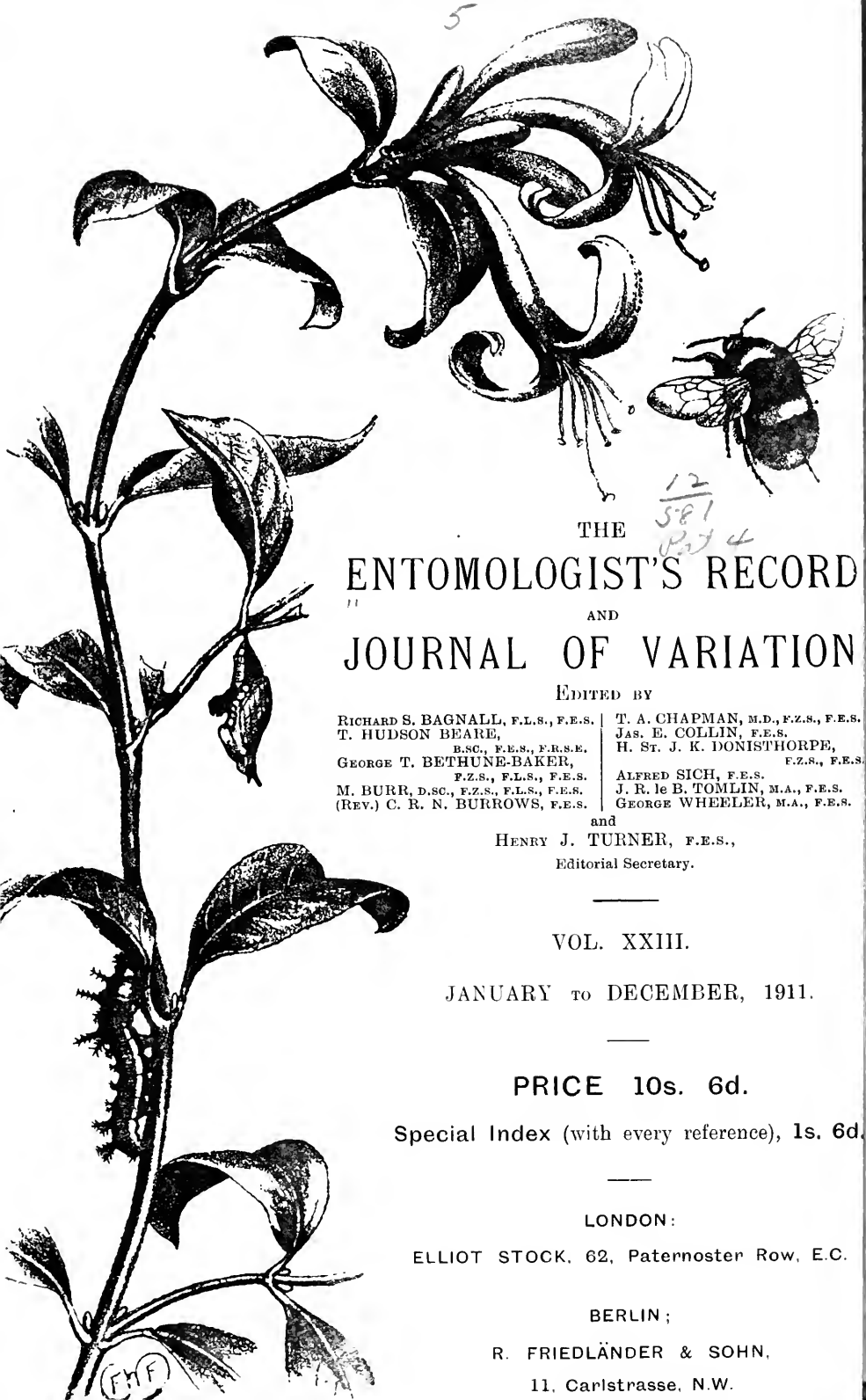


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THE
ENTOMOLOGIST'S RECORD
AND
JOURNAL OF VARIATION

EDITED BY

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Editorial Secretary.

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PREFACE.

We have lived, and critics tell us we have lived well. That opinion is for our subscribers to acknowledge. The year has been for us an eventful and anxious one. It has been our earnest desire that the Magazine should continue on the same lines as during the last twenty-two years, when under the talented and beloved care of the late Mr. J. W. Tutt. We have ever kept before us the lines of Mrs. Gaskell :

“ Dying he shall never die,
To the dust his dust we give.
In our hearts his heart shall live.”

May his spirit ever live in the magazine and may it continue to fill the place it filled of yore.

Everyone and each one of the editorial staff have been most loyal for the welfare of the paper, while many other gentlemen have given their aid ungrudgingly. The list of contributors has increased, the number of plates is quite normal, and from communications we note that the matter has been most acceptable to our readers for its varied and interesting character.

The great feature of the volume has been the special “Tutt” number in May, probably a unique issue in the annals of entomological literature. For its success we are particularly indebted to those gentlemen outside our staff, who contributed of their best, the kindly notices of him we have lost.

In the controversy of the year, when an aggressive attempt was made to prevent for ever the necessary extension of the British Museum (Natural History) our efforts were on the side we knew our late Editor would have forcefully taken. To the success of the opposition to this nefarious project, the splendid work of the Rev. G. Wheeler, both in the magazine and in other ways, in no small degree contributed. In fact, during the whole year Mr. Wheeler has devoted himself in season and out of season unsparingly to the interests of our success.

In wishing our readers the Compliments of the Season may we urge them one and all to reciprocate by sending us notes of their collecting during the coming season.

H. J. TURNER.

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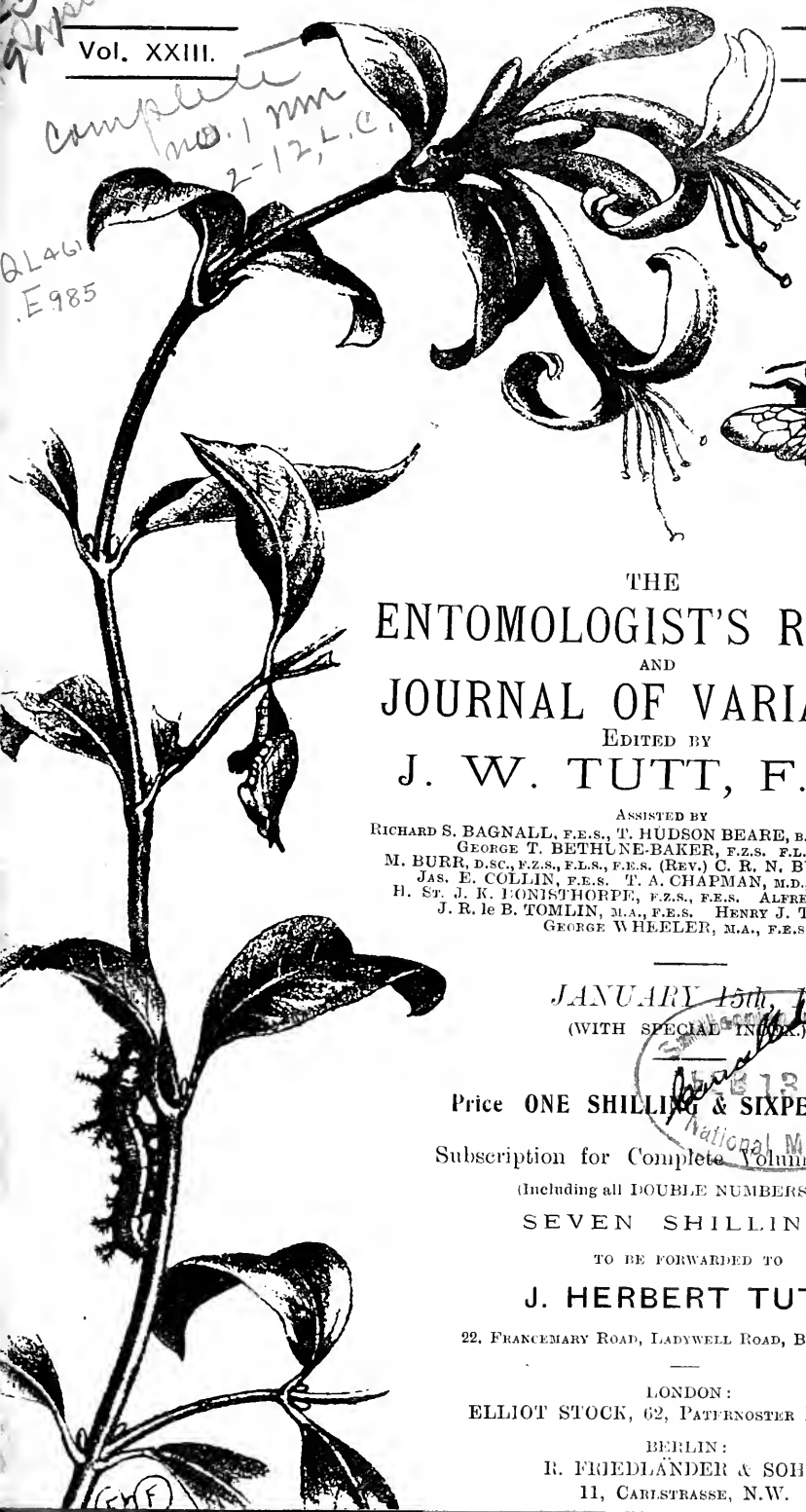
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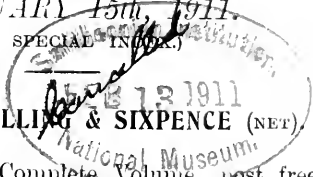


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ASSISTED BY
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JANUARY 15th, 1911.

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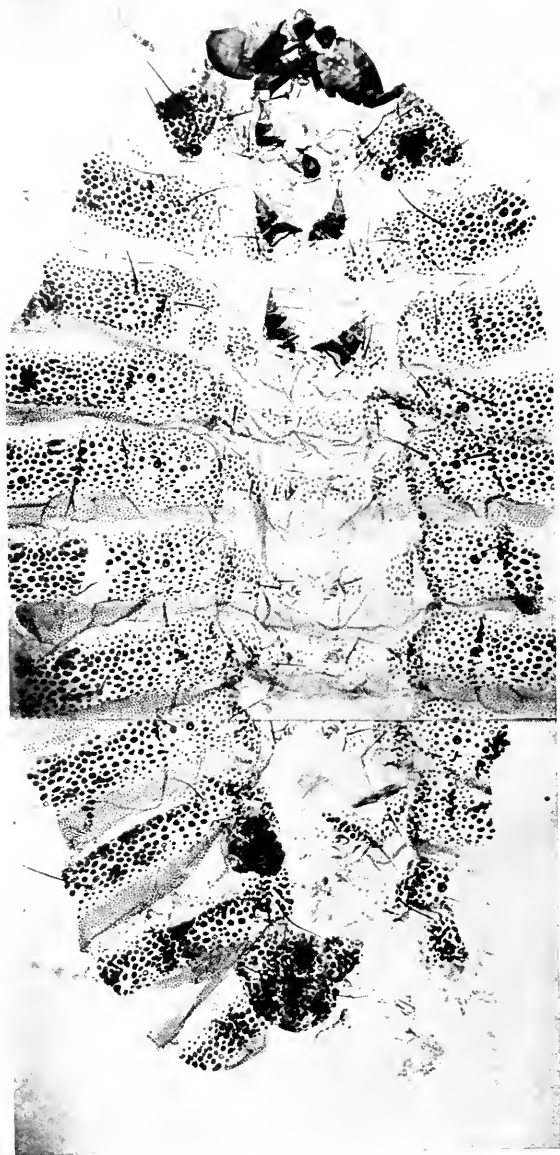


Photo. F. Noat Clark.

LARVAL SKIN OF *HELINSIA OSTEODACTYLA* $\times 20$.

The Entomologist's Record, etc., 1911.

The Entomologist's Record

AND

JOURNAL OF VARIATION.

VOL. XXIII. No. 1.

JANUARY 15TH, 1911.

Notes on *Hellinsia osteodactyla*, Z. (with two plates).

By DR. T. A. CHAPMAN, F.Z.S., AND EDWARD GOODWIN.

Mr. Edward Goodwin has supplied the following notes on this species, and the editor asks me to add a few others on the structure, and some other items about the species.

Mr. Goodwin says, "In the autumn of 1908 I found about 50 larvæ of this species. They were spun up each in a seed-down (*pappus*) in which they hibernate, and in some cases (probably nearly all) pupate. These seeds are practically all blown off the dead stalks during the winter, and *H. osteodactyla* larvæ with them, as I carefully examined a lot of dead stalks in the following March. Very few seeds remained on, and all I could find was one dead larva.

Those I found in the autumn were put in a cage with plenty of the foodplant, but at no time could I find any trace of feeding having taken place. During the following April and May I searched the cage for larvæ and had some difficulty in finding about a dozen. Some of these I placed in a chip box with some seed heads, which they spun to the edge of the box, but all died before pupating. All my efforts to find a pupa in the cage during June and July were futile, though four perfect insects emerged early in August.

The following autumn I again visited the locality, but to my surprise the larvæ were exceedingly scarce and I could find only half-a-dozen. These I sleeved on the foodplant outdoors. On June 20th I found that two of the larvæ had spun together some seed heads to the side of the sleeve. I transferred these to a large glass bottomed box which I inverted over some moss and placed it so that it would get a little sunshine. This treatment was successful as both eventually pupated about the third week of July, one in the *pappus* and one in the moss and were then forwarded to Dr. Chapman."

The larva of *H. osteodactyla* presents the following characters, as taken from the table in Tutt's *British Lepidoptera*, vol. v., p. 106. The prothoracic plate has five hairs in the front row, three behind (on each side), two small lenticles, a suture, no depression, and points as minute plates as on the rest of the larva. The hairs i, ii, iii, iv, and v are simple, no warts developed. vi has several small accessory hairs, but there are no warts developed and no secondary skin hairs. The most pronounced feature of the larva is that the skin points are developed in small plates or scutcheons, largest and most pronounced dorsally.

In the Alucitid division of the plumes, *Leioptilus carphodactyla*, *Adaina microdactyla*, *A. scarodactyla*, and this species form a group of internal or quasi-internal feeders, and are remarkable for the skin points of the larva being developed as numerous flat plates. In the Platyptiliid division, the internal feeders (most typically *Platyptilia*) present no similar arrangement.

These plates are well shown in the photograph of the skin of a larva, divided dorsally, and spread out. The ordinary simple character of the hairs is also very distinct (*Plate I.*).

(*To be continued.*)

Retrospect of a Coleopterist for 1910.

By PROF. T. HUDSON BEARE, B.Sc., F.R.S.E., F.E.S.

The additions to our list which I have the pleasure of recording this year are exceptionally numerous. It will be noted that no fewer than 13 are insects new to science.

Trechus subnotatus, Dej., introduced by Mr. E. A. Newbery (*Ent. Mo. Mag.*, xlvii., p. 131); a single specimen was taken by Mr. de la Garde at Shaldon, Devon, on February 26th, 1910. This species so far has been known only from south-eastern Europe.

Laccobius ytenensis, Sp. n., described by Dr. Sharp (*loc. cit.*, p. 250) from specimens taken in the New Forest (commonly), in Devonshire, and in Cornwall. The male characters of this insect are very peculiar and distinct.

Atheta (Homalota) picipennis, Mannh., introduced by Dr. Joy (*loc. cit.*, p. 252) on specimens found at Dalwhinnie and Aviemore, Inverness-shire. Dr. Joy says this species is related to *H. atramentaria*, Gyll. Dr. Cameron states (*loc. cit.*, p. 280) that he has captured this species flying at Rathmullan, Ireland, and he states that it is most likely to be confused with *H. cinnamoptera*, Th.; in fact Fauvel considers this latter species to be synonymous with *picipennis*.

Gabrieus (Philonthus) stipes, Sp. n.; *G. pennatus*, Sp. n.; *G. velox*, Sp. n.; *G. keysianus*, Sp. n.; *G. appendiculatus*, Sp. n.; and *G. bishopi*, Sp. n.; these six species, all new to science, were described by Dr. Sharp (*loc. cit.*, p. 129). They had probably been mixed with *P. nigritulus*, Gr., and *P. trossulus*, Nor. Dr. Sharp has shown by dissection that they can all of them be readily separated by the characters of the aedeagus.

Lathrobium longipenne, Fairm., introduced by Dr. G. W. Nicholson (*Ent. Rec.*, xxii., p. 159), on a single specimen taken at Roydon, Essex, in a tuft of grass at the foot of a willow tree. It is similar to *longulum*, Gr., but has longer elytra, which in this specimen are brick-red with a darker base. This insect is considered by Ganglbauer and in the European Catalogue only a var. of *longulum*. Commander Walker records (*Ent. Mo. Mag.*, xlvii., p. 280) the capture of a specimen of this form at Tubney.

Oryctes sauleyi, Pand., introduced by Dr. Joy (*loc. cit.*, p. 4). This insect has been taken in mole's nests and in flood refuse. It is similar to *fairmairei*, Pand., but has the hind body alutaceous. Dr. Cameron has taken it in the Isle of Grain, and the writer has taken it at Coulsdon, Surrey. In both these cases it occurred in mole's nests.

Lesteva fontinalis, Kies., introduced by Mr. E. A. Newbery (*loc. cit.*, p. 109). It is similar to *pubescens*, Mann., but is a much more shining insect owing to the less close punctuation and pubescence. It was taken by Mr. de la Garde in Devonshire, and occurs in the Isle of Wight. All the records for *pubescens* for the Isle of Wight apparently refer to this new species, as so far the author has not been able to hear of a true *pubescens* from the island.

Olophrum nicholsoni, Sp. n., described by Mr. Donisthorpe (*Ent. Rec.*, xxii., p. 139). Specimens were taken on March 19th at Wicken Fen by Mr. Donisthorpe and Dr. Nicholson, and later on in the month by Mr. Dollman. The author also took a number of specimens of this new species on April 14th, and was working it out when he heard from Mr. Donisthorpe that he was describing it as a species new to science. It occurred again in some numbers to Mr. Donisthorpe and the author during the month of September.

Enicmus histrio, Sp. n., described by Dr. Joy and Mr. Toulon (*Ent. Mo. Mag.*, xlvii., p. 250) from specimens taken at Bradfield, Oxford, Southport, West Malvern, and other localities. It is somewhat similar in appearance to *E. transversus*, Ol., but is smaller and less elongate.

Corticaria labiana, Sp. n., described by Dr. Sharp (*loc. cit.*, p. 106), it is like *similata*, Hum., but is smaller and has shorter legs. The specimens were found on an oak tree in the New Forest in 1908 and again in 1909.

Corticaria fowleriana, Sp. n., described by Dr. Sharp (*loc. cit.*, p. 108), from a specimen which was taken at Braemar as long ago as 1871. This species is allied to *C. fuscula*, Hum. In the paper describing these two species new to science, Dr. Sharp discusses fully the validity and the limitation of the genus *Melanophthalma*, Mots. Of the five species assigned to this genus, in the Catalogue of Beare and Donisthorpe, Dr. Sharp is of opinion that only one is a true *Melanophthalma*: the others belong to the genus *Corticarina*, Reitter, but Dr. Sharp is of opinion that this latter genus cannot be kept separate from *Corticaria*, as there are no real structural differences. Dr. Sharp considers there are only two British species which belong to the genus *Melanophthalma*, viz., *transversalis*, Gyll., and *distinguenda*, Pz.

Cryptophagus fowleri, Sp. n., described by Dr. Joy (*loc. cit.*, p. 205) from specimens taken at Bradfield. Dr. Joy thinks that this species has probably been mixed in collection with *C. scanicus* var. *patruelis*, Sturm.

Cryptophagus bimaculatus, Panz., introduced by Mr. J. N. Halbert (*loc. cit.*, p. 62). The specimens were taken in 1902 at Shane's Castle, on the shores of Lough Neagh. It is easily recognised by the fact that it has a dark patch on the elytra, and by the structure of the side margins of the thorax, the usual central prominent tooth being absent. In introducing this new species, Mr. Halbert gives an account of the beetles in the British fauna which so far have been found only on the shores of Lough Neagh.

Ptilinus costatus, Gyl., introduced by Mr. J. Taylor (*Ent. Rec.*, xxii., p. 173), on specimens found in the wooden base of a pair of scales in a chemist's shop in Sandown, Isle of Wight. This species has perhaps been introduced, but it is common in France.

Galerucella pusilla, Weise, introduced by Dr. Sharp (*Ent. Mo. Mag.*,

xlvi., p. 28); this species is very similar to *calmariensis*, L., but is paler in colour, less marked, with black on the elytra, and the two terminal segments of the abdomen are entirely red. Bedel will not admit that this is a genuine species; the latest European Catalogue, however, treats it as a distinct species. It has been found in various localities; Mr. Donisthorpe and the author took a series at Catfield, Norfolk, in September last off *Lythrum salicariae*.

Galerucella fergussoni, Sp. n., described by Canon Fowler (*loc. cit.*, p. 228), from specimens taken by Mr. Fergusson near Glasgow; this species is similar to *sagittariae*, Gyll., but is smaller and much darker. It is the same insect which was described by Dr. Sharp (*loc. cit.*, p. 89) as var. B. of *sagittariae*. Mr. A. A. Dalglish (*loc. cit.*, p. 262) gives some additional notes as to the occurrence and characters of this form.

Crepidodera impressa, Fabr., introduced by Dr. Sharp (*loc. cit.*, p. 27); specimens were taken on the seashore at Hayling Island by Mr. C. G. Lamb. The species is closely allied to *transversa*, Marsh, but is larger and darker.

Apion cantianum, Wagner, = *brevicorne*, Schilsky. This insect was described from a specimen taken at Chattenden by Commander Walker, and Mr. G. C. Champion (*loc. cit.*, p. 188) draws attention to the fact that its occurrence in Great Britain has been overlooked. It is similar to *flirostre*, Kirb., but has shorter and stouter antennae.

Tychius haematopus, Gyll., introduced by Mr. J. Edwards (*loc. cit.*, p. 80). Mr. Edwards deals with all the species of this genus which occur in Great Britain, and gives a very useful table; *haematopus* is most closely allied to *juncens*, Reich. It has been taken by Mr. Bennett at Hastings, and was mistaken for *squamulatus*, Gyll. Mr. Donisthorpe has also taken the species in several localities.

Gonipterus lepidotus, Gyll., Mr. Champion draws attention to the fact (*loc. cit.*, p. 145) that a specimen of this well-known Tasmanian weevil was taken in a house at Willesden, in June, 1908. It is, of course, probably only an introduced beetle, and is not entitled to a place in our list.

Colon calcaratum, Er.—This species, which has been struck out of the British list, is reinstated by Dr. Joy (*loc. cit.*, p. 267); specimens of this species have been taken by Mr. Harwood and Dr. Joy.

The following new varieties and aberrations have been added:—

Philonthus intermedius, Boisd., var. *donisthorpei*, a new variety described by Mr. H. Dollman (*Ent. Record*, xxii., p. 295). This variety differs from the type in having bright red elytra. The specimen was captured at Ditchling, Sussex, on August 30th last, in farmyard refuse. It occurred with the type.

Paramecosoma melanocephalum, Herbst., var. *univeste*, Reitter, and var. *infuscatum*, new var. Mr. J. N. Halbert (*Ent. Mo. Mag.*, xlvii., p. 66) introduces these two new varieties; the former is larger than the type and uniformly chestnut brown; the latter is entirely black, and the general punctuation is stronger than in the type. It seems to be generally distributed in Ireland, and has been taken at Plymouth by Mr. Keys.

We have this year an addition of 26 species and 3 varieties; one of the new species, however, is only an introduced species, and should not go into our list, and another species for the same reason is a some-

what doubtful addition. As mentioned before, no less than 13 of the the above additions are species new to science.

I do not propose to comment on any of these additions, but would merely like to draw attention to a sentence in a note by Dr. Joy on the genus *Colon* (*Ent. Mo. Mag.*, xlvi., p. 267), in which he states that he is of opinion that certain species must be deleted from our list, and gives as one of his grounds for this opinion, that "no further examples have turned up during the last 29 years, and I think there is little doubt it is an abnormal specimen of some allied species." Canon Fowler drew attention a year or two ago to the danger of describing or introducing new species closely allied to some common species on the strength of the capture of a single specimen. The two species which Dr. Joy thinks must be deleted from our list are *Colon puncticolle*, Kr., and *Colon microps*, Czwal.

With reference to the naming of colour varieties, I should like to draw attention to the opinion expressed by Mr. G. J. Arrow in the volume on the *Fauna of British India* dealing with the *Cetoniinae* and *Dymastinae*, p. 28:—"This colouring is very variable, and different individuals of a species may be grass-green, olive-green, indigo, purple, blue, black, fiery-red, or golden-green. Such shades may always be regarded as interchangeable, and of no significance for the purpose of classification. . . . Defect of pigment in all these green species seems to result in the production of fiery-reds, and it is probable that the red condition is passed through in the process of attaining the full colouring of maturity. Experiment shows that it is produced in dead specimens by the chemical decomposition which takes place in the green pigment upon prolonged exposure to sunlight."

During the year there has been a considerable number of records of the capture of rare species. Mr. H. C. Dollman records among others *Tychius polylineatus*, Germ., at Ditchling, by sweeping and out of moss; *Xantholinus glaber*, Nor., at Richmond Park; *Hister merdarius*, Hoff.; *Ilyobates propinquus*, Aub., and *Neuraphes carinatus*, Muls., all from Ditchling. Mr. J. R. le B. Tomlin records *Macronychus 4-tuberculatus*, Mull., from the river Teme, Hereford; *Laccobius scutellaris*, Mets., from the river Tavy, and from near Newbury; and *Malthodes brevicollis*, Payk., from Glemsford, Suffolk. Mr. Donisthorpe, *Ptinella britannica*, Mat., from a mole's nest in Burwell Fen; and *Bryoporus rugipennis*, Pand., from Braemar. Mr. J. Taylor, *Cryptophaqus subfumatus*, Kr., from Sandown, Isle of Wight; and *Chaetocnema arida*, Foud., from Whitefield Woods, Isle of Wight, where it was taken last year for the first time by Mr. Donisthorpe. Mr. R. S. Bagnall, *Euplectus kunzei*, Aub., from Gibside, and *Dryocetes autographus*, Ratz., from Westgate-in-Weardale. Mr. C. F. Selous, *Colon serripes*, Sahlb., and *Syncalypta setigera*, Ill., from Barton-on-Sea. Mr. G. B. Walsh, *Leistus montanus*, Steph., in some numbers from Skiddaw. Mr. J. F. Dutton, *Lathrobium rugipenne*, Gyll., out of wet sphagnum in Delamere Forest. Mr. F. H. Day, *Omalium brevicolle*, Pk., from Salkeld, Cumberland. Mr. J. N. Halbert, *Stenus palposus*, Zett., *Atamaria wollastoni*, Shp., and possibly a new species of *Homalota*, all from the shores of Lough Neagh. Mr. P. de la Garde, *Phyllotreta diademata*, from Shaldon, and *Tachinus rugipennis*, Gyll., from Exeter. Mr. E. A. Butler, *Ceuthorhynchidius mixtus*, Muls., and *Cryphalus abietis*, Ratz., from Royston. Mr. G. C. Champion, *Chaetocnema arida*, Foud.,

Melanophila acuminata, DeG., and *Criocephalus polonicus*, Mots., all from the Woking district. Commander Walker, *Haemonia appendiculata*, Panz., from Kidlington, near Oxford, in some numbers, in August, this is one of the most interesting records of the year; *Catops varicornis*, Rosenh., from Streatley; *Trichonyx sulcicollis*, Reich, from Brockenhurst; *Tychius polylineatus*, Germ., from Streatley; *Cathorhynchidius mixtus*, Muls., from Tubney; and *Cathormiocerus maritimus*, Rye, from Milford-on-Sea. This latter species has been taken in some numbers by Mr. C. J. C. Pool in the old locality at Southsea. The author has taken *Pterostichus aterrimus*, Pk., and *Stenus proditor*, Er., at Stalham, Norfolk, *Cryphalus abietis*, Ratz., near Edinburgh; and *Bryoporus rugipennis*, found on Cairngorm; he also found *Zeugophora subspinosa*, F., with *Z. turneri*, Pow., at Aviemore; there has been no record of the former of these two species further north than the Midlands.

Many interesting notes have appeared in our entomological journals. Those dealing with synonymy include the following:—A paper by Dr. Sharp (*Ent. Mo. Mag.*, xlvi., p. 4) on the British species of the genus *Phaedon*: in this paper Dr. Sharp describes a new genus *Paraphaedon*, in which he places the species *tumidulus*, Germ.; he also expresses the opinion that *concinus*, Steph., is a genuine species. Some of the continental authorities treat this species as a variety only. On p. 89 of the same journal, Dr. Sharp discusses the question as to whether *Galerucella nymphaeae*, L., and *sagittariae*, Gyll. are distinct species; he is of opinion that they are.

Dr. Joy contributes two valuable notes on the genus *Colon*. In the first of these (*loc. cit.*, p. 25), he gives an interesting account of an apparent "assembling" of *C. riennense*, Hbst., *C. serripes*, Sahl., and *C. brunneum*, Lat., in one very restricted spot near the edge of a wood. In the second article (*loc. cit.*, p. 267), to which reference has already been made, he gives a table of characters for separating the species which occur in this country. It is undoubtedly the best table which has so far been published.

(To be continued.)

Five days in the Hospenthal district.

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

After an exceptionally hard year's work I was glad to start on July 14th for Switzerland, and was hoping to meet my friend Dr. Chapman somewhere between Andermatt and the Rhone Glacier. I therefore went straight through to the former spot, where I arrived just before 12 noon, and was not sorry to have a good lunch, but I must acknowledge to feeling pretty well tired out; not knowing however exactly what to do, I thought the best thing to clear one's brain was to walk the weariness off, and with this object in view I started up to the Ober Alp See. The afternoon, though bright, was cold, and very little was on the wing, a few *Erebia lappona* and *Colias phicomone* were to be seen, an occasional *Cyaniris semiargus* presented itself, whilst in the warm sunny stretches of the road crowds of *Titanio phrygialis* rose at every step, intermingled with an occasional *T. schrankiana*. As I neared my goal it clouded over, and the last mile was walked in a heavy

shower of cold rain, so that I was glad to avail myself of the hospitable shelter of the Ober Alp Inn, a little wayside place to which has recently been added a "dépendence," where I am told visitors are made very comfortable in an inexpensive way. Here I stayed till the shower was over, and having had a short saunter beside the lake and enjoyed the view, the time had come to retrace my steps to Andermatt. Hardly was dinner finished before Dr. Chapman rang me up on the "phone" to know whether I had arrived and if so whether we could arrange to meet the next day at Hospenthal; this was soon settled, and before the following mid-day I was safely housed at the Meyerhof, and from my bed-room window I recognised the Doctor in the valley catching something on his way back to the hotel, and it was not long before I was on my way to meet him. An afternoon's walk on the St. Gotthard hillside produced nothing worth recounting, for the sun had retired from view and therefore it was cold. A quiet morning the next day produced a short series of *Pieris rapae* of an unusually large size in both sexes and an occasional *Colias phicomone*. *Melampias melampus* and *E. lappona* were not uncommon, and I netted a single specimen of *E. stygus*. Among the Lycaenids *Polyommatus icarus* and *Cyaniris semiargus* ran neck and neck as to which should be the commoner, of the former besides the usual female, I took two nicely irrorated with blue, not to so great an extent as is to be found at home, but very pretty specimens. *Cupido minimus* was flying and its emergence was not yet over for I took one or two that were quite fresh. It varied a good deal in size, one specimen equalling if not excelling the largest Engadine specimens that I have seen; a single specimen of *Aricia astrarche* and also of *P. hylas* fell to my net, the latter being unusually dark grey beneath. We walked one day to the Realp and Dr. Chapman noticed *Arctomyziscis myricae* at rest on one of the granite road stumps and as he did not trouble to box it I did, whilst the same evening a *Leucania comma* came in to light and made a great fuss in its excitement. *Parascotia (Psodos) alpinata* and *P. quadrifaria* were also taken, together with several species of *Cranbus* and *Botys*, of the latter the pretty little *B. cingulata* was always welcome, whilst of the former, a single *C. radiellus* and several *C. conouellus* of both sexes fell to my net, and lower down two large and dark *C. dumetellus* were taken. Of *Argynnidae* I saw but one, which turned out to be a typical *Brenthis pales*, whilst *Coenonympha arcania* var. *darwiniana* was, as usual, common. This is a meagre list for two days' work or more, but the weather was not ideal for insects, and the valley struck me more forcibly than it has done before as not being at all prolific in insect life. My birthday was spent in a delightful walk with the two Miss Chapmans and the Doctor to Airolo over the St. Gotthard Pass, delightful except for the return from Goschenen to Hospenthal, for in the absence of an omnibus we all, including the ladies, had to walk home in torrents of rain, and splendidly they did it, looking as well at dinner time as if they had only been out for a short promenade. To us men's mind, however, the walk had its value, for the Reuss was magnificent, tossing and roaring as I have never seen it before. I have been over the Devil's Bridge many times in all states of weather, but never had I seen it like this. The stream seethed and boiled in its turmoil; furious at being confined to so narrow a bed, it seemed to foam with rage, tossing its spray right over

the footway and half soaking the pedestrian who dared to cross over. The Devil's Bridge is a befitting name on a day like this, for, as we remarked to each other, there might have been forty million imps struggling for the mastery in that wonderful scene.

But to return to the more sunny side of the tunnel; the morning at first was dull, and as we ascended the Pass a few *Erebia ceto* were taken, together with *E. lappona* as usual; a single specimen of *E. gorge* with very black underside found its way into one of my boxes near the top of the Pass. *Parascotia trepidaria* likewise fell a victim, as also did *P. quadrifaria* lower down on the other side; of *Larentia caesiata* I took several specimens quite typical, and a bad *Brenthis euphrosyne* was the the only one of its genus at the higher level, and on the way down towards Airolo two quite fresh *A. aglaia* saluted us, whilst a single *Aporia crataegi* and a single *Colias phicomone* made the acquaintance of our nets. One very worn *Pararge maera* showed that this species was nearly over. Among the *Lycaenidae* that we saw or caught as we neared Airolo, one or two examples of *Heodes virgaureae* or *Chrysophanus hippothoë* danced from flower to flower in a certain military area that was so hemmed in and encircled with barbed fencing, that it was quite impossible to get through anywhere, and they were not sufficiently near to name with certainty, but from the brilliance of the copper, I incline to think they must have been *H. virgaureae*. One *Polyommatus hylas*, and a nice pair of *C. semiargus* were the only blues that we saw and caught. *Zygænidae*, usually so plentiful all over Switzerland, were here, and particularly in the Hospenthal, remarkable by their absence. At Airolo we took *Anthrocera purpuralis* var. *nubigena*, *A. loniceræ*, and *A. transalpina*. After a pleasant afternoon tea, and after posting various Airolo postcards to our several friends, we made our way to the station hard by in brilliant sunshine, but alas, emerged on the other side of the Gotthard Tunnel into a downpour of rain. However, the rain in no way damped the enjoyment of the day, and the sight of the Reuss from the Devil's Bridge was fully worth the inconvenience of the rain, for though I have seen most of the largest waterfalls of Norway, yet the Reuss on this day will ever have a niche of its own in my memory. The Doctor and I spent another day around the Ober Alp See, mostly on the mountain to the north-west of the Lake, and though our list of captures was not great, it was, nevertheless, most enjoyable, for in addition to the scenery and insects, the Doctor is such a delightful companion that time goes quickly with him. As we went up the steep bye-paths towards the Ober Alp we found ourselves beside a deep gully with a running stream and saxifrage in abundance, and the sun greeted us warmly as we emerged on to the bridge above, so we halted to admire the view, and as we looked there appeared a *Parnassius* below on the saxifrage, doubtless, *P. delius*, then another, and another, until the temptation was too great, so down I went to try my luck, and as I came back with half a dozen or so in my cyanide bottle, the Doctor said, "I believe *P. delius* must always lay its eggs beside running water," and to this I agree entirely, I have never seen it laying except on saxifrage that, I believe, must at times be wholly under water. In the Roseg Valley, where the species occurs very plentifully, and where I have watched them laying, I was quite certain that those plants must be under water considerably at the melting of the snow,

and the same applies to the streams issuing from the Saas glacier and elsewhere, where I have observed the insect. These specimens (Ober Alp) were large and pale, quite as pale as my Roseg specimens, where they are noted for their whiteness, but they are larger than usual; one only had no red spot either above or below on its forewings. As we ascend, *Erebia stygus* is not uncommon. *Melampias melampus*, as usual, insists on being caught, and *E. tyndarus*, quite fresh, unwillingly enters into our glass-bottomed boxes, whilst a single *E. lappona*, for "auld acquaintance's sake," is taken, and one large dark *M. epiphron*: a male *Pararge maera*, quite fresh, belies my previous statement about it on the St. Gotthard. On our way the usual blues occur, viz., *C. semiargus* of a large size; both sexes of *C. minimus* also came along, one specimen I took with no spots on the undersurface of the hindwings, and few and reduced on the fore-; one *Vacciniina optilete* fell to my lot, and one female *P. icarus* with only a trace of red above and quite unusually dark grey below, with the spots large and conspicuous. Only two species of Hesperids were taken by me, but I fear this is a group that I rather neglect in Switzerland, not, I think, because they are uninteresting, but because they are difficult, and thereby I expose my laziness. I only saw two Zygænid, including *A. purpuralis*, whilst the pretty *Botys purpuralis* also is inveigled into my net, together with *Crambus coulombellus*. Of *Melitæa*, only *M. aurinia* var. *merope* put in an appearance. Among the Heterocera, I secured after a chase a large black Phycid, as yet unnamed, and also a *Mamestra glauca*. Of Geometers, the only species worth recording was the widely-distributed *Parascotia alpinata*, whilst along the Ilanz carriage road crowds of *Titanio* arose at every step, the great majority of them being *T. phrygialis* and its var. *sericealis*, with a fair sprinkling of *T. schrankiana*. On the mountain side, or rather in the trough on the mountains, near where the stream issued from the Ober See, where men and boys, and girls also, were busily engaged cutting and stacking peat, both the previously-mentioned species occurred sparingly, and with them an occasional *Asorta aethiopella*, a small Phycid that on the wing is quite indistinguishable from dark specimens of *Oreana rupestralis*, and almost so from *T. phrygialis* also. Our last day together had, alas, now come, as I wanted to try the Laquinthal for *Erebia christi* before it was too late, and Dr. Chapman kindly walked with me to the Furka, where we finally had lunch together, and, so far as I was concerned, very regretfully parted, he to go back to his sisters at Hospenthal, I to go to the Rhone Glacier, and from there the next day to Brigue by the first diligence, as I desired to get to Algaby at the junction of the Gondo and Laquin valleys the same day. It was bright, but rather cold, and therefore insects were not on the wing, but as we took one of the many short cuts up the hillsides, I saw and took *V. optilete* at rest, and *C. semiargus* flew my way, these being the only Lycænid I saw that day. *Erebia lappona* was plentiful and in nice condition, and a single beautiful *E. mnestra* allowed me to take it, whilst on the top of the Pass *E. gorge* was not uncommon, as was also *Melitæa aurinia* var. *merope*. *M. cynthia* was just coming out, and both sexes were secured. The only Pierid we saw was *Pontia callidice*, and whilst I was busily engaged in catching them, the Doctor was equally busy in finding their empty pupa-cases under stones, and in the end we secured a fair number, though most were probably last year's cases.

Just before arriving at the "Col" a driving wind was blowing, and in one part there was a wall with a stagnant stream of melted snow full of moths, which had evidently been blown against the wall and dropped into the water below. Among them were *Parascotia trepidaria* and *Titanio* by the dozen, and I succeeded in rescuing a couple of *Psyche plumifera*, and caught one *Epichnopteryx sieboldii*. *Zygæna erulans* was also on the move beyond the first hotel, for one found its way into my net; I also took *Parascotia coracina* and a single typical *Anarta melanopa*. At this point I had to say "au revoir" to my friend, and he retraced his steps to Hospenthal, whilst I first went and had a perfect view of the Rhone Glacier before descending further to the Gletsch Hotel. Glaciers are scenes I never tire of, with their wonderful colours, peak upon peak of loveliest shape and hue, fantasy let loose, as it were, piling erections of exquisite shapes hither and thither at her own sweet will, and creating chasms below of wondrous greens and blues. But to return to more mundane things, there is a time for everything, and the time had come for me to go, and as I passed below the Belvedere Hotel the sun was shining gloriously on the hot rocks by the roadside, so hot that they almost scorched my hands; dozens of larvæ of *Endrosa* and *Melitæa cynthia* were basking in the heat, the latter of all sizes, so that I felt convinced some must pass two winters under the snow, and I have at this moment two hibernating larvæ going through the winter. This completes my small list of captures from this part of the Oberland. I was specially desirous, whilst more or less in the neighbourhood, of seeing *Erebia christi* in its special haunts, and, with this object in view, decided to go on to the Simplon district.

Myrmecophilous Notes for 1910.

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

Formica rufa, L.—Mr. Taylor and I found a very curious nest of this ant at Parkhurst Forest, I. of W., on August 21st. It was not large, and chiefly composed of small pebbles, which gave it a rather strange appearance. The ants must have experienced considerable difficulty in carrying some of the larger stones and placing them in position on the top of the hillock. I took a photograph of the nest, which, unfortunately, has not turned out a success.

Formica exsecta, Nyl.—On May 15th, I obtained about 100 ♂s, some eggs, and larvæ from a nest of this species in Parkhurst Forest. These I took home and introduced into my old *exsecta* nest, which I had originally procured on April 26th last year, near the same spot. A ♀ and seven ♂s were all that remained of the old colony, which was housed in a combined "Fielde and Janet" nest. They were quite friendly with the new ♂s, much excitement prevailed, and a great deal of tapping of antennæ took place all round. The eggs and larvæ were collected in one corner and the ♀ sat among them. The ♀ laid eggs last year and larvæ were partly brought up, but eventually all were devoured. This year the ♀ again laid eggs, but these disappeared as well as the eggs and larvæ I had brought up from Parkhurst. It is possible I have not given them sufficient animal food. Most of the ♂s and the ♀ are still alive and well. It will be interesting to see if next year they will bring up a brood.

In August over ten different *ersecta* nests were found in Parkhurst Forest, some at a considerable distance from the head quarters. It is, therefore, well established here. This is fortunate, as the best locality at Bournemouth is in danger of being destroyed. A road has been made through the spot, and building operations are being carried out all round. When the nests at Parkhurst were situated on a bank, or other acclivity, they always faced the east. I may mention, that this year I have carried a pocket compass with me, wherever I have been investigating ants' nests, and have found they invariably face the east. They thus obtain the benefit of the morning sun. This has been demonstrated by Forel³ and others. I found several nests of *F. ersecta* at Braemar in June, another new locality for this species. *Formica fusca*, L., was found to be abundant at Braemar, in June, both on Mts. Marrone and Ben-na-buirid. The latter mountain is over 4,000ft. high, and perpetual snow lies on the top. The nests, which were under stones, appeared to me to cease below 2,000ft.

Lasius umbratus, Nyl.—Nests of this scarce, but widely distributed ant, were found at Weybridge and Box Hill. Only one colony, however, could be found in each locality. On May 1st a rather curious observation was made in the nest at Box Hill by Mr. Bedwell and myself. A large number of small empty land shells were seen in the cells of the nest, which was situated under a stone. The ants appeared to have collected them all together, and to be sitting on them. I have no explanation to offer. It is exceedingly doubtful that the ants would be under the impression that the shells were pupæ, or that they would serve as food.

Myrmica.—Of our two rarer species, I found a nest of *M. lobicornis*, Nyl., at Weybridge, in May, and one of *M. sulcinodis*, Nyl., at Braemar, in June. In neither nest did I find a queen.

Leptothorax acerrorum, F., was nesting under stones at Braemar. This ant is frequently found in company with other species. Farren⁴ White records it in a gorse stump in the centre of a nest of *F. sanguinea* at Shirley, and Rothney⁵ continually found it with the same ant in the same locality. Mr. Hamm tells me he took it in the nest of *ersecta* at Bovey Tracey in Devonshire. Pool⁶ found winged ♂s and ♀s, as well as ♂s, in a *F. rufa* nest at Enfield. I have continually found it in company with *F. rufa* at Weybridge. I found ♂s and winged ♂s and ♀s in a *F. rufa* nest at Nethy Bridge⁷ in July, 1908, and have taken the worker with *F. sanguinea* at Woking⁸. Wheeler has written on the presence of *Leptothorax* species in strange ants' nests. I may mention that I have taken dealated ♀s, and ♂s of *Leptothorax nylandrici*, Först., frequently with *L. fuliginosus*, at Oxshott, and subsequently in nests of the same ant at Wellington College. Wasmann⁹ records *L. acerrorum* with *F. truncicola*, *F. rufa*, *F. sanguinea*, *F. fusca*, *Myrmica ruginodis*, and *M. laevinodis*. It has very rarely occurred with *L. niger*, both species being much of the same size. He remarks

* "Fourmillières Boussoles" (Bull. Soc. Vaud. Sc. Nat., xlv., 1909, p. 342.)

⁴ *Ants and Their Ways*, 1895, p. 244.

⁵ *Ent. Mo. Mag.*, 1882, p. 263; 1892, p. 50; 1893, p. 67.

⁶ *Ent. Rec.*, 1906, p. 317.

⁷ *Ent. Rec.*, 1902, p. 16.

⁸ *Trans. Leicester Lit. and Phil. Soc.*, xii., ii., 1908, p. 227.

⁹ *Ent. Rec.*, 1906, p. 317.

¹⁰ *Biolog. Centralbl.*, xxx., 1910, p. 494.

that these observations show that the peaceable neighbourhood with strange ant species is to be looked on as the customary and original condition of *Leptothorax*.

I took two small nests of *L. acervorum* at Weybridge, on March 7th, from under bark of small fir stumps. They were from quite different stumps, at some distance from each other. They both contained a ♀, ♂s, and some young larvæ. I put them all into a small plaster nest. They were quite friendly together and joined forces at once. All the larvæ were collected together into one heap in a corner, the ♀s sitting on them surrounded by the ♂s.

On April 4th, no dead ants were present, which proves there had not been any fighting. By April 15th, eggs had been laid, and some of the larvæ were quite large. On April 17th, several of the larvæ had changed to pupæ. On June 1st, a winged ♀ had hatched. This, of course, was from one of the larger larvæ taken in nature. I have never bred a ♀ from eggs laid in captivity in any of my nests. Many ants feed largely on the juices obtained from *Aphidæ* and *Coccidæ*, both subterranean (true myrmecophilous species), and species found on plants. This food they are unable to get in captivity, and it may be that this is partly used to rear the ♀ larvæ. I consider the fact that I never reared any Pseudogynes in the *P. sanguinea* nest in which I bred numbers of *Lomechusa strumosa* for two years, lends considerable support to Wasmann's theory, why Pseudogynes are produced in nests of that ant long infested by the beetle. The workers bred in this nest, were somewhat small, but were never Pseudogynes. If the latter were simply produced by the ants neglecting their brood, on account of the presence of the beetle and its larva, I should have obtained some in my nest. The colony from which I took this nest in nature, contained over 60 *Lomechusa*, and the ♂s were all of a small size. Consequently, the beetle must have been present for some time. Now, if as Wasmann explains, the Pseudogynes are produced by the ants trying to turn larvæ which they have started to bring up as queens, into workers, to replace the loss of the latter caused by the ravages of the beetle, then the fact that queens are seldom, or never, reared in confinement, possibly for the reason I have given, will account for the fact that I never reared Pseudogynes in captivity, the ants being unable to bring up larvæ as queens in the first place.

Lord Avebury* was only able to quote one case with all his ants' nests, where queens came to maturity from eggs laid in captivity. He remarks: "The nest had been richly supplied with animal food, which may possibly account for the fact." To return to my *acervorum* nest, a number of the ants died in the summer, during my various absences from home. On September 29th there were present 24 ♂s, 1 ♀, and a number of small larvæ. On October 30th, when I gave them a dead house fly, much excitement was noticed. The ♂s appeared to signal to each other by striking the bottom and sides of the plaster nest with their abdomens. The condition of the nest is much the same to-day as it was in October, the larvæ are little larger than they were then.

Myrmecina latreillei, Curt.—On May 31st I took a small nest of this rare little ant at Box Hill. It was situated in a hole in a small

* *Ants, Bees, and Wasps*, 1882, p. 40.

flint. By hitting the flint with another stone over a sheet of paper, I shook out all the contents, which consisted of one ♀, many ♂s, eggs, and young larvæ. I took them home and placed them in a small plaster nest. On May 8th I found another smaller nest, also in a hollow flint, in the same locality. These I placed in the same plaster nest as the others. Unlike the *Leptothorax*, however, they would not mix, and the ♀ and ♂s of the new colony were killed by the old ♂s. More eggs were laid by the old ♀, and fresh ♂s were reared. To-day (December 1st) there are a number of fair-sized larvæ present, and the ants are all well. This little species is generally found singly, and the winged sexes may be swept off grass in the autumn. The worker frequently occurs in company with other ants. I have found it in the nests of *F. fusca*, *L. flavus*, and *L. niger*. There are very few records of the finding of a complete colony in this country. Lord Avebury, I believe, found a colony in Kent. Farren White* gives an account of a nest near Dursley, which consisted of ♂s, a deilated ♀, many ♂s, and larvæ of different sizes. Martineau† records nests in dead tree stumps at Colwich, Staffs., and Selsby, Gloster.

Ponera coarctata, Ltr.—On May 1st and 8th I found small colonies of this ant under flints at Box Hill. They contained five and three deilated ♀s and a small number of ♂s. I established a little colony of four ♀s and some ♂s in a small plaster nest at home. They were not a success, and eventually all perished. They would not eat the honey I gave them. A few small flies were devoured by the ♂s, but they gradually all died off, the ♀s not laying any eggs. On September 27th I took five winged ♀s and a few ♂s in a nest of *Lasius fuliginosus* at Darenth Wood. It not unfrequently occurs in nests of other ants, but according to Wasmann it has no strict connection with them. I took it in a nest of *F. fusca* at‡ Doddington, in Kent. Mr. W. E. Sharp has shown it to me from the nest of *L. flavus* at Stoa's Nest. Janson† and Shepperd both found it in nests of *L. fuliginosus* at Highgate. Chitty‡ states that Kent, east of the Medway, is the headquarters of this ant in Britain. This is hardly the case, the insect having been found at Liverpool, Manchester, South Shields, Sutton, Warwick, Weybridge, Shere, Gomshall, Brighton, Isle of Wight, Exeter, Plymouth, Mount Edgecombe, Cornwall, etc.!

Ponera punctatissima, Roger.—At the end of July, Mr. C. J. C. Pool sent me some winged ants from Portsmouth, which, he informed me, were swarming in a scullery. These turned out to be ♀s of *P. punctatissima*. When I went to Southsea in August, he took me to this scullery, and I found the ants were still present in numbers. This went on for several weeks, the ants being chiefly found on a window facing the street. Much search failed to find the nest, but we noticed a grating at the back which connected the scullery with a bakehouse. Here we obtained permission to hunt, but still we could not find the headquarters. A few winged ♀s were observed in the bakery, but no ♂s were found at all. The baker told us he sometimes noticed small ants crawling about,

* *l.c.*, p. 247.

† *Entom.*, 1901, p. 232.

* *Ent. Rec.*, 1902, p. 16.

† *Ants and Their Ways*, 1895, p. 238.

‡ *Ent. Mo. Mag.*, 1903, p. 233.

and in the sugar for icing cakes. These would no doubt be the ♂s. The ♂ of this species is wingless, and Wheeler* states it is indistinguishable from the worker, except in the structure of the genitalia. *P. punctatissima* was described by Roger† who found it in houses in Germany. Forel‡ recorded a large colony in the masonry of a wall at Vaux. It was first taken in this country by Henry Squire who found several specimens in a bake-house near Burton Crescent, London, where G. Stokes captured it again in 1860. Mrs. Varley found several specimens in her kitchen in Robert Street, Hampstead Road. In 1877 Charsley§ recorded several ♂s of a *Ponera*, which he queried as *P. ochracea*, taken in the earth in a conservatory at Oxford. Subsequently he¶ described it (female, worker major and minor) as a new species and proposed the name of *P. tarda* for it (it proved to be *punctatissima*). He pointed out that it must have been long established in this conservatory, and mentioned that a species of *Myrmica* inhabited the same bed with the *Ponera*, and associated with it in perfect harmony. Farren White* discovered a large colony in a hot house at Minchinhampton. Saunders† captured a winged female at Bromley in Kent, flying in the evening, at some distance from any houses. It is recorded from a bake-house at Colechester‡, and as taken by Hall at Deal§. On March 17th, 1906, a ♀ and ♂ were taken in flood refuse at Whitstable¶, by Chitty and me. Walker has found the ♀ in the bone heap at Queenborough. These are all the British records that I am aware of. At Kew I discovered the sub-species *P. punctatissima*, sub-species *bovorum*, described by Forel from South Africa. In 1908 I took a few ♂s in the Fern House, and a winged ♀ in the Palm House. This winter Mr. Crawley and I found it again, the ♂s were very scarce in the Fern House, but not uncommon under pots in the Palm House. It is not easy to detect, as it is of much the same colour as the shingle on which the pots rest.

Mr. Crawley and I have recently collected together, on several occasions, in the Hot Houses at Kew. We found most of the species present that I have recorded before, and we added one to the Kew list, viz., *Tetramorium guinéense*, F. It is abundant in one of the smaller houses, a ♀ and many ♂s, were secured. It was first found by Brewer, in this country, at Sheerness in 1866, and F. Smith* added it to the British list as *Myrmica kollari*, Mayr. Farren White† found it in great numbers in a hot-house at Easting. Subsequently, in 1894, he found it in the Botanical Gardens, Regent's Park. Pegler‡ took it at Retford. Crawley takes it in a conservatory at West Leake, Notts., where he first discovered it in February, 1909. He tells me it is very abundant, and must have existed there for a long time. Of other

* *Journal of Experimental Zool.*, viii., 4, 1910, p. 429.

† *Berl. Ent. Zeit.*, 1859, p. 446.

‡ *Fourmis de la Suisse*, 1873, p. 222.

§ *Ent. Mo. Mag.*, xiv., 1877, p. 69.

¶ *l.c.*, p. 162.

* *Ants and Their Ways*, 1895, p. 239.

† *Hymen. Acul*, 1896, p. 29.

‡ *Vic. Hist. Essex*, 1903, p. 99.

§ *Vic. Hist. Kent*, 1908, p. 116.

¶ *Ent. Rec.*, 1906, p. 161.

* *Ent. Ann.*, 1871, p. 60.

† *l.c.*, p. 242.

‡ *Vic. Hist. Notts.*, 1906, p. 91.

species at Kew, I may mention, that there are two forms of *Prenolepis braueri*, Mayr., sub-species, *donisthorpei*, Forel, to be found. The one which is jet black, is very abundant in the Fern House, I captured a ♂ there on our last visit. The other which has a good deal of red about the body and legs occurs in the Palm House, though not so commonly. The two forms are not found together. Since this was written I have heard from Prof. Forel that the latter is *P. ravidula* sub sp. *atalana*, Forel.

Technomyrmex albipes, Smith, is the most abundant species at Kew, occurring in both the hot and also the cooler houses. We secured a number of specimens of the ergatoid ♂, which Forel* described from my previous specimens. He suggested that they may be caused by the presence of parasites entertained by the *Technomyrmex*, in the same way that Pseudogynes are caused by the presence of *Lomechusa* with *P. sanguinea*. The ordinary winged ♂ is very common, and I have recently taken a ♂ with short wings. This reminds us of the short-winged ♀s of *Lasius alienus* shown by Mrázek† to be infested with a nematoid worm of the genus *Mermis*. He called these ♀s, mermithogynes. Wheeler‡ dissected three out of seven brachypterous females of *Lasius neomiger*, which he had taken in a single colony in Manitou, Colorado. Each was found to contain a large coiled *Mermis*, 53mm. to 55mm. long. Crawley captured at Oddington, near Oxford, in 1899, and again in 1900, a number of brachypterous ♀s of *L. flavus*, walking on the road, and a few macropterous ♀s occurred with them. In 1900, in the same locality, he found in a nest of *L. alienus*, under a stone, several short-winged ♀s. He tells me in this case all the winged females present were brachypterous. It is possible that the short wings in my ♂ *Technomyrmex*, are caused in the same way, when it may be called a "mermithaner." In the *Lasius* ♀s there is nothing unusual, except in the very small size of the wings. Sharp° mentions that queens of *L. alienus* have been found with short wings, but refers to them as an intermediate form between the females and workers. This, we now know, is not the case.

(To be continued.)

Experiments on *Vanessa io*, L.

By T. REUSS.

All the ova of *Vanessa io*, which I obtained in May and up to June 3rd last (*vide antè*), were used for experiments undertaken for the purpose of distinguishing, if possible, between "larval" and "pupal" forms of the perfect insect, and of ascertaining in what degree certain conditions of development, acting during the oval and larval stages, influenced certain facial details of the perfect insect. I had already, in the *Entomologist*, vol. xlii., p. 311, given expression to an opinion, based on the results of field-work and of temperature experiments, that *V. io* possessed two characteristic varieties: a "blue-spotted" form with lighter ground colour and two heavy black bands across the hindwing ocellus, and a "blue-banded" form with darker ground

* *Bull. Soc. Vaud.*, 162, 1908, p. 21.

† *Acta. Soc. Ent. Bohem.*, v., 4, 1908, pp. 139-146.

‡ *Jour. Exper. Zool.*, viii., 4, 1910, p. 421.

° *Camb. Nat. Hist. Insects*, ii., 1899, p. 140.

colour and usually more blue in the hindwing ocellus. The first variety seemed dependent on a cool, comparatively contrastless climate, the second one on hotter summers and stronger contrasts of temperature.

Obviously, if this were so, proof could be easily adduced by rearing one brood of *V. io*, after having divided the ova into two parts, under the two different kinds of temperature conditions in question, and, if not only the pupal developments, but also those of the larval and oval stages were responsible to any extent for the variation of the markings and colours in the imagines, then, though there was the difficulty, that "pupal" heat or cold forms might be *facially* identical with "larval" heat or cold forms, yet the actual identity of either pupal or larval forms could be exposed by further methods of comparison. Thus the different series from *one* brood of *V. io*, suitable for this purpose, should be obtainable by dividing a batch of fresh ova into two parts, and hatching and rearing one part in the day temperature of a sunny, hot season, and the other in the mean shade and night temperature of a cool season—again dividing the resulting pupæ of each part into four other separate parts; one each to develop under the same conditions as the larvæ and ova ($+^{\circ}$ larvæ and $+^{\circ}$ pupæ; $-^{\circ}$ larvæ and $-^{\circ}$ pupæ), one each to develop under opposite conditions ($+^{\circ}$ larvæ and $-^{\circ}$ pupæ; $-^{\circ}$ larvæ and $+^{\circ}$ pupæ), one each to be exposed to repeated extremes of temperature—over 37°C. to 45°C. ($+^{\circ}$ extr. pupæ), and one each to develop in the "normal warm" temperature of about 18°C. (norm. warm pupæ). The signs $+^{\circ}$ and $-^{\circ}$ signify $20\text{--}37^{\circ}\text{C.}$ and $8\text{--}15^{\circ}\text{C.}$ respectively. The following notes deal with the results I obtained by rearing three broods of *V. io* from freshly laid ova, and one brood from wild larvæ about a day old, of which the ova had hatched under natural conditions, *i.e.*, cool nights and warm days. Two of the broods were treated exactly in the way described; of another brood, one part of the ova was "iced" for about a fortnight (17 days), the other ova and *all* the larvæ were treated to the mean shade temperature only, while of the last brood *all* the larvæ were reared quickly in temperatures above 20°C. by day and not below 15°C. by night.

To simplify my text, I will call the two common varieties of *V. io*—*i.e.*, the blue-spotted and the blue-banded forms—shown *antèà*, vol. xxi., pl. vii., figs. 9, 12, and figured and described together with the protoid *V. io* ab. *jischeri*, Stdfss., in the *Entom.*, xlii., p. 311, figs. 2, 3—ab. *mesoides* and ab. *teloides*, and connect these names relating to the markings of the forewings with others describing the ground colour or the amount of blue in the hindwing ocellus. Thus *V. io* ab. *mesoides-clara* and ab. *teloides-clara* are the orange, and *V. io* ab. *mesoides-brunnea* and ab. *teloides-brunnea* the almost chocolate-brown forms of both varieties. The names *splendens* and *lucidocellata* (vide *antèà*) refer to the extreme amount of blue in the hindwing ocelli, and ab. *nigricellata* has a black hindwing ocellus with only four or five separate blue spots. Ab. *magnumaculata* has very much enlarged white spots in the forewing ocelli, while in ab. *parcimumaculata* the white spots below the ocellus tend to disappear (=ab. *erimumaculata trans.*), and the spots inside the ocellus are very small. Ab. *marginalis* has black marginal spots of such size, that they tend to coalesce and form a black margin in the forewing. In the following records the relations between the facial *details* of the imagines and the conditions

of development in the oval, larval, or pupal stages may easily be checked. Also the influence of the parental (♀) facial detail becomes evident, and this influence presents itself only in those specimens that were reared in approximately normal conditions of temperature.

BROOD I.—The ova, bluish-green, 7-9 ribbed, were laid on the 20.5. by a *V. io* ♀, which was normal in facies, being in every way intermediate between *ab. mesoides* and *ab. teloides*.

1. +° ova and +° larvæ (20—37°C.).

a and a₁. (+° and +° extr. pupæ, the latter transferred *immediately*.)

Oval stg.	Lrvl. stg.	Pupated.	Pupal stg.	Emerged.
20-27.5	—	10-11.6	—	20-22.6 = 31-33 days.
7	14-15	:	10-11(days)	= <i>ab. teloides-lucidocellata</i> and <i>splendens</i> , <i>ab. marginimaculata-obscura</i> (both numerous) two <i>ab. belisaria</i> , Obth., <i>trans</i> , one a cripple. All are dark in ground colour, near <i>brunnea</i> : two specimens are <i>ab. marginalis trans</i> (+° pupæ), one of these is lighter in the ground colour. 28 specimens were set.

b. (Norm. warm pupæ, transferred *immediately*.)

Oval stg.	Lrvl. stg.	Pupated.	Pupal stg.	Emerged.
20-27.5	—	10-11.6	—	25.6 = 36 days.
7	14-15	:	14-15(days)	= <i>ab. teloides-lucidocellata</i> dark in ground colour, not quite <i>teloides-brunnea</i> . 2 examples set.

c. (-° pupæ transferred *immediately*.)

Oval stg.	Lrvl. stg.	Pupated.	Pupal stg.	Emerged.
20-27.5	—	10-11.6	—	8-9.7 = 49-50 days.
7	14-15	:	27-29 (days)	= <i>ab. teloides</i> , normal to lighter in ground colour, not quite <i>teloides-clara</i> , three <i>ab. teloides-lucidocellata</i> , all the others are near the latter form. Three specimens approach the parent ♀ somewhat. 16 specimens were set.

2. -° ova and -° larvæ (8—15°C., no sunshine, the insects were kept mostly in the dark).

a and a₁. (+° and +° extr. pupæ transferred *directly* after pupation.)

Oval stg.	Lrvl. stg.	Pupated.	Pupal stg.	Emerged.
20.5-6.6	—	6.7	—	16.7 = 57 days.
17	30	:	10 (days)	= one <i>ab. belisaria</i> , crippled, but fine in colour, hindwings ex-oculated; nine pupæ dead. The + pupæ produced var. <i>teloides</i> , dark hindwing ocellus exactly like the parent ♀.

b. (Warm pupæ, not above 30°C., transferred *immediately*.)

Oval stg.	Lrvl. stg.	Pupated.	Pupal stg.	Emerged.
20.5-6.6	—	6.7	—	15-1.67 = 56-57 days.
17	30	:	9-10 (days)	= <i>ab. teloides</i> , dark hindwing ocellus exactly like parent ♀. 2 specimens set.

c₁. (-° pupæ transferred *two days after pupation* to extreme temperature conditions.)

Oval stg.	Lrvl. stg.	Pupated.	Pupal stg.	Emerged.
20.5-6.6	—	17.7	—	28.7 = 69 days.
17	41	:	11 (days)	= <i>ab. mesoides</i> , typical specimens, except for a <i>darkening</i> of the ground colour. For the first time the specimens of this brood show the heavily double-barred hindwing ocellus. 2 examples set.

c₂. (-° pupæ).

Oval stg.	Larval stg.	Pupated.	Pupal stg.	Emerged.
20.5-6.6	—	14-17.7	—	13-14.8 = 85-86 days.
17	38-41	:	27-31 (dys.)	= <i>ab. mesoides</i> , ground colour normal to lighter, <i>all</i> have the two heavy black bands in the

hindwing ocellus; one ab. *mesoides-riridiocellata*; three ♀s approach the parent ♀ in the forewings. 26 specimens set.

BROOD II.—The ova answering to the same description as those of brood I. were laid on the 26.5, by a female of *V. io* ab. *mesoides-lucidocellata*. This female has well marked black marginal spots (full row), the outline of the second costal blotch next the ocellus is rectangulated (this detail proved to be transmittable by hereditism to a remarkable degree, otherwise in both *V. io* and *V. urticae* it is a sign of the influence of cold) and in the large blue hindwing ocellus there are two faint white spots.

1. (+° ova and +° larvæ).

a and a_1 (+° pupæ and +° extr. pupæ) the latter transferred immediately.

Oval stg.	Larval stg.	Pupated.	Pupal stg.	Emerged.
26.5-2.6	—	17-18.6	—	26-28.6 = 31-33 days.
7	15-16	—	8-11 (dys.) = var. <i>teloides-lucidocellata</i>	

and ab. *teloides-splendens*, one *teloides*, one *mesoides-parrimaculata* (dark), two ab. *belisaria*, Obth., trans., ♂ and ♀, the very dark male tending to lose the ocelli in the forewings, the lighter female, however, in the hindwings. Both these aberrations are also *magnimaculata* and the male is *brunnea*. 19 examples were set.

b. (Warm pupæ).

Oval stg.	Larvl. stg.	Pupated.	Pupal stg.	Emerged.
26.5-2.6	—	17-18.6	—	27-28.6 = 32-33 days.
7	15-16	:	9-11 (days) = var. <i>teloides</i> , one ab. <i>teloides-lucidocellata</i> ; three of the specimens with an indication of a "nota;" ground colour darker than normal. 6 specimens set.	

c. (-° pupæ transferred immediately.)

Oval stg.	Larvl. stg.	Pupated.	Pupal stg.	Emerged.
26.5-2.6	—	17-18.6	—	11.7 = 46 days.
7	15-16	:	23-24 (days) = var. <i>teloides</i> , one ab. <i>teloides-lucidocellata</i> . The ground colour is normal. 5 specimens set.	

A few specimens in all three groups have the faint white spots of the parent form in the ocelli of the hindwings. Nearly a hundred pupæ succumbed to extreme temperatures (50° C.) under a_1 . The rise in temperature above 45° C. was accidental; in the sensitive stage soon after pupation the pupa often bear such heat without injury.

2. -° ova and -° larvæ.

a_1 . (+° extr. pupæ transferred after one day.)

Oval stg.	Larvl. stg.	Pupated.	Pupal stg.	Emerged.
26.5-11.6	—	20.7	—	29.7 = 64 days.
16	39	:	9 (days) = 1 ab. (<i>teloides</i> -) <i>brunnea-lucidocellata</i> ♀, 1 ab. <i>teloides-brunnea</i> , ♂, both specimens tend towards <i>magnimaculata</i> ; 2 cripples of the form <i>teloides-brunnea</i> . 1 dead, 2 specimen wsere set.	

b (-° pupa).

Oval stg.	Larval stg.	Pupated.	Pupal stg.	Emerged.
20.5-11.6	—	16.7-20.7	—	15.-16.8 = 81-82 days.
16	35-39	:	26-31 (days) = var. <i>mesoides</i> , ground colour normal, one ab. <i>mesoides-brunnea</i> , one ab. <i>mesoides-splendens</i> , ♀, two ab. <i>mesoides-lucidocellata</i> , ♀s, and some specimens near the latter, showing the influence of the parental facies, the ocelli being much bluer than is usual in var. <i>mesoides</i> . 29 examples were set.	

In 22 of 41 specimens the outline of the second costal blotch of the forewings is nearly rectangular on the side enclosing the ocellus; the first costal blotch is very much enlarged (in all the specimens), and betrays its origin from two separate black spots. Both details were already noticeable in the parent female, and have reappeared in this group of the brood only. Several specimens

show signs of a "nota," and, in addition, of a basal suffusion, reaching as far as the first costal blotch, as, for instance, in *V. urticae* var. *ichnusa*. Two male specimens showed these details strongly developed = ab. *basi-obscura*. The white spots on the hindwing ocelli of the parent form did not reappear in this group, and the black marginal spots in the forewings were but slightly indicated in some specimens.

b_1 (—° pupæ).

Oval stg.	Larval stg.	Pupated.	Pupal stg.	Emerged.
26.5-11.6	—	23-24.7	—	20.8 = 86 days.
16	42-43	:	28-27 (days)	— var. <i>mesoides</i> , only. In one specimen there appears in the outer angle of the hindwing and above the ocellus (left wing only) another spot, which is also marked on the underside, and represents an evidently inherent detail of the Vanessid facies in general. 9 examples were set.

BROOD III.—The bluish-green 7-9 ribbed ova were laid on the 28.V. by a fine female of *V. io* ab. *lucidocellata*, with angular outline to the second costal blotch, and with two white spots in the hindwing ocellus. The specimen was in very good condition, but got severely damaged in capture.

The ova all succumbed after an exposure to + 45°C.

BROOD IV.—The ova, bluish-white, 7-9 ribbed, were laid on the 3.6. by a rather small specimen of *V. io* ab. *brunnea*, which was normal, except for the distinctly brown ground colour.

Part of the ova were "iced" in a refrigerator for 17 days, and afterwards allowed to develop in the mean shade-temperature till pupation of the resulting larvæ. All the ova emerged safely. The other part of the ova, with which I shall deal first, developed in the shade-temperature.

1. —° ova and —° larvæ.

a (+° pupæ and +° extr. pupæ, up to 40°C., transferred immediately.)

Oval stg.	Larval stg.	Pupated	Pupal stg.	Emerged.
3.6-17.6	—	1.8-2.8	—	14-16.8 = 72-74 days.
14	45-46	—	12-15 (dys.)	= ab. <i>teloides-lucidocellata</i> . All the 21 specimens are remarkable for the jagged outline shown by the outside rim of the almost egg-shaped hindwing ocellus—they are darker than normal in the ground colour, almost ab. <i>brunnea</i> , one ab. <i>nigrifasciata trans</i> . Other specimens show this tendency also, and all are near <i>magnimaculata</i> , while four tend towards ab. <i>belisaria</i> in the forewings.

b. (pupated 31.7-2.8, kept as —° pupæ till 16.8, then they were exposed to + 42°C. down to + 25°C.).

Oval stg.	Larval stg.	Pupated.	Pupal stg.	Emerged.
3.6-17.6	—	31.7-2.8	—	19.8 = 77 days.
14	44-46	—	17-19 (dys.)	= ab. <i>mesoides</i> , darker, browner than normal in ground colour, hindwing ocelli rounded, the 7 specimens are near the parent ♀ in facies. One ♀ shows the breaking up of the first costal blotch into two spots.

c. (—° pupæ).

Oval stg.	Larval stg.	Pupated.	Pupal stg.	Emerged.
3.6-17.6	—	28.7-2.8	—	24.8-26.8 = 82-86 days.
14	41-46	—	22-29 (dys.)	= var. <i>mesoides</i> , three specimens (♂s) with indications of a "nota" and basal suffusion spreading from the base to the nota. Hindwing ocelli rounded, except in three specimens. The 30 specimens are near the ♀ again—but now the ground colour is almost normal. The first costal blotch is "hook"-shaped in many specimens, indicating its tendency to break up into two spots—as in <i>V. urticae</i> — <i>P. c-album</i> .

2. ("ice" ova and —° larvæ, the ova were "iced" from June 8th to the 25th) All the resulting specimens have rounded hindwing ocelli.

a. (+° pupæ, up to 40°C. (from 12.8 onwards = 4-5 days after pupation).

Oval stg.	Larval stg.	Pupated.	Pupal stg.	Emerged.
3.6-28.6 25	— 40-41	7-8.8 —	— 10-11 (dys.)	18.8=76 days. =of two pupæ ab. <i>teloides-brunnea</i> , one crippled.
a_1 (+° extr. pupæ, up to +45°C. from 16.8 onwards, kept as -° pupæ till 8 to 9 days after pupation).				
Oval stg.	Larval stg.	Pupated.	Pupal stg.	Emerged.
3.6-28.6 25 :	— 40-41	7-8.8 :	— 14-15 (days)	22.8=80 days. =of 5 pupæ: 5 ab. <i>teloides-brunnea</i> , all cripples, one only slightly so.
a_2 (+° extr. pupæ, up to +42°C. from the 27.8 onwards=kept as -° pupæ till 19 to 20 days after pupation).				
Oval stg.	Larval stg.	Pupated.	Pupal stg.	Emerged.
3-28.6 25	— 40-41	7-8.8 :	— 22-24 (days)	30-31.8=89 days. =of 7 pupæ: 4 (2 ♂ s, 2 ♀ s) ab. <i>teloides-brunnea</i> , perfect specimens, the females with normal light rings of greyish colour encircling the hindwing ocelli. One male was almost chocolate-coloured, 2 crippled ab. <i>mesoides-brunnea</i> , 1 pupa was dead. The tendency to ab. <i>nigrofasciata</i> was visible in one ♂ specimen.
b (-° pupa).				
Oval stg.	Larval stg.	Pupated.	Pupal stg.	Emerged.
3-28.6 25	— 40-41	7-8.8 :	— 25-29 (days)	2-5.9=94 days. =of 16 pupæ: five ab. <i>mesoides</i> , four were var. <i>teloides</i> , and seven intermediate forms. Two specimens show traces of a "nota." The ground colour was almost normal, slightly browner. The seven intermediate specimens would be like the parent form if the ground colour were more brown. The size of the specimens was normal, mostly somewhat larger than that of the parent ♀, seldom smaller. There were no large forms, neither in pt. 1, nor in pt. 2, but in brood I, of which the ♀ was a larger one, many very large specimens made their appearance from the +° pupæ, both from +° and -° larvæ. The results from part 2 of brood IV, compared with those from part 1, point out, I think, that the retardation of the oval development strengthened hereditism, as shown by a somewhat less characteristic reaction to low temperature (which was not below the shade or night temperature of the season), while the browning, darkening effects of heat, as compared with the results from other broods, were much heightened—evidently by the influence of the parent ♀, ab. <i>brunnea</i> . This wild ♀, ab. <i>brunnea</i> , need not, however—as shown by the ab. <i>mesoides-brunnea</i> from -° pupæ and larvæ of brood II—itsself have been developed in the pupal stage by heat, the brown colour, especially of a lighter shade, being producible by opposite (retarding) influences, acting already in the larval stages.

These records seem, so far, to show that the influence of the parent female, as regards distinctive facial detail, makes itself felt in a very decided way, when ova, larvæ, and pupæ are bred in the mean shade temperature. The parent males were unknown to me, but if they were nearer ab. *teloides* (all those I saw flying about, and could examine in the spring were so, and on the 3rd May, I captured a very worn ♂, ab. *teloides-nigrofasciata*, trans.), then their influence would have come out in the +° larvæ and +° pupæ, very strikingly.

As regards the influence of the oval and larval stages in broods I and II, the records show that heat ova and heat larvæ produce ab. *teloides*, and will still produce ab. *teloides* (as oval and larval form), but of a lighter ground colour, even if the pupæ are, after pupation, immediately transferred to the mean shade temperature, in which

they take 23-28 days to develop, while if left in the same conditions as the larvæ, they emerge in 8-11 days. On the other hand, all "shade" ova, larvæ, and pupæ produce var. *mesoides* (as oval and larval form), the pupal stage extending over 26-31 days. Even if the —°pupæ from —°ova (I do not include the "ice" ova of brood IV) and —°larvæ are transferred to hot, sunny cages they will not produce var. *teloides* unless they are transferred *within a day* or so after pupation. If exposed to heat *later*—or if only so exposed to an insufficient degree—they emerge with perhaps a darkened ground colour as ab. *mesoides-brunnea*. Similarly, the pupæ from +°ova and larvæ produce var. *mesoides*—and beyond that even the protoid ab. *fischeri*—but only if they are directly after pupation transferred to a refrigerator for some weeks, and then allowed to develop in a normal temperature*—for, as has been shown, these pupæ from +°ova and larvæ resist the constant influence of the lowest temperatures in the English summer—still emerging as var. *teloides* (here an "oval and larval" form, following out also the facial tendency of the parent male in both sexes) after nearly a month of pupal development.

Broods I and II had, however, been treated to the two possible extremes of temperature conditions connected with very hot, or with very cool seasons, providing also for a very sunny exposed situation of the ova and larvæ, or for a well shaded position of the brood in a wood. Under such conditions the ova and larvæ would naturally be influenced much more strongly in one direction or the other, than under normal conditions.

In conclusion, the following records of brood V show that when the ova and larvæ are reared in nearly normal conditions, then they do not any more influence the pupal development in the degree, as did the larvæ of broods I and II, that then, in fact, the mean shade and night temperature, acting on the pupæ only, will cause var. *mesoides* to develop exclusively, and in the extreme form, not far from ab. *fischeri*, while warmth and sunshine will produce var. *teloides* with equal certainty and in great perfection. Both var. *mesoides* as also var. *teloides* would be "pupal" forms in this case.

Brood V.—Both male and female parent forms unknown. The ova developed in their natural environment in the temperature of the season. The figures given below for the oval stage are assumed, but I think are correct.* The young larvæ—captured soon after they had emerged—were all bred in conditions, which I will call "normal warm," the temperature rising when the sun shone in the daytime and not falling below 15°C. at night. (In the open air, the thermometer repeatedly showed 5-8°C., the temperature only once keeping just above 15°C. in the night of

* The "sensitive" stage is retained for weeks at a temperature of +1° to +2°C. development being suspended. If, for instance, larvæ hanging up for pupation are placed in these low temperatures, they will hang unaltered for four weeks at least—and, if brought into normal conditions, yet pupate and emerge as normal specimens. High temperatures would, therefore, wipe out the effects of the long "icing," and for that reason pupæ should be left some days in 10-12°C. after leaving the refrigerator.

* The only fine days suitable for ovipositing, "within reach," were May 24th, 26th, 28th, and June 3rd. Comparison with my records make the first and last dates impossible. The maxima and minima of the temperatures from May 26th to June 10th, read as follows in °F. :—71, 65, 74, 68, 63, 59, 67, 69, 72, 65, 61, 67, 78, 76, 76, 64° C.=daily shade maxima; and 43, 49, 49, 52, 45, 48, 45, 47, 45, 43, 47, 48, 53, 55, 52, 54=nightly minima, beginning May 25th-26th. Mean temperatures=68.3°F.=20°C., by day; 48.8°F.=9.3°C., by night; and 58.4°F.=14.7 C., for the whole period.

June 13th). The conditions of development were evidently most suitable to the larvæ; the resulting imagines were very fine specimens.

1. (Normal ova and normal warm larvæ).

a (+ °pupæ, not above 37°C. transferred immediately.)

Oval stg.	Larval stg.	Pupated.	Pupal stg.	Emerged.
26 or 28.5-10.6 13 or 15	— 17-18	27-28.6 —	— 8-11 (days)=	6-8.7=39-43 days. of 78 pupæ, all emerge

as var. *teloides*, but among these there are 9 ab. *teloides-nigrifasciata*, and 37 other specimens show the same aberrational tendency. The ground colour was darkened in all the specimens, and among them are also 15 *lucidocellata*, 7 belonging to the fasciated, and 8 to the common forms of *teloides*. The tendency to ab. *marginalis* was visible in a few specimens. All but the 9 ab. *teloides-nigrifasciata* were let fly.

b. ("warm" pupæ, not below 15°C.).

Oval stg.	Larval stg.	Pupated.	Pupal stg.	Emerged.
26 or 28.5-10.6 14 or 16	— 17-18	27-28.6 —	— 11-14 (days)=	9-11.7=42-46 days. of 25 pupæ all were var.

teloides, tending more or less towards *nigrifasciata* and *marginalis*. Ground colour dark, 11 specimens were set.

c_1 . (transferred as larvæ (pupating) to the mean shade-temperature, pupated 30.6 (instead of 28.6). After the 6.7 the pupæ were kept at +20-40°C).

Oval stg.	Larval stg.	Pupated.	Pupal stg.	Emerged.
26 or 28.5-10.6 13 or 15	— 20	30.6 —	— 16 (days) =	16.7=49-51 days. of seven pupæ, seven

fine ab. *mesoides-brunnea*, one with grey hindwing ocellus. The wing margins were more dentated than usual. All were set. The sensitive stage had evidently been passed—i.e., the form *mesoides* had been fixed in these pupæ by the 6.7 at about 10-12°C. The nights were only 8°C. warm at that period, the thermometer recording 50°F. (10°C.) only on the 30.6.

c_2 . (transferred as c_1 , but kept in the cold till the 16.7, afterwards + 25 to 45°C. (7 + extr. °pupæ), and + 25 to 40°C. (6 + °pupæ).

Oval stg.	Larval stg.	Pupated.	Pupal stg.	Emerged.
26 or 28.5-10.6 13 or 15	— 20	30.6 —	— 21-22 (days)=	21-22.7=54-57 days. the 6 + pupæ emerge

as rather dark var. *mesoides*, of the 7 + extr. °pupæ only one emerges as a fine ab. *mesoides-brunnea*, the rest are dead or cripples of the same form. This time the ground colour only was influenced by the extreme temperatures. All were set.

c_3 . (transferred as under c_1 , but left wholly in the cold).

Oval stg.	Larval stg.	Pupated.	Pupal stg.	Emerged.
26 or 28.5-10.6 13 or 15	— 18-22	28.6-2.7 —	— 30-36 (days) =	1-3.8=65-69 days. all the 70 pupæ emerge

as normal or light colored var. *mesoides*, extreme form, with (in the ♀s) a full row of black spots in the margins of the forewings; 36 were set.

Of 296 specimens here recorded 190 are ab. *cyanostieta*, Rayn.

Some Parasites of *Lasius fuliginosus*, *L. niger*, and *L. flavus*.

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

During August and September, 1898, I had a colony of *Lasius fuliginosus* in a "Lubbock" observation nest. On August 29th, I noticed among the larvæ three small brown objects, each stationed on a larva. These mites were about the size of a pin's head, and had a highly polished shell; the legs, which did not project beyond the edge of the shell, were soft and incapable of gripping the body of the larva. These parasites occasionally changed their position on the larvæ, and did not

appear to injure them in any way. The ants took no notice of them.

In this nest there was a large number of *Antennophori* (the species was without doubt *A. grandis*), about 12 per cent. of the ants being infested with them. The same summer I found *Antennophori* with both *Lasius niger* and *L. flavus*. The position of an *Antennophorus* on an ant was generally the underside of the head, though they were occasionally seen on the top of the head, on an antenna, and on the abdomen. Sometimes as many as three were on one ant, two generally being on the abdomen, and the third under the head. On one occasion I saw a pair apparently copulating on the antenna of a *L. niger*. I observed ants of this species try to brush the parasites from their antennæ.

On August 13th, 1909, I found an *Antennophorus* on the underside of a ♀ of *Lasius flavus* belonging to a colony in a "Janet" nest. When I first observed the *Antennophorus* it was attempting to transfer itself to the head of a ♂ standing face to face with the ♀, but though it made several attempts, the ♂ always drew back in time to prevent the parasite getting hold. The *Antennophorus* made no attempt to transfer itself to other ♀s. Its host occasionally attempted to brush it away when feeding larvæ, as, owing to the position of the parasite, the ant could not reach the mouths of the larvæ. This ant never seemed to leave the chamber that I first found it in, as it was there every day I looked for it. On November 12th, 1909, I removed this *Antennophorus* from its host. It gripped the point of a needle so fiercely, that some force was required to dislodge it. Thus it is easy to understand that the ants could not remove these parasites themselves, even if they wished. I put this *Antennophorus* in a nest of *Lasius niger*, where it remained stationary, waving its "feelers" to and fro. Several ants touched it with their antennæ, and went away. At last an ant seized it by one of its "feelers." The *Antennophorus* instantly clung to the ant's head, the ant, meanwhile, running backwards in great agitation. At last the ant released its grip of the *Antennophorus*, which immediately ran with extraordinary quickness along the left side of the ant, and stationed itself on the left side of the abdomen. The ant writhed and rolled over and over, but could not get rid of its burden. For some hours after the ant showed signs of discomfort, but eventually seemed to become resigned to its burden. Several other ants examined the parasite, but made no attempt to remove it. I saw the parasite the next day in the same position on its host, but since then I have been unable to find it. A great many ants in the above-mentioned nest of *L. fuliginosus*, carried on the the top of the thorax numbers of a small oblong white parasite, which seemed to cause the ants considerable discomfort.

Aphides of *Lasius niger*.

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

On August 31st, 1895, I found three aphides in a nest of *L. niger*, two of which I secured. They were moving about among the ants, and were not attached to grass roots, as the common species of aphis kept by this ant usually is. These aphides were different from any others that I had ever found in ants' nests, and the full-grown ones were of a considerable size, fully $\frac{1}{8}$ inch in length. They were creamy-white

in colour, and had very long hind legs, which they lifted and waved whenever an ant saluted them. The ants treated them with great care, saluting them with rapid jerks of the body, as they do other ants, and never allowing them to wander about unattended. These two Aphides lived in my nest of *L. niger*, where they were received with great excitement, for some weeks. I never saw the ants feed them, and there was no vegetation of any kind in the nest. Occasionally an aphid wandered outside the nest, and was eventually carried back again by its attendant ant. On September 4th, there was a young aphid in the nest, and the next day another. On September 7th, a third one was born. All three young ones were together in a corner of the nest, and an ant with them. On August 16th, 1896, I found sixteen of these aphides in a nest of *L. Niger*, three of which I sent to Sir John Lubbock, and the remainder I put in my nest of *L. Niger*. I made a note that twelve of these were alive and well in the nest on August 19th.

Next year, April 24th, I procured several of the common species of aphid, found in nests of *L. niger*, and gave them to my nest of the same species, but the ants took little notice of them, and did not carry them inside. On July 30th, 1897, I found a full-grown aphid of the strange species, and put it outside my nest. The ants carried it inside immediately. These aphides were all found in two nests of *L. niger* only, about eight miles from Oxford. This aphid would be *Paracletus cimiciformis*, C. Heyd.

Tachyporus fasciatus, n.sp., a species of Coleoptera new to Science.

By G. W. NICHOLSON, M.A., M.D., F.E.S.

Broad, shining, reddish-testaceous, with the head, breast, the sides and a broad band at base of elytra, and hindbody black. Head and thorax exceedingly finely punctured. Antennæ long and fine, not thickened towards apex, with base testaceous, darker towards apex, penultimate joints longer than broad, 11th joint half as long again as 10th. Elytra longer than thorax, with disk reddish, side margins to just before apex broadly black; a slightly zig-zag and not very well defined broad band occupying nearly the basal half of elytra black; where this band joins the marginal black bands it is narrowest, so that here the reddish colour of the disk of elytra extends to nearly the base on each side as a tongue-like projection; very finely and closely punctured, the punctures bearing a rather obvious black pubescence; marginal bristles stout and long. Hind-body black, with the apical margins of segments testaceous, finely and closely punctured. Mouth parts and legs testaceous. L. $3\frac{1}{2}$ mm.

This insect in size and shape most closely resembles *T. solutus*, Er., but differs from it in the following particulars:—The punctuation of the head, thorax, elytra, and especially of the hindbody is much finer. The antennæ, although of the same length, have their penultimate joints considerably narrower. The 11th joint is only half as long again as the 10th, whereas in *T. solutus* it is nearly twice as long. The elytra, besides presenting the difference in colour, are more obviously pubescent and their marginal bristles are stout and long, whereas in *T. solutus* they are short and fine. From *T. chrysomelinus*, L., it differs by its broader form, by the colour of the elytra and by the punctuation, which is distinctly closer and deeper, and by the greater length of the antennæ, whose penultimate joints are not quadrate or slightly transverse, as in the latter species. The marginal bristles of the elytra are even stouter and longer than in *T. chrysomelinus*.

I took a specimen of this insect at Wicken Fen on April 24th, 1910, and another at the same place on July 30th. Both were obtained by sifting sedge-refuse. As it is obviously unknown in this country, it was sent to Capt. St. Claire Deville, who returned it as new to science.

ORTHOPTERA.

ANISOLABIS ANNULIFES, LUCAS, IN SCOTLAND.—In November last, while searching for coleoptera in a bakery here, I obtained a specimen of an earwig which was new to me, and on examination proved to be the above species. An extended search yielded some 30 odd specimens, including one or two larvæ. According to Dr. Burr, in his *British Orthoptera*, the species was first noticed in this country by Mr. Swale, in a bakery at Tavistock. It is interesting to find the species located here also in a bakery. Probably, if searched for, it would be found quite common in such places. How long the species may have been established here it is impossible to say. I am much indebted to Dr. Burr for confirming the identification of the species.—GEORGE A. BROWN, Sunnyside Road, Coatbridge.

NOTES ON COLLECTING, Etc.

ARGYRESTHIA ANDEREGGIELLA.—This species was taken near the "Wake Arms," Epping Forest, on August 5th, 1909, and again at Fairhill, Tonbridge, very abundantly on August 3rd-22nd, 1910, among apple and hazel nut, but going over by August 20th.—P. A. and D. A. J. BUXTON, School House, Rugby. *December, 1910.*

FREDERICINA CALODACTYLA (ZETTERSTEDTH).—I was unable to go for the larvæ of this species until May 22nd. I then found that none of the wood very near where I discovered larvæ last year had been cut down, so I searched in the neighbouring high wood and succeeded in finding about a dozen, but only after much patient searching. Two or three had already pupated, the little pupæ being about half exposed. The first one emerged on June 7th. The insect appears to favour one part of the wood only—a few acres in the centre. I asked Mr. T. Blest, who was visiting North Devon, to look out for larvæ there. He found half-a-dozen near Wooda Bay, and formed the opinion that they are commoner there than in Kent. Of these, two only emerged on June 7th and 10th respectively.—EDWARD GOODWIN, F.E.S., Canon Court, Watlington. *December 10th, 1910.*

SCIENTIFIC NOTES AND OBSERVATIONS.

RETARDED PUPATION OF *SPILOSOMA LUBRICEPEDA*, AND PREMATURE EMERGENCE OF *TRIPHLENA PRONUBA*.—The following notes may be of some interest in view of the curious weather we have experienced this autumn. I was keeping a large number of larvæ of *Spilosoma lubricipeda* in the hope that "something would turn up." They pupated at various times, from the end of August, through September and October. At the end of October one larva was still feeding, but during the last few days of that month it spun a cocoon and prepared for the change. A cold spell ensued early in November, and after that

was over I glanced at the cocoon and found the larva had not yet pupated. It remained in the larva state until December 6th, on which day I noticed it had just changed, having taken over five weeks to effect the change. My brother has been feeding up numbers of "garden caterpillars," among others some *Triphaena pronuba*. These pupated in early October, and on December 11th one of them emerged, possibly being misled by the warmth into thinking summer had arrived!—HAROLD B. WILLIAMS, 82, Filey Avenue, Stoke Newington, N. December 20th, 1910.

THE PUPA OF CERTAIN DEPRESSARIAS.—On reading Mr. Sich's note on the pupa of *Depressaria applana* in the *Ent. Record* for December, 1910, it occurred to me to see whether I could answer his question as to that of *D. ciliella*. Unfortunately I cannot find an example of the pupa of that species in my drawers, and suppose I am without it. I find the antenna curves round the wing in a good many species, but also has much the normal disposition in perhaps a majority of species. The only one of them I have that is apparently parallel in this respect with *D. applana* is *D. assimilella*. These two species are not usually placed near together by systematists. It is just possible that this point of structural identity may make it desirable to investigate them from other points of view, to determine whether they really are closely related or whether this antennal feature has been separately acquired by the two species. A reference to this structure in *D. applana* occurs in *Trans. Ent. Soc.*, 1893, p. 103.—T. A. CHAPMAN, F.Z.S., Betula, Reigate. December 19th, 1910.

THE HOUR OF EMERGENCE OF MELITEA AURINIA.—The following notes may be of interest. They were made on some larvæ of the species that we found near Marlborough, Wilts. The larvæ frequent an absolutely dry slope of "down," far from any water, and carefully avoiding a damp meadow just beneath their locality, where, however, the scabious does not flourish. The emergence was, we fear, unnaturally retarded. The spring of 1910 was particularly sunless; the larvæ spent a week in London, and when we finally brought them here, food was not easily obtainable. The imagines emerged as follows:—

	BEFORE 8.30 A.M.	BEFORE 1.30 P.M.	BEFORE 6.0 P.M.	BEFORE 9.0 P.M.	UNNOTED.	TOTAL.
♂	1	7	4	3	2	17
♀	7	28	32	1	4	72

The scarcity of males is due to the fact that we selected large larvæ, as we did not want to be troubled with many at Rugby. This makes the result very unsatisfactory. *Date of emergence.*—♂s May 23rd to June 11th. ♀s May 26th to June 17th. Eleven of the ♂s were out by June 7th; 41 of the ♀s between June 6th and June 10th (inclusive). From the above tables the emergence (of either sex) appears to take place in the early afternoon. Do the specimens fly the same afternoon, if the sun is out to dry them, or do they wait one, or even two, days? The species dries its wings extremely slowly. One specimen "bled" in setting, though it had emerged two days before it was killed. After that we kept each specimen alive in the dark for four days. Even when four days old the specimens absolutely refused to fly, though in bright sunshine, and dropped repeatedly from a considerable height. In curious contrast to the above results are those obtained by Mrs.

Hemming. From 111 larvæ from the same locality she reared 84 pupæ (only two ichneumonid). All the pupæ "hatched" successfully. Her specimens were reared in a greenhouse at Horley, with abundant food. They emerged as follows:—3 ♂s (the first) May 18th; 2 ♀s (the first) May 19th; emergence ended on May 26th (1 ♀). Food in both cases honeysuckle. On June 13th-15th Mrs. Hemming visited the Marlborough locality. The emergence was in full swing. The morning of the 14th was sunny, but windy. A few imagines were on the slope (lee side), but most of them in the meadow at the bottom; the ♂s were fanning their wings on buttercups; the ♀s were sitting in the grass.—P. A. and D. A. J. BUXTON, School House, Rugby. December, 1910.

CURRENT NOTES.

Will contributors please note that owing to the very severe illness of the Editor, Mr. J. W. Tutt, all contributions and editorial matters must be sent to Mr. Henry J. Turner, 98, Drakefell Road, New Cross, London, S.E. At present the acting Editor is particularly desirous of obtaining matter relating to British insects, *e.g.*, Collecting Notes, Details of Life Histories, Scientific Observations, and anything which would be suggestive of special field work and experiment during the coming season.

The following is a list of Officers and Council appointed by the South London Entomological and Natural History Society for the ensuing year:—President, W. J. Kaye, F.E.S. Vice-Presidents: A. Sich, F.E.S., and A. E. Tonge, F.E.S. Treasurer: T. W. Hall, F.E.S. Librarian: A. W. Dods. Curator: W. West (*Greenwich*). Hon. Secretaries: Stanley Edwards, F.L.S., F.Z.S., etc., and Hy. J. Turner, F.E.S. Council: R. Adkin, F.E.S.; F. W. Cowham; E. C. Joy, F.E.S.; R. A. R. Priske, F.E.S.; A. Russell, F.E.S.; B. H. Smith, B.A.; and E. Step, F.L.S. One is pleased to see that this flourishing Society follows the custom of the Entomological Society of London by always securing the election of at least one absolutely new member of Council in place of the retiring members.

We are pleased to note that in spite of the difficulties attached to the preparation of the eighteen plates, Part IV. of the *Transactions of the Entomological Society* is out before the end of the year. As this has not been possible for the last few years, we must heartily congratulate the business and publication committee and the honorary secretaries. The volume for 1910 will be a record one, since it will contain more than sixty plates.

We are advised that the parts of Wytismann's *Genera Insectorum*, relating to the Families *Pterophoridae* and *Ornecodidae*, by E. Meyrick, B.A., F.Z.S., F.E.S., have just appeared.

Students of the British Micro-lepidoptera will be glad to hear that a list of these insects occurring in Lincolnshire is being published in the *Transactions of the Lincolnshire Naturalists' Union*. The author is Mr. Guy W. Mason, who has already compiled a list of the Macro-lepidoptera of the county.

Mr. Norman H. Joy adds two new species of coleoptera to the British fauna, both of which are also new to science, *viz.*, *Thinobius bicolor*, of which he took three specimens on the banks of the River Truim, in Invernessshire, on May 1st, 1910, and which he differenti-

ates from *T. linearis*; and *Anisotoma duridiana*, of which he has examples from Southport, Deal, and near Llancillo, and which up to the present time has been confounded with *A. dubia* in collections.

Mr. G. C. Champion records a variety of *Telephorus thoracicus* new to Britain. Mr. C. J. C. Pool has recently sent him the var. *suturalis* from Gosport, which is a form not hitherto recorded in this country.

Mr. G. Porritt records another specimen of *Xylophasia zollikoferi*, taken on August 12th last, at Methley, between Leeds and Wakefield, by Mr. J. T. Wigin, and states that it is of the same form as the specimen taken at Norwich in October last.

We have just received the *Transactions of the City of London Entomological and N. H. Society* for the year 1909. It is much belated owing mainly to the ill-health of its editors. However, as usual the papers it contains are of a high order. Messrs. E. A. Cockayne, F.L.S., H. M. Edelsten, F.E.S., Dr. T. A. Chapman, F.Z.S., Dr. G. G. C. Hodgson, and the Vice-President, Mr. Prout, F.E.S., contribute them.

CHRISTMAS M D C C C X.

It was a late December day;
The mist that on the country clung
Grew a fine rain: with sullen drip
The sodden tree-boughs hung

Athwart the vacant forest-rides:
No sound of man, or beast, or bird,
No living sound from the earth or sky
The clammy silence stirred:

It might have been a No-Man's-Land
In some enchanted isle afar,
Whence life hath passed long since, and
where
But phantom vapours are:

Yet on went we, my Friend and I,
By oozy path and drenching wood,
In a sheltered gloom at length to bide,
Where the mighty Beech-boles
stood.

As some strange, naked monster,
stretched
Along the earth between them, lay
One felled and prone, its smooth flank
stained
To mottled green and gray:

And up and down, and in between
Its stark and silent limbs, behold!
A Presence slowly creep and crouch;
As green and gray and old

It seemed as that grim creature's bulk:
Oh! say, is it the very Sprite,
That dwelt in yon proud Beechen-bole,
Where once it stood upright?

You scarce might tell, for all your
prying,
The moving body from the dead,
Save that it crept, and crouched, and
crept,
And showed or hid a head!

And now we drew anigh, and now
A tremulous, thin sound I caught;
A man's, an old man's voice! And
what
Is it he sought and sought?

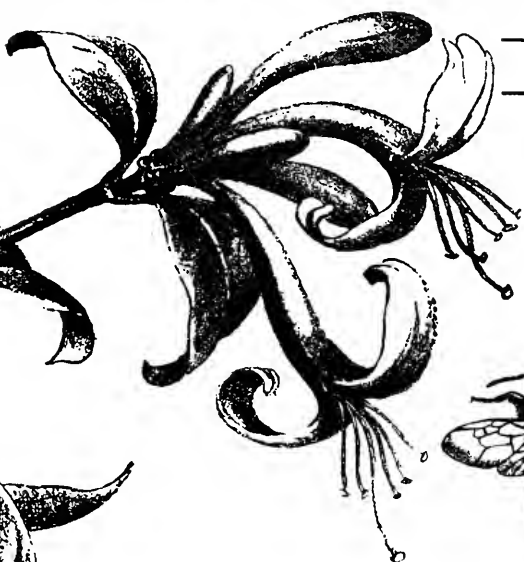
A few poor sticks he gathers up,
And in his apron stores away;
Small matter be it lonesome here,
Mid-June or winter's day:

While, as to his own soul, he croons
In cracked and feeble tones the rhyme,
That Angels first, so the story tells,
Sang out at Christmas-time

To shepherds by their flocks at night;
"Goodwill and Peace on earth befall!
"Peace and Goodwill God bids us
bring,
"And His blessing to you all!"

SELWYN IMAGE.

We much regret to say that just before going to press we received the sad news of the passing away, after a long and severe illness, of our respected Editor. An Obituary will appear in due course.



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AND
JOURNAL OF VARIATION

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Notes on *Hellinsia osteodactyla*, Z. (with two plates).

By DR. T. A. CHAPMAN, F.Z.S., AND EDWARD GOODWIN, F.E.S.

(Concluded from page 2.)

I had some years ago received larvæ of *H. osteodactyla*, and on August 5th, 1910, I again received some material from Mr. Goodwin. The cocoon made amongst the pappus of the *Solidago* was precisely like that observed on the previous occasion, and in which the larva passed the winter and pupated.

To describe the one received this year. It is very complete, *i.e.*, the contained pupa is quite invisible without opening the cocoon, the filaments of the pappus being fastened side to side (for the most part) firmly, and without gap. A cocoon made by a larva turned out of the pappus—taking refuge in some moss—is much slighter, and the pupa is very visible. The material, no doubt, is less amenable to the natural procedure of the larva, but no doubt its defects are principally due to the larva having to make a cocoon when its silk was exhausted, and it ought naturally to have been resting and awaiting pupation, the interesting point is, that it could make a cocoon at all after this disturbance. The pupa does not move out of the cocoon at all on emergence.

The pupa is whitish, or yellowish-white when mature, at first, no doubt, somewhat translucent and colourless. The length is 5.5mm. to 6.0mm., the greatest thickness about 1.0mm.; the wings and appendage cases (antennæ, maxillæ, and legs) extend far beyond the 3rd abdominal segment in one mass, nearly to the end of the pupa, *i.e.*, to the 9th segment. The pupa (apart from appendages) tapers regularly from 4th abdominal segment to the end. The ventral line (down appendages) is nearly straight. The head possesses a number of long (0.2mm. to 0.25mm.) pale straw-, or almost brown-coloured hairs. There are others less numerous over the whole dorsum. These appear to be i (0.2mm.), ii (0.25mm.), iii (0.25mm.), iv and v (on 3rd abdominal only one, 0.2mm. and one on 4th abdominal; iv=0.18mm.; v=0.26mm.; on following segment v rather larger. I call the anterior one iv, but doubt if this is correct). There are ten cremastral hairs on last (10th) segment; these are long, nearly 0.3mm., curved, but in no degree clubbed or hooked. On 8th abdominal segment are two short, blunt, pyramidal, brown, chitinous points, in front of, respectively, hairs iv and v, a slighter one in front of iii of same segment, and a similar pair in front of iv and v on 9th abdominal segment; ii, on 8th abdominal, have similar points. The exact naming of hairs on 9th abdominal segment is difficult. i appears to be a small chitinous point, ii is a hair with a sharp, brown, conical point in front of it, iii has a sharper point in front of hair, and below this (v?) is a much larger point or spine in front of the hair. The 10th abdominal segment has no dorsal hairs, but has a dark, transverse, terminal margin, retreating a little at each end, and ending in a blunt projection. The transverse margin also has a series of darker points (spines dorsal to ventral hairs?). The dorsal surface has a network of darker lines (raised). Segments 4, 5 and 6 of the abdomen, are free (a ♀ pupa). The spiracles are on slightly raised cones, faintly tinted brownish. The end of the appendage cases seems to consist of the extremities of the maxillæ, and of the second and third pairs of legs, fairly at a level. The first legs fall short, about 0.5mm., and the very sharp wing tips are another 0.5mm. back, whilst the antennæ are about 0.4mm. short of the wing tip.

The thoracic spiracle is raised in a short cone much like the others, and is close to the antennal groove. More dorsal, in line with the dorsal hairs (i and ii?) there project backward from the front margin of the metathorax, one on either side, two spines, closely adpressed to the surface, but not actually touching it, these diverge a trifle, are tinted brown, and about 0.12mm. long. Behind them are, in the line of the subdorsal ridges, gradually diminishing rugosities that are apparently further members of a series, of which the two spines in front of them are the first and only fully developed examples.

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The pupal skin, when mounted, is very delicate and faintly tinted. The eyepieces continue attached to the face piece, and the dorsal headpiece is not detected. It is possibly absent, being very small in other "plumes," and this may be the reason it does not carry the eyepieces as is typical of the family. This is, at any rate, a further stage in evolution than the typical one that is so constant throughout the lower division, the *Platyptiliids*. The face piece carries four hairs (about 0.24mm. long) on each side. The antennæ do not reach quite to the end of the wings, but the maxillæ and legs reach together about 1mm. beyond them, the maxillæ, however, being behind the legs, for the lower half of their length.

The prothorax (on either side) carries four hairs (about 0.3mm. long), which from position might be i-ii, and two lower ones iii-iv?). ii, if it be ii, is about the middle of the hindmargin. The mesothorax has also four hairs, but the two dorsal ones are both near the dorsum. It possesses a short spine towards its anterior dorsal angle, and there is a curious slender hair-like process at the base of the wing behind the spiracle cover—a fine raised ridge runs dorsally from the base of this spine. Along the posterior margin of the segment is a row of six or seven minute spines pointing forward, with several bases of abortive ones, making eight or nine on either side. These spines are about 0.04mm. long. On the metathorax are again four hairs, the two dorsal in the same transverse line, the two lower at the antero-ventral angle. The dorsal hairs are accompanied by a very short spine, and the posterior margin has the forward-pointing row of spines, but fewer are fully developed. The hindwing tapers to a point a little way down the 2nd abdominal segment. The 1st abdominal segment has three hairs, placed as normal i, ii, and iii, the latter close to hindwing. There are no spines, but just ventral to i is a minute lenticle-like circle; this is present also in the following segments, as also on mesothorax, behind ii, and on metathorax in front of supposed ii. The 2nd, 3rd, and 4th abdominal segments have the spiracle and two hairs below it. These are all about 0.2mm. long. The 5th shows below iv and v a single, and then two hairs. The 6th and 7th are identical. The 8th has only the scar of a spiracle, and no hairs below iv and v, which are on a ridge, of which there is a slight forecast on 7th. The posterior hair is about 0.5mm. long, and all the hairs here are longer than in front. The 9th segment has five hairs, of which second, third, and fourth have an obtuse, but sharp spine behind each. The 10th appears to have six hairs on either side without very definite spines. There is a longitudinal depression, through 8th and 9th medio-ventrally, interrupted a little at incision (a ♀ pupa).

The finer sculpture includes very minute, very sharp skin points directed backwards across the anterior half of most abdominal segments from the third backwards; elsewhere they are more or less rounded. The intersegmental membrane, as usual, has a pavement sculpture, the plates being elongated transversely and in lines. They show that the incision 3rd-4rd abdominal is free dorsally, but losing movement a little ventrally.

The pupa being devoid of cremastral hooks, and yet remaining within the cocoon when the moth emerges, probably supplies the explanation of the uses of the very unusual armament of spines, not only in the cremastral region, but more especially on the meso- and metathorax. These seem admirably arranged for preventing this portion of the pupal skin from slipping forward. When emergence takes place this portion of the pupa expands as the opening in front takes place, and will press the spinous portions against the silk lining of the cocoon, and efficiently engage these spines should any tendency to forward movement occur.

The spine at the wing base is one I have not before noticed in any pupa, its position is quite away, in a ventral direction, from the position in which the "wing-spine" occurs. There is, indeed, on this pupa a faint trace of the normal wing spine, it is seen in fig. 2, as a few wrinkles just below the dorsal end of the little ridge passing backwards from the spine just referred to, and close below the two lower hairs.

DESCRIPTION OF PLATE II.

PUPA OF *Hellinsia ostedactyla*.

FIG. 1.—Head from pupa skin $\times 25$. Shows the hairs, labrum, base of left antenna of maxilla, etc.

FIG. 2.—Thorax of left side $\times 50$. Showing hairs, spines, spiracle, etc.

FIG. 3.—Third and following abdominal segments (spread out flat) and appendage covers opposite these segments, hairs, spiracles, spines, etc. $\times 25$.

A Contribution to the Fauna of Syria.

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

(Continued from vol. xxii. p. 273.)

I did practically no further collecting, and had but few chances of observing insects from the end of 1907 to 1910. In the late summer of that year I paid a short visit to Syria, from August 23rd to September 16th. I did not expect to get anything worth mentioning so late in the season, but to my surprise found the coast and the highest mountains very fairly productive. The middle-heights were, however, very poorly off for butterflies. Owing to a break-down in the machinery of the ancient steamer on which I was to leave Port Said for Syria, I had two and a half days at that horrid "Gate of the East." It was even hotter than Marseilles had been, and very damp, and I saw no butterflies save *Lampides boeticus* and two *Zisera lysimon* var. *karsandra*, one of which I caught.

On August 23rd and 24th, I collected in the grounds of the American College at Beirut, where I found *Idmais fausta*, males only, not uncommon, and with *I. fausta*, a fair number of *Belenois mesentina*, the males fresher than the females. The latter, when approached by males on pairing intent, fluttered along the ground at what I can only describe as a hopping gait, as if the insect was progressing by a series of tiny leaps. Pairing took place in bright sunny spots. Small males of *Gegenes nostrodanus*, a pair of *Chrysophanus thersamon*, odd specimens of *Rumicia phlaeas*, *I. boeticus*, *Polyommatus icarus*, worn, *Ypthima asterope*, and a very fine and fresh *Pararge maera* var. *orientalis*, obviously of the third brood, were my other captures. On the 25th I set off for Baalbek with Professor A. E. Day of the American College, on a trip to the Cedar Mountains. Thanks to the Professor's great knowledge of the country and its insects, the trip though brief was most enjoyable, and enabled me to get some idea of the insects of the Northern Lebanon. But as some of my captures are still unidentified, and I hope to revisit this excellent hunting ground in the near future, I will skip the description of this journey. *Pieris brassicae*, *P. rapae*, dwarf *Colias edusa*, and worn *R. phlaeas*, *Iphiclides podalirius*, and *Satyrus anthe* were noted near Baalbek, and at Reyak Junction, on September 1st, I noted *G. nostrodanus*, *P. rapae*, *P. daplidice*, *P. icarus*, *Aricia astrarche*, and *R. phlaeas*, the last three on flowers of a large spearmint. From September 2nd to September 6th I was at Damascus, where the Young Turks were making great preparations to destroy the rebellious Druses of the Hauran, who have taken a good deal of "pacification" since then, and have inflicted heavy losses on their foes. I collected only at one place, a large ill-kept garden, just outside the town, where quite a number of common insects occurred. Of these *P. icarus* was the most interesting. It showed an unusually rather large and richly coloured form, generally

with broad dark margins, with occasional specimens of ab. *nigromaculata*, and ab. *lucia*, while one ♂ showed the combination of the *icarinus* (right side) and *candiope* forms, and another combined the typical form with ab. *tripuncta*. With *P. icarus*, I took two *A. astrarche*, and several *L. boeticus*, which was common enough on a patch of "Labla" beans (*Dolichos labla*), a few *R. phlaeas*, all but one of the ab. *coeruleopunctata*, with partially suffused forewings and well marked tails. All were above the average size, my largest being one of 34mm. Single large ♀s of *Erynnis alceae*, and *H.* var. *hypoleucos* (the Syrian form of *Hesperia malvae*) were taken with a worn but unchipped ♀ *I. podalirius*. Worn *C. edusa* abounded with *Pyrameis cardui*, and I took a nice *Raypearlia telicanus*, the first I had seen in Syria. My best capture was *Z.* var. *karsandra*, which was not uncommon. This pretty little blue appears to be the Egyptian form of *Z. lysimon*, at least my Cairene summer specimens are indistinguishable from those taken at Port Said and Damascus, and pronounced by Dr. Chapman to be *karsandra*. One had the submedian spots on the underside of both forewings striate and produced towards the discoidal spot. I stayed at Bludan on September 7th and 8th, but the nights were now quite cold at this height (4,800 feet), and few butterflies were out. Third brood specimens of *Celastrina argiolus*, a few worn *Satyrus pelopea* and *Epinephela jurtina*, and plenty of worn *Dryas pandora*, with *A. astrarche* (frequent and fresh), *Tarucus balkanica* (ovipositing on *Paliurus* sp?), *P. icarus*, and one worn *Hirsutiua admetus* var. *ripartii*, were all that I saw. It seemed to me that *astrarche* and *argiolus* and perhaps *balkanica* were of a third brood, and I am inclined to believe that many species, which are double-brooded in Central and South Central Europe, are triple-brooded in Syria. It is indeed quite natural that they should be so. From May or Mid-April to October there is no rain in the mountains, and the coast plains and lower slopes enjoy uninterrupted heat and sunlight from March till October. To judge from my records and those of Miss Fountaine, Mrs. Nicholl and others, who have collected in Syria, *Melitaea trivialis*, *C. thesamon*, *Pyrgus orbifer*, *P. macra*, and *Leptidia sinapis*, are certainly triple brooded on the coast and at lower elevations. *A. astrarche* and *C. argiolus* up to medium heights.

Save for two days at Aleib, I spent the last week I had in Syria in collecting near Beirut. Arriving there on September 9th, I called upon Sig. F. Cremona, who is well acquainted with the Lepidoptera of the Beirut district, where he has done a good deal of collecting on behalf of French and German entomologists. Among his specimens I noted an undoubted female of *Hypolycaena livia*, a damaged male of *Junonia hierta* var. *ebrene*, of which he has only taken two specimens in six years, both in July, and several specimens of the *alrippus* form of *Limnas chrysippus*, which is usually rare at Beirut, but occurred comparatively frequently this summer with the locally abundant type *L. chrysippus*. Fine specimens of *Satyrus hermione* var. *syriaca* and *S. fatua* var. *sichava* were also noteworthy, both taken near Beit Meiri, a village near Brummana, in pine woods, at about 2,200 feet. I also noted specimens of *Pararge egeria* from the same locality. The last-named insect seems to me to be decidedly local in Syria. I have only met with it (worn) at Bludan, in early July, 1907. *Aglais urticae* var. *turcica*, from the summit of Djebel Sannin (near 9000 feet), and

a *Thestor*, either *T. nogelii* or *T. callimachus*, taken in late May, at about 3,000 feet, in woods at Dlibta, above Ghazir, near the sea coast, in the north-central Lebanon, were also interesting. Acting on Signor Cremona's advice, I collected on the 10th, near Dora, a station some two miles outside Beirut. Arriving very early in the morning, at about 7.30 a.m. to be precise, I began to hunt in some vegetable gardens north of Dora Station, but found nothing there save a few *Chrysophanus thersamon* of the tailed summer form, and a single *Pieris brassicae*, which escaped the net. A little further on was a pine grove, which I explored, but found at first unproductive, save for a worn *P. daplidice* and some *Yphthima asterope*. Beyond the grove was a nice little meadow, where hundreds of grasshoppers of many species made a most cheerful sound. As I got to the field, which was quite close to the railway, and bordered on all sides with hedges made of tall reeds, the sun came out from behind the heat haze which had till then obscured it, and insects at once began to move. Among them I saw several *Melitæas*, which proved to be *M. triria* of the third brood (if this species is not continuously brooded on the coast), plenty of *C. thersamon*, a good few *P. icarus*, and occasional *R. telicanus*, while hurrying *Colias edusa* and *Idmais fausta* occasionally went by. After taking what I wanted, I went back through the pine wood, taking a passable female *E. jurtina* on the way. This struck me as pretty late for the coast, where I had found *E. jurtina*, of the *telmessia* form, in the first fortnight of May, in 1905, while Miss Fountaine had recorded it from the American college grounds in April. One cannot help suspecting at least a partial second brood, the more so as the climatic conditions on the Syrian coast are, as I have pointed out, so stable as to be unlikely to co-operate with other causes in producing laggards. I then retraced my steps past the station and collected on some rather damp ground intersected by ditches lined with reeds. Near the station I caught my first Syrian *L. chrysippus*, a fine typical specimen, and afterwards took several more, only one of which, however, was worth keeping. I looked about for *Hypolimnas misippus*, one or two of which are taken every year by Signor Cremona on this ground, or three miles further on, near the Beirut water-works at Dbayé, but it was in all probability too late for this species. I saw none. *P. icarus*, including a female ab. *semiarcuata*, *C. edusa*, worn, *M. triria*, *C. thersamon*, *P. daplidice*, *P. rapae*, and occasional *Belenois mesentina* with odd *L. boeticus* and *I. fausta*, were the insects of this part of the Beirut River delta. The whole of the plain between Beirut and the Dog River is simply a delta of alluvial soil brought down from the Lebanon by the Nahr Beirut, Nahr Antelias and other streams. It is fertile and extensively cultivated, but cultivation is not intense. There are plenty of banks and hedges where insects abound, and near the sea coast part of the foreshore, which seems to be too sandy for cultivation, is given over to pasture.

At one point where the ground seemed more marshy than usual, I came across a clump of about a dozen "fitneh" *Acacia* trees, round the summits of which, some ten or twelve feet above the ground, two or three "blues" were flying. I took one which came within reach, but it was only a worn male of *R. telicanus*. However, on walking to the other side of one of these clumps of *Acacia*, I saw a "blue," with a circling flight very like that of *L. boeticus*, wheel round two or three

times in the air dropping as it wheeled and then settle almost at my feet. A stroke of the net and I had a very fresh ♀ of *Castalius jesous* in my possession. This was my last good catch of the day, but on my way back to the station I noted *I. podalirius* and *P. machaon*, one of the latter very fresh, and more *M. triria*, *Y. asterope* and *C. thersamon*.

On the following day I went out by tram to the railway bridge, where the Lebanon railway crosses the coast road, and thence worked the railway banks. I began collecting at about 5 p.m., my object being to try for Lycænids and for *B. mesentina*, which I had seen there in swarms while passing in the train on September 9th. The Lycænids did not appear, but *B. mesentina*, generally in very good condition, swarmed. Every tuft of grass or clump of thistles carried two or three specimens, either resting or settling to fly off again, and return preparatory to finding a resting place. The insect was extremely variable in size. Larvæ abounded on the bushes of *Capparis* (?) *fruticosa*, and pupæ, some dead and many living, were fixed to dry stems of many bushes which had been eaten bare of their leaves by the voracious caterpillars. I looked in vain for larvæ or pupæ of *Idmais fausta*. The imagines were not uncommon, roosting like those of *B. mesentina* on tufts of grass, dry thistles, etc., but the profusion in which the African Pierid occurred made the "salmon butterfly" seem rare by comparison. On one branch of a *Capparis* bush I counted fifteen pupæ or empty pupa cases of *B. mesentina*. On another, which I cut, there were fourteen, mostly empty, and one or two superimposed upon earlier pupæ the imagines of which had in two cases not been able to emerge properly and were dead and dried, half out of the case, pressed down by later pupæ. A branch with twelve pupæ on a space of about ten inches in length, gave me eight imagines on the following day, all rather undersized examples. Five emerged at dawn—the rest later in the day.

I paid a visit to the Dog River on the 12th, but found little at this usually productive spot. *L. sinapis* of the third brood occurred here and there, and I took one ragged *Limenitis camilla* with a male *R. telicannus*, but nothing else was moving save a few worn *Y. asterope*, so I strolled off to the quarries, some 250 yards from the river mouth, and there amused myself with *I. fausta* and *B. mesentina*, which abounded on hot glaring rocks where the caper-bushes grew. A single *Chilades trochilus*, generally to be found at this hot and dry spot, and several *C. thersamon* were taken, and one ragged female of *Cigaritis acamas*, an insect which is not uncommon on dry, stony hill-sides and banks near Beirut, but of which one scarcely ever gets a perfect specimen. I then walked to Dbayé station, and while waiting for the train, collected in a couple of little fields surrounded by hedges beside the line. Worn *R. telicannus* occurred there with *L. boetiens*, and plenty of worn *P. rapae* and fresh *C. thersamon*. I took a good male *P. icarus* of the *nigro-maculata* form. Next evening I again worked the railway banks for *B. mesentina*, and on the 14th and 15th was Professor Day's guest at Aleih. Here I collected in the last patch of scrub wood left near the Professor's house. Insects were comparatively rare here, and mostly worn. A single worn *S. hermione* var. *syriaca*, and an almost wingless *S. fatua* var. *sichaea*, a small form of *A. astrarche*, with single specimens of *C. pamphilus*, bleached almost white, *C. thersamon*, *Y. asterope*, and *C. argiolus*, and a fresh and large specimen of *Muschaupia*

proto, with a large piece chipped out of one of its hindwings, a pair of *L. sinapis*, the female not larger than a moderate sized *A. astrarche*, and a few *P. icarus*, with many worn females of *E. jurtina*, were all the insects taken or noted here.

My last day in Syria was spent working the ground near the railway. It was roasting hot, 91° in the shade. Heaven only knows how much hotter in the sun, and though I was as lightly clad as possible, I found the damp heat very trying. However, the day was a successful one, for first and foremost I added a new species to the Syrian list in the shape of *Hypolycaena livia*, of which I got a passable female after some twenty minutes stalking. Near the trees of *Acacia farnesiana*, where I took *H. livia*, I picked up a couple of imperfect *C. acamas*, while worn *Y. asterope* and fresh *C. thersamon*, *B. mesentina*, and *I. fausta*, including two very large females, one of a beautiful creamy-salmon colour, were added to my bag. A single *L. chrysippus* was taken on a flower-head, and in a small orchard below the steep slopes above the railway, I got a fine male *Chapra mathias*. *P. icarus* occurred sporadically, and near the railway bridge, at my starting point, I took a fresh *C. trochilus*. Only one *M. triria* was seen, and a very few *E. alceae* of the small *australis* form, all very worn and chipped. A beautifully fresh pair of *P. orbifer* were taken, *in cop.*, on the railway bank, and *C. edusa* was not uncommon, but all taken were chipped or otherwise imperfect. *B. mesentina* in all sizes, from 40mm. to 63mm., abounded. I noticed many pairs, *in cop.*, during the forenoon, two or three perched upon high reeds near the railway track from which they rose when disturbed, the males carrying the females in every case that came under my observation. The flight of *B. mesentina*, in the hotter hours of the day, is swift and powerful, and an individual once missed is not likely to be caught by the return stroke of the net. On the other hand, the insect is not very shy and can be taken off flower-heads without difficulty, while it is very easy to capture when settling down for the night after 5 p.m.

So ended a very interesting trip, in which altogether sixty-three species were taken or observed. I do not give the full list of my captures, since some of my specimens from the Cedars of Lebanon (6,400ft.), Ain Ata (5,500ft.), and the Cedar Mountains (8,500-10,000ft.) have not yet been identified. I need only note the capture at the Cedars of *M. proto*, *P. meleager*, *H. poseidon*, *A. isaurica*, *Polygonmatius amandus*, and a "blue" which Dr. Chapman believes to be either a new variety of *A. escheri* or *Plebeius pylaon*, both species hitherto unrecorded from Asia, *S. baton*, *C. thetis*, *P. ergane*, and an *Adopaea* which I believe to be *A. lineola* ab. *semicolon* with a doubtful *Hesperia*, at Ain Ata, of *P. meleager*, and on the Cedar Mountains, of *H. alvens*, *E. altheae*, *A. isaurica*, *A. anteros*, *P. amandus*, and two unidentified Plebeiid, one of which seems to me to be near *P. eros*, and the other suggests affinities with *eumedon*, and last, but not least, *Pontia callidice* var. *chrysidice*. Professor Day also saw *A. urticae*. I may perhaps be excused for thinking that the following list of butterflies of Beirut, based on my experience in four separate visits, with some indications of their habitats, may be of use to other collectors. Names of species for which I have Sig. Cremona's authority, based upon the actual capture, are followed by (F.C.).

The ground includes the coastal plain from Beirut to the Dog River, and the foothills of the Lebanon up to kil. 5 on the Beirut-Damascus road. Species are widely distributed in the district named, unless indications are given to the contrary. URBICOLIDS.—*E. alceae*, *E. althaeae*, Dog River, not common; *P. orbifer*, common in spring and summer; *H. malvae* var. *hypoleucos*, less common than the last; *T. actaeon*, local in Dog River glen, and on Lebanon foothills near Djemûr; *G. nostradamus*, common, especially in hot dry places; *C. mathias*, here and there on low ground, but not abundant; *B. zelleri*, rare, only taken by me at the Dog River glen, July, 1907. LYCENIDS.—*K. spini*, Dog River and foothills of Lebanon, till early July; *C. acamas*, frequent in dry places, July, 1904 and 1907, September, 1910; *H. livia*, near railway, on "fitneh" Acacia trees; *C. jesous*, Takweni, Dora (P.P.G.), near Nahr Antelias (Mrs. Nicholl), May, July, and September; *L. boeticus* and *R. telicanus*, not rare in autumn on hedges and trees; *S. baton* (F.C.), and in American College collection, rare; *G. cyllarus*, common in spring (F.C.); *C. trochilus*, common in July at Dog River glen, and otherwise not rare during most of the summer in dry, hot places; *A. astrarche*, not common; *P. icarus*, *C. arqiolus*, Dog River glen and bushy places in plain, not very common in my experience; *R. phlaeas*, *C. thersamon*. PAPILIONIDS.—*P. machaon*, *I. podalirius*, neither more than frequent; *T. cerisyi*, local in spring; *D. apollinus*, in spring, not uncommon (F.C.). PIERIDS.—*P. brassicae*, not very common (P.P.G.); *P. rapae*, *P. daplidice*, *B. mesentina*, very abundant in autumn; *A. belemia*, sparingly in early spring (F.C.); *A. belia*, still less numerous (F.C.); *I. fausta*, very common from early July till the end of September; *L. sinapis*, Dog River glen; *G. cleopatra*, *C. edusa*. NYMPHALIDS.—*L. camilla*, sparingly in Dog River glen; *P. atalanta*, common in winter and early spring; *P. cardui*, *P. egea*, *J. hierta* var. *cebrene*, very rare (F.C.); *M. phoebe* (? var.), Takweni, and at kil. 5 (F.C.); *M. tricia*, *D. pandora*, about two miles up the Dog River glen according to Professor Day; *L. chrysippus*, locally abundant in coastal plain; *H. misippus*, very rare; *M. titea*, local; *S. fatua* var. *sichaea*, foothills of Lebanon, July; *E. jurtina* var. *telmessia*, *P. megera*, *P. maera*, not very frequent; *Y. asterope*, very abundant; total, fifty-one species. I have been thus far unable to confirm Zaeh's records, now more than half a century old, of *E. polychloros*, *Z. lysimon*, *L* (?) *galba*, *M. proto*, and *M. tessellum*, nor have I ever taken *S. pruni*, recorded from Beirut by Matthew, with *B. quercus*. I cannot help wondering whether some form of *N. ilicis*, which is common on the lower slopes of the Lebanon, may not have been taken for the former insect, which has not hitherto been recorded for Asia Minor, nor for the extreme South of Europe. *B. quercus* certainly ought to occur in Syria, and has very likely been overlooked.

A few stray notes on the Alucitides of Strood.

.By J. OVENDEN.

The following is a list of the species of "Plumes" which, up to the present time, I have met with in an area of some six miles around Strood, Kent. A large portion of the area belongs to the chalk formation, and is intersected by the somewhat deep and wide river valley of the Medway, with some amount of marsh land under tidal

influences towards the north. In the same direction there are small areas of sand and of very stiff cold clay. *Adactylus bennetti*, common on the river banks at dusk; *Capperia heterodactyla* (*teuerii*), a few have occurred in the woods beyond Cuxton; *Oryptilus parvidactyla*, occurs commonly on the Downs from Cuxton to Snodland; *Platyptilia gomodactyla*, swarms wherever the coltsfoot abounds; *Gillmeria ochrodactyla*, local where yarrow is abundant, and there in some numbers; *G. pallidactyla*, local, among Tansy on the marshes towards Maidstone; *Eucnemidophorus rhododactyla*, occasionally met with at Chattenden; *Amblyptilia cosmодactyla*, occasionally met with along hedgerows; *Marasmarcha lunaedactyla* (*phaeodactyla*), common in the Halling district among *Ononis*, larvæ often in numbers; *Stenoptilia pterodactyla* (*fuscodactyla*), everywhere; *Adkinia bipunctidactyla*, common in the district, found most freely in the larval state in the rootstocks of the Devil's-bit Scabious (*Scabiosa succisa*): *Oidaematophorus lithodactyla*, occurs on the marshes and on the highest hills of the neighbourhood; *Emmelina monodactyla*, common in the autumn; *Porritia galactodactyla*, all over the district, but local where it occurs; *Leioptilus carphodactyla*, to be found in the larval stage all over the district where the foodplant occurs, but seldom seen on flight except for a few minutes at dusk, I have bred hundreds in confinement on living plants, but have not seen a dozen on flight; *Orendenia septodactyla* (*lienigianus*), very local; *Adaina microdactyla*, occurs at Snodland, but difficult to see on flight; *Alucita pentadactyla*, everywhere; *Wheeleria nireidactyla* (*baliodactyla*), on the Downs, but scarce; *Merrifieldia tridactyla* (*tetradactyla*), fairly common on the Downs.

Nova et Vetera.

By (LT.-COL.) N. MANDERS, F.Z.S., F.E.S.

When one is disposed to despair of keeping abreast with the ever-increasing output of entomological literature, and apt to sigh for a return of the "Good old days," when science was in its infancy and books on insects few and far between, it acts as a corrective to such faint heartedness to turn to some of these ancient volumes, and note the difficulties with which the entomologists of an earlier date had to contend; even such apparently simple matters as killing and setting were such stumbling blocks as to deter many from attempting the task of making a collection.

In an old library, I recently came across *The Entomologists' useful Compendium, or an introduction to the knowledge of British Insects*, by George Samouelle, Associate of the Linnean Society of London, a book probably well known to the more erudite, but possibly unknown to many readers of the *Record*. The dedication to Dr. W. E. Leach, F.R.S., etc., is dated March, 1819. The work contains in addition, detailed instructions as to the collecting, setting and preservation of the various insects. I will, however, confine myself to the Lepidoptera; and first as to giving one's captures the happy dispatch. This in the younger days of middle-aged entomologists now living was still an unsatisfactory undertaking. I can remember on one summer evening long ago, endeavouring to give *Theretra porcellus* its quietus with a toothpick dipped in oxalic acid, and I distinctly remember my fingers receiving as much acid as the moth, and its hopeless condition as a cabinet

specimen after the completion of the distinctly distasteful operation. I rather fancy it was Doubleday who introduced crushed laurel leaves, but these were not always available, and I do not know who made the brilliant discovery of the cyanide bottle, but whoever it was, he deserves the Nobel prize for humanity in the killing of insects. In Samouelle's time chloroform and ether were of course unknown, and he quotes Haworth, 1803, as to one method of giving, let us say, a Privet hawk-moth the *coup de grace*. The Italics are Haworth's.

"When the larger moths must be killed, destroy them at once by the insertion of a strong red hot needle into their thickest parts, beginning at the front of the thorax. If this is properly done, instead of lingering through several days, they are dead in a moment." The barbarity of this proceeding evidently strikes him, as he enters into a long disquisition to prove "that insects being animals of cold and sluggish juices," do not feel as much as warm blooded animals, which, however true, affords small satisfaction to the hawk-moth, whose vitals are being reduced to a cinder by a red hot needle. Samouelle rather improves on this by the following observations: "This order of insects (butterflies and moths) require no further preparation than merely passing a pin through the thorax; but as some would live for a considerable time impaled in this way, and this mode of killing them must be repugnant to every feeling mind, we shall merely state that we have succeeded in destroying the life of the largest moth by immersing the body in boiling water . . . the wings should be pressed together, and held firm by fingers and thumb, so that the upper surfaces be not rubbed, which would spoil the specimen." One can imagine a painful struggle between the tender-hearted entomologist, and the hawk-moth objecting strenuously to being par-boiled.

"With regard to the smaller species," he continues, "they are, in general, soon killed, as passing the pin through them will frequently deprive them of life in a few minutes; but the usual method is to collect the very minute moths in separate pill boxes, and kill them by the fumes of sulphur." Another method was to put the boxes in front of a hot fire until death released the sufferers.*

In those early days entomological pins and setting boards were quite unknown and setting was accomplished I believe very satisfactorily by means of card braces. Camphor and Turpentine were used as the chief preventative of mites and mould.

Our Author divides his book into two parts, one a description of the Linnean genera and species of English insects and the other "The Entomologist's Calendar, exhibiting the time of appearance and habitation of near three thousand species of British insects." It seems to have been the opinion in those days that the majority of butterflies and moths were extremely short lived, as he writes "As many of the Lepidoptera last but a few days in the perfect state, I have distinguished the time of the month in which such species appear by the following B. beginning, etc."

This calendar is well worthy of comparison with "Practical Hints

* Barbarous methods seem to have come down to a much later date, e.g., Dr. Paul Girod in his *Atlas de poche des papillons de France, Suisse, et Belgique*, published in 1898, considers the following advice necessary (p. 149). "Après avoir tué la chenille dans le flacon à cyanure, ce qui est préférable à la vider vivante, on étale, etc." The italics are mine.—G.W.

for the Field Lepidopterist" as showing the advance of our knowledge in the last ninety years, yet it is to be remarked that Samouelle repeatedly impresses upon his readers the importance of studying insects in their early stages.

The English names of both butterflies and moths were in a transitional stage like their scientific names are at the present day. In one part of his book he speaks of the red and "white admirable" and in another the red and "white Admiral"; it was subsequent to this date, therefore, that these butterflies permanently assumed the names by which they are now known. Again the "Camberwell Beauty" is indifferently called the "White-Border," and so on. Our Author raises a protest against the use of these names, and strenuously advocates the acquisition of the scientific ones, and this is not to be wondered at when we notice such names as "The Double Kidney" (!) and the "Large Tabby" (!).

He enumerates sixty-one British species of butterflies, and it is very interesting to note the change in the last hundred years. *Colias hyale* he calls the "Clouded Yellow," and *C. edusa* "the pale clouded yellow." He considers the latter not to be a British insect, but gives the time of its appearance as August, that of *C. hyale*, June and August. The names have evidently been transposed in later years.

Many of his localities are evidently borrowed from Haworth, whom he not infrequently quotes, though he evidently had personal knowledge of the butterflies occurring near London. *P. machaon* was no doubt common "near the New Forest," and *P. podalirius* is not considered a truly British insect, "*Pontia crataegi*" was found in the woods near London and was no doubt common enough, "*P. daplidice* (Bath white) was captured by that successful and industrious entomologist, Mr. Stephens," at Dover, in July, 1818. *Melitæa cinxia* was in those days, as in these, "very rare in Britain," and no locality is given. *M. athalia* is called *M. dictynna*. He repeats Haworth's error regarding the distinction of English specimens of *V. antiopa* by the possession "of the Superior Whiteness of their borders."

He quotes Haworth's classical description of the flight of *A. iris*, which shows that that worthy had an intimate acquaintance with this splendid insect. Those, who like myself have witnessed it, can testify to its fidelity. He calls the White Admiral *Limenitis camilla*, and one rather wonders what will eventually be the name of this insect; if I recollect rightly, a discussion arose about it not a great while ago. In some instances both English and Latin names are different to those now in use, as an example, "*Hipparchia pilosella* (small meadow brown)" is, I presume, *H. tithonus*. "*F. blandina*" was known in the "Isles of Bute and Arran," but *F. ligea* was either not known or its claims disregarded. Our author must on occasion be found guilty of carelessness, for whereas in the first part of his book he states, "In this section I shall enumerate the whole of the British species," he makes no mention of some which he duly observes later on in the calendar, such as "*darus*, the small Ringlet," "*polydama*, the marsh Ringlet," and "*typhon*, the scarce heath," all of which are now known, I believe, under the last name. And now I come to look into it, I fear me I must convict him of considerable carelessness, for how otherwise can he describe in one place *H. pilosella* as the small meadow brown, and in another as the large heath? Perhaps his soul is above the

English names altogether, and possibly his Latin ones are not always correct, which makes one shudder for violations of the law of priority. *E. epiphron* and *H. actaeon* (though in this case I know I am falling into grievous error myself, for Heaven knows what, in the absence of Tutt's *Butterflies*, is the correct name of the Lulworth skipper), were quite unknown, but on the other hand "*Lyc. chryseis*, purple-edged copper," and "*Lyc. virgaureae*, scarce copper," were recognised as British, and "*Lyc. cydon*, the Mazarine blue," was found in "great abundance near Sherbourne, in Dorset." It would be tedious to go through the whole list, but I hope I have given sufficient to show how interesting it is to compare this venerable list of the English butterflies with one of the present day. As I have said, entomological pins were unknown, and judging by the illustration of set insects the pins then were considerably thicker than those in common use at the present day. I have often wondered how English entomologists came to adopt the low setting, which is still, I fancy, very much in vogue. I do not propose to advocate the general adoption of the Continental method, however desirable it may be and most unquestionably is, but it has one distinct advantage, that one has not to perform a gymnastic performance to read the label hidden somewhere underneath the specimen.

An Entomological Riddle.

By THE HON. N. CHARLES ROTHSCHILD, M.A., F.L.S.

The life history of *Lycæna arion* is still a mystery, and it is much to be hoped that entomologists in this country, who have some spare time, will give a portion of it at all events to attempting the elucidation of this interesting problem. All that is really known of the life history of this attractive butterfly can be summed up in a few words. The eggs are laid on the wild thyme. The larvæ eat this plant until they have moulted three times, which takes place usually in the late summer or early autumn, they then refuse to eat this foodplant, and in captivity wander about and perish. The painstaking researches of Mr. Frohawk have further demonstrated that the insect hibernates as a larva, and when full-fed pupates under the ground. Like the larvæ of most *Lycænas* that of *L. arion* is myrmecophilous, but it is absurd to assume that any portion of the larval stage is really directly associated with ants, as, were this the case, the numerous nests that have been submitted to rigid and minute examination, must have yielded examples of the larva, and none have been found. Mr. Frohawk himself is, we believe, convinced that his original suspicions in this direction are really unfounded. He, however, made one discovery not hitherto, we believe, published, which he has kindly permitted us to make known, namely, that the young larva of *arion* after the third moult, will bore into fresh green peas, and live a short time on that pabulum. Now were the larva of *arion* to feed in a fashion at all analogous to that of other species of *Lycænidæ* existing in this country, it is obvious that one or the other of the investigators when searching for it must have found it. The imago is common in those localities where search has been made, and the larvæ must be at least as common as the imagines, and considering that the search has been made both by day and by night not only on thyme but on the other plants growing in the immediate vicinity, it is

absurd to imagine that if these larvæ really feed externally, that they would not have been observed. Taking into consideration these facts, as well as that of the larvæ burrowing into fresh peas, one is forced to the conclusion that the larva of *arion* after its third moult lives in the roots or stems of some plant, and it should not be difficult for those, who have time at their disposal, to solve the mystery. At one period it was suspected that gorse was in some way necessary for the welfare of this insect, as this plant was usually found in the localities in England where *arion* occurred. This view, however, must be rejected, as the butterfly is common on dry hillsides in Hungary, where gorse does not grow. The object of these few remarks is to stimulate collectors to endeavour to solve this entomological riddle, which is really of much interest.

Two days at Eclépens.

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

The two closing days of my summer holiday were spent at Eclépens. Instead, however, of working the place from Lausanne or perhaps better from Vallorbe, I resolved to risk the hospitality of the little town of La Sarraz, and I shall venture to do so again, when next I am able to devote a few more days to that favoured district. I found the simple quarters of "La Croix Blanche" in the main street of the village, if not luxurious, very clean, whilst the fare though plain was always well cooked, and the hostess and her daughter most attentive. Other advantages are that La Sarraz is on the main line and is only forty minutes easy walk from the desired hunting ground. Leaving Stalden in the Visp Valley at 7.30 a.m., on August 15th, I walked to Visp and caught the first morning train to Lausanne in burning heat. Early though it was, a few insects were astir. A large Satyrid suddenly doubled in front of me before I had even thought of mounting my net, and shortly a second did likewise, but it did not go free, for a quick stroke secured it and revealed *Satyrus alcyone*, then *Hipparchia semele* shared the same fate and several of each eventually fell to my net, whilst lower down where the Visp widens out over a broad stony track, another species attracted my attention, and I was able to secure several *S.* var. *cordula*, though their first beautiful velvety gloss had passed away, but considering the lowness of the altitude and the warmth of that part of the valley the species must have been decidedly late, for I had taken it plentifully at Bérisal, where it should have been later in emergence, more than a fortnight previously. Of Lycaenids, *Agriades coridon* was in evidence in fair numbers and quite fresh, a single ♀ *Hirsutina damon* also fell to my net, whilst a few *Leucophasia sinapis* flew lazily about in the early morning sun. The one insect that I was specially on the watch for was, however, *Nactia punctata*. It seems to be especially active between 6 and 9 a.m., its flight is not easily mistaken, but I was getting towards Viège before I saw it and then it seemed limited to a small spot where it would rise almost vertically out of some juniper bushes. Time, however, was pressing and I had to be content with a couple of specimens. At Villeneuve I was glad to transfer my quarters from the train to the steamboat and to enjoy a delightful hour on the ever beautiful lake, though the heat was so great that the distant mountains were wrapped

in mist and even those coming down to the lake itself were slightly clothed in a blue haze. After lunch and an hour or so's rest in the gardens of the "Beau Rivage," I took the train to my desired haven, and having had a good night's rest, was ready for whatever, fate had in store for me. The following day found me fairly in the marshy tract that I expected much from, the special objects of my visit being *Lycæna euphemus* and *L. arcas*, whilst in the hills further on I hoped for *Satyrus briseis*, and possibly, if not too early, *S. circe* also. Very soon after I entered the marsh a little butterfly arose, and though I had never before seen it alive in its natural habitat, I at once saw it could be nothing but *Loweia amphidamas*, and this was my first Eclépens capture, then another and another, ending with some half dozen fresh specimens of this pretty little copper, whose acquaintance I was especially glad to make in this unexpected way. The morning was somewhat cloudy and insects were not much on the wing, at last, however, as I made my way into the bog a dark *Lycæna* was flushed and a fine female *L. arcas* made its way into my net, then another, this time a male, and in the chase after others many a time did I sink well over my boot-tops into the deceptive green, but that was a small thing, when *L. arcas* after *L. arcas* flitted by or settled, as they were very fond of doing, on the globular fruit of the grass-like rush or on the seed heads of the long grass. Then a somewhat paler species attracted my attention and I found I had secured a *L. euphemus* but past its best, and only four specimens in all were taken, these were considerably worn, though one was a nicely radiated example, the radiation however being scarcely visible on the underside. The marsh did not produce anything else except a couple of *Loweia dorilis*, whilst on the edge away from the road *Agriades coridon*, *Melanargia galathea* and *Gonepteryx rhamni* were in evidence. During the two days I spent there I secured a nice series of *L. arcas*, but on comparing them with my examples from elsewhere I find they are quite unusually dark in blue and with a strong tendency to radiating spots markedly beyond the common, whilst the females are almost black with the same characteristic as the male towards radiated spots. This was quite new to me, for I had hitherto only known a quite brown and spotless female. I took a single ♂ with beautiful radiations on the underside.

After some hours in the marsh, I moved into the hills above the station, a totally different locality. The first thing that raced past was apparently a perfectly fresh *Papilio machaon*, and a stern chase was successful in landing it into the net. *Parnassius apollo* was also well in evidence, but going over, though I wish I had taken more, for now that they are set I find several have a marked development of red in the spot near the anal angle, and also in the spot beyond the cell between veins 4 and 6. In the meadows just below the woods were also flying *Vanessa urticae*, not uncommonly, but I contented myself with two brilliant and quite fresh examples. A worn out female of *Dryas paphia* next came my way, whilst I disturbed from the isolated shrubby oaks several *Bithys quercus*, but the sun was not bright enough to make them fly. The second brood of *Melitæa didyma* was just appearing, the males being beautifully red in tone of colour, the females, however, were quite normal. A single specimen of *Pararge maera* fell a victim to my avarice, evidently only just emerged, whilst *P. megera*, in equally fresh condition, was not uncommon in the clearings of the woods.

In the meadows *Epinephela jurtina*, and *E. tithonus* were in full force and excellent condition, but of *Enodia hyperantus* I only saw one, which had seen its best days. Quite fresh *Polyommatus icarus* were still on the wing, some of the females with broad and brilliant marginal orange spots in both wings, *Agriades thetis* was also an unwilling prisoner, as was *Cyaniris semiargus* in both sexes and in the pink of condition. On this ground, as also in the marsh, I took males and females of *Urbicola comma* which was evidently in its best time, I must acknowledge, however, I saw many more than I took. In the woods above the tunnel, and especially in one particular rather narrow lane between the woods, *Erebia aethiops* was in abundance, and had it not been for a short, but very violent, thunderstorm, would have been in most perfect condition; however, an excellent series with some very fine females were obtained. I did not see *Satyrus briseis* the first day but on the second day I struck, a long distance shot, at a *Satyrus* whose flight I did not recognise, but alas, it was too far away and circled up gaily between me and the sun, when I saw to my regret that *S. briseis* was on the wing, I only saw a second later on, which, unfortunately, I again failed to secure. *Hipparchia semele* was abundant in the same woods, or rather in a stony area just outside them, whilst in some thin undergrowth, in the middle of the woods, I suddenly caught sight of a large dark insect which I saw at once must be *Enodia dryas*, an insect I have always had a peculiar liking for, and here it was quite common but going over, I managed, nevertheless, to obtain a short series of nice specimens. The time had now come to wend my way home, but as I came to the avenue by the marsh another large *Satyrus* flew rapidly towards me, fortunately I had lengthened my stick to about 10 feet to reach a Phycid I saw resting in an inaccessible place, and had not shortened it. I thought it was *S. circe* coming to meet me and I made a frantic stroke, but alas, it circled vertically up over my head, the long stick, however, did the deed for a backhander secured it and I brought down—not *S. circe*—but only a large female *S. hermione* with very broad and white bands on both wings. Of moths I saw but few, two beautiful specimens of *Callimorpha hera* I took at rest, a few Anthrocerids flying in the upper meadows were for the most part *A. pilipendulae*, but I took two *A. carniolica* ab. *hedysari*, the abdomen of one of them being ringed with red. Thus ended a delightful holiday, as that night I caught the express and came straight through home.

A New Variety of *Liodes* (*Anisotoma*) *curta*, Fair.

By OBERSANITÄTSRATH DR. A. FLEISCHER of Brünn.

Liodes curta var. *douisthorpei*, differs from the type in smaller size and colour, but chiefly in the strikingly short form and rounding of the side borders of the thorax. Short, oval, very arched, head, thorax and the club of the antennæ black, the rest of the body red-brown, individuals not completely coloured, yellow-brown. Antennæ as short as in the type, the club likewise very broad, the last joint hardly perceptibly narrowed. The thorax just less contracted to the base than in the type, somewhat in the same way as between the type of *dubia* and its variety *obesa*.

Head and thorax as strongly punctured as in the type, but the

elytra somewhat more strongly punctured in the striæ, with still thicker rows of punctures; also the interstices more strongly punctured. The construction of the legs in the ♂ and ♀ is the same as in the type; the form of the penis is also identical. The similarly formed, short, arched, small forms of *dubia* ab. *subglobosa* and ab. *bicolor*, are easily separated by their much thinner antennæ and the much finer sculpture of the thorax, and much less dense rows of punctures in the striæ.

Small females of this race separate themselves further from similarly coloured females of *calcarata* ab. *nigrescens*, Fl., by the much shorter form and broad front tibiæ, as well as by the sculpture also. Length, 2·5mm.-3·5mm.

The beetle was taken by H. Donisthorpe on the sandhills on the English coast, at Hartlepool, co. Durham, in numbers.

Note.—In this short form, I suspect the "typical" *curta* of Fairmair, as it is hardly possible that Fairmair would have chosen the name "*curta*" for a long beetle. The long form is not a pure sand-hill beetle, since the beetle is found also in mountains in central Europe, such as Adamsthal near Brünn, this form is well known there, and up to now has been recognised by all authors as the type form. One could procure full light on the point, whether the short form is really the typical one, could one obtain Fairmair's type for comparison, if it exists.

Anisotoma algirica, Rye (*Ent. Mo. Mag.*, xii., 1875, p. 151), as a **British insect.**

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

On July 3rd Mr. Collins and I found a small *Anisotoma* in a sand-pit at Cumnor, near Oxford. I was unable to make it agree with any of our known species, and eventually sent it to Herr Obersanitätsrath Dr. Fleischer, the European authority on this difficult genus. He has now returned it to me as *A. algirica*, Rye, which is of course an addition to our list. The late Mr. Rye described it (*loc. cit.*) from a specimen taken by Mr. Rippon in Algiers. Mr. Collins kindly took me to this sand-pit to try and find *Trichonyx märkeli*, in which we were successful. *Atomaria umbrina*, *Eucephalus complicans*, *Oxyptoda brachyptera*, *Mycetoporus longulus*, etc., were also found at the same time. P.S.—Dr. Fleischer has also named two specimens of this genus which I swept in Parkhurst Forest on August 21st, as *A. calcarata* ab. *nigrescens*, Fleisch. (*Wein. Ent. Zeit.*, 1906), an aberration new to Britain.

Retrospect of a Coleopterist for 1910.

By PROF. T. HUDSON BEARE, B.Sc., F.R.S.E., F.E.S.

(Concluded from p. 6).

Mr. J. Edwards (*Ent. Mo. Mag.*, xlvii., p. 80) had a note on the British species of the genus *Tychius*, Germar, in which he introduced *hematopus*, Gyll., and gave a very useful table for separating our species. On p. 132 of the same journal, Mr. Edwards had a note on the British species of *Smicronyx*, Schonherr, in which he gave a number of useful notes and a table for separating our three species.

Two excellent coloured plates were published in the *Ent. Mo. Mag.*,

p. 1 and p. 203, depicting "some interesting British insects," the letterpress accompanying the plates having been contributed by Mr. G. C. Champion and Mr. R. W. Lloyd. Thirteen of the recent additions to our list were illustrated, and also two of the *Staphylinidae*, which were described by Canon Fowler in his *Coleoptera of the British Isles*, but were not illustrated, *viz.*, *Eudectus whitei*, Sharp; and *Borboropora kraatzi*, Füss.

Mr. H. Britten and Mr. E. A. Newbery (*loc. cit.*, p. 178) published a revision of the British species of *Ptenidium*, Er. From this note it appeared that considerable changes will have to be made in the synonymy of this genus. Mr. E. A. Newbery had two further notes (*loc. cit.*, p. 83 and p. 229); in the first of these notes Mr. Newbery dealt with *Hypothenumus eruditus*, Westwood, and he pointed out that Westwood was in error in stating that this genus is characterised by a three-jointed funiculus to the antennæ; as a matter of fact it has a four-jointed funiculus. From all the records it appears that the insect is really an exotic one, but has been widely distributed by commerce. It is not synonymous with *Stephanoderes*, Wollaston. In the second note Mr. Newbery made certain changes in synonymy; he pointed out that *Chrysomela didymata*, Brit. Cat., was really *C. brunsvicensis*, Grav., and that our *Telephorus abdominalis* was really var. *cyanea*, Curt. Mr. Newbery also stated that the insect he introduced as *Quedius variabilis*, Heer., was only the var. *fageti* of *mesomelinus*, but this var. was now considered by some continental authorities to be a genuine species. Mr. Newbery also again drew attention to the fact that the *Coeliodes cardui* of the *British Catalogue* was really *C. fuliginosus*, Marsh. Canon Fowler in his *Coleoptera of the British Isles*, expressed his inability to separate these two species. In the same note, Mr. Newbery dealt with the synonymy of *Oxyptoda croleta*, Er., and *O. lurida*, Woll., but the writer must confess that he is unable to appreciate the point of this note.

The writer published a note (*loc. cit.*, p. 117) on *Lestera sicula*, Er., and *L. punctata*, Er., in which he pointed out that these two species were quite distinct; he has to thank Mr. Newbery for drawing attention to a slip in this note; the European Catalogue to which the writer referred was the earlier Catalogue; there has been a change in the synonymy, as Mr. Newbery rightly stated, in the 1906 European Catalogue, but Ganglbauer apparently adhered to the original synonymy.

Mr. Dollman (*Ent. Record*, vol. xxii., p. 96) stated that the *Apion unicolor*, K., of our catalogue is really *A. platala*, Germar; Kirby's specimens of so-called *unicolor* were only *gyllenhalii*. Dr. Joy said (*Ent. Mo. Mag.*, vol. xlvi., p. 27) that *Colon barnevillei* was only a small undeveloped form of *C. zebei*.

Of notes dealing with life-histories, etc., there have been a considerable number. Mr. G. A. Dunlop gave an account (*loc. cit.*, p. 15) of the insects found in a badger's nest—there were six species of coleoptera. Mr. W. E. Sharp stated (*loc. cit.*, p. 33) that the food plant of *Otiorhynchus auropunctatus*, Gyll., was probably *Carduus arvensis*. Mr. J. H. Keys stated (*loc. cit.*, p. 117) that he had found a fully winged example of *Diglossa* at Dawlish Warren; he also recorded (*loc. cit.*, p. 262) the capture of a melanic form of *Athous haemorrhoidalis*, on Dartmoor. Mr. H. Britten (*loc. cit.*, p. 212) said that he

was of opinion that the food plant of *Ceuthorhynchus setosus*, Boh., is *Sisymbrium thalianum*, or the Thale Cress; Commander Walker also found this insect on the same plant. Dr. Chapman published a note (*loc. cit.* p. 260) on the destructive habits of *Myelophilus piniperda*, L.; the note detailed some observations made by the author at Ewhurst, Surrey, on September 24th last; Mr. H. G. Champion described (*loc. cit.*, p. 281) a similar incident from Oxford, and pointed out that this destructive habit was already well known, full accounts were given in Dr. Schlich's *Manual of Forestry*, vol. 4, p. 265; it is desirable to point out that Canon Fowler in his *British Coleoptera*, vol. 5, p. 419, also described in detail the great damage that this beetle often caused in pine forests. Mr. G. C. Champion published a note (*loc. cit.*, p. 261) on the sexual characters of *Longitarsus agilis*, Rye; he took a large number of examples of this species at Seaton, Devon, last autumn, on *Scrophularia nodosa*, and apparently all the fully winged examples were females. In another note the same gentleman drew attention (*loc. cit.*, p. 279) to the fact that *Polydrusus chrysomela*, Olive, and *confluens*, Steph., were apterous, and suggested that they should be placed in the genus *Eusomus*. Canon Fowler had a note (*loc. cit.*, p. 262) on a beetle which produces eloquence; the natives of certain districts in East Africa eat this particular beetle (*Melaspis glabripennis*) in order to acquire the gift of eloquence and conviction. Mr. A. H. Hamm (*loc. cit.*, p. 137) published a valuable note on the life history of *Cetonia aurata*, L., and on the differences between the larvæ of that species and those of *C. floricola*, Herbst.; the two larvæ move in quite a different manner. Dr. Cameron has described (*loc. cit.*, pp. 135 and 179) two new species of the longicorn genus *Pentomacrus*, *serratus* and *distinctus*—from Haiti; and a new species of *Sunius*, *gattoi*—from Malta.

In the four parts of the *Transactions of the Entomological Society of London* for 1910, issued up to the close of the year, the only paper dealing with coleoptera was a short one by Dr. Joy on the behaviour of coleoptera in time of floods, in which the author described his field observations and experiments on the power many *Steni* and other beetles possess of "skimming" over the water.

The publication of a new local list, "The Coleoptera of the Hastings District," was begun this year; the first part appeared in May last in the *Hastings and East Sussex Naturalist*, vol. i., no. 5, and has been reprinted as a separatum; the fact that its author is the well-known Hastings entomologist, Mr. W. H. Bennett, ensures that this list when completed will be quite equal in accuracy and completeness to the best local lists which have so far appeared.

Two of the valuable series of books dealing with the fauna of British India, published under the authority of the Secretary of State for India, which have appeared this year, deal with coleoptera. The first, by Mr. G. J. Arrow, is a monograph on the Indian species of *Cetoniinae* and *Dynastinae*; it is illustrated by numerous woodcuts and two beautiful coloured plates, and is published by Messrs. Taylor and Francis, London. The volume opens with a systematic index of all the known Indian species of the subfamilies; then follows an introduction of 23 pages, dealing with the structure, life-history, and classification of the *Lamellicornia*; the descriptions of the Indian species of each subfamily are preceded by general notes on

the structure, sexual dimorphism, colour, pattern, habits, and metamorphoses of the species of the subfamily. As bearing on some remarks made in the "Retrospect" for 1909, it is interesting to quote one sentence in which Mr. Arrow, referring to the fact that though the literature is extensive, but little serious scientific study has been devoted to the group, says, "of the metamorphoses and habits of the species we know lamentably little." If this is true of the species of a family which contains some of the most brilliant and striking of all animal forms, how much more so is it true of the thousands of obscure and minute species which swell all our lists of coleoptera. Mr. Arrow has described a large number of new species, and is to be warmly congratulated on the completion of a monograph which must have involved a large amount of research and laborious investigation. Mr. Arrow has by this monograph added to his reputation as an entomologist of the first rank.

The second volume *Indian Insect Life*, by H. Maxwell Lefroy and F. M. Howlett, is of course only partly devoted to coleoptera; it contains many beautiful illustrations, and will be found to be full of interest to all entomologists, especially to those who turn their attention to the economic side of the subject.

Two excellent papers have appeared in no. xvii. of the *Mémoires de la Soc. Ent. Belgique*, namely, a *Revision des Prionides*, by Prof. A. Lameere, and *Katalog der Staphyliniiden Gattungen*, by Dr. F. Eichelbaum.

Considerable progress has been made during the year with the *Coleopterorum Catalogus*, edited by Schenkling, and published by Herr Junk; 26 parts have now appeared, such important families as the *Lucanidae*, *Tenebrionidae*, *Histeridae*, *Aphodiinae*, etc., have been dealt with.

The year which has just closed has been a fruitful one; the number of earnest workers is increasing, less attention is being paid to mere collecting, and more and more to the elucidation of the many problems of surpassing interest which confront every thoughtful entomologist.

CURRENT NOTES.

Dr. David Sharp has announced (*Ent. Mo. Mag.*) two species of *Bledius* new to science. The first, *B. annae*, closely allied to *B. pallipes*, he found in 1867 in the friable sandy banks of the river Nith, near Thornhill, and again in the same place in 1910. The second, *B. jilipes*, related to *B. pallipes* and *B. annae*, was met with in some numbers by Mr. E. G. Elliman in the clay cliffs of Overstrand, near Cromer, in 1897. Dr. Sharp also announces *B. terebraus* as a species new to Britain. It was taken at Harburn, near Carstairs, in 1866, and has only recently been identified by comparison with examples from the Copenhagen Museum.

The Annual Meeting of the Lancashire and Cheshire Entomological Society was held at the Royal Institution, Colquit Street, Liverpool, December 19th, 1910, Mr. R. Newstead, M.Sc., F.E.S., Vice-President, in the chair. The reports of the Council and Hon. Treasurer were read and adopted, and the following members were elected as officers and Council for the ensuing year, *viz.*—President: S. J. Capper, F.E.S. Vice-Presidents: W. J. Lucas, B.A., C. E. Stott,

Claude Morley, F.Z.S., P. F. Tinne, M.A., M.B., Geo. Arnold, M.Sc. Treasurer: Dr. J. Cotton. Secretaries: H. R. Sweeting, Wm. Mansbridge. Librarian: F. N. Pierce. Council: E. J. B. Sopp, F.R.Met.S., Wm. Webster, M.R.S.A.I., Wm Mallinson, W. T. Mellows, L. H. Lister, G. M. Taylor, M.A., C. B. Williams, R. T. Cassal, M.R.C.S., L.S.A., O. Whittaker, R. Wilding, L. West, M.I.M.E. Mr. Robert Newstead, the retiring Vice-President, delivered the address, which was entitled "The Taxonomic value of the Genital Armature in the Tsetse Flies (Genus *Glossina*).” He stated that he had made a careful examination of all the hitherto described species of the genus *Glossina*, which had not only revealed some very striking morphological characters, but had led to the discovery of three hitherto undescribed species:—*Glossina submorsitans*, Newst., *G. brevipalpis*, Newst., and *G. fuscipes*, Newst., and also to the re-establishment of Bigot's *G. grossa*. The scheme of classification adopted was based entirely upon the taxonomic characters of the male armature, which are the true and almost only natural anatomical elements, that can at present be found in these insects. He had found that the species fall into three very striking and distinct groups each being separated by very trenchant characters. These are:—Group I. (The *Fusca* Group): This division includes the four largest species of the genus:—*G. fusca*, Walker, and *G. grossa*, Bigot, which have a Western distribution; *G. longipennis*, Corti., and *G. brevipalpis*, Newst., occurring chiefly on the Eastern side of the continent (Africa). In all of these species the claspers are quite free, there being no membrane stretching between them; the distal extremities of these appendages have either a single large and bluntly pointed tooth-like extension or they are bluntly bidentate; the harpes in all cases being markedly different in their morphological characters. Group II. (The *Palpalis* Group): To this division belongs the following species:—*G. palpalis*, Rob. Desv., *G. tachinoides*, Westwood, *G. fuscipes*, Newst., and *G. pallicera*, Bigot. In all of these species the claspers of the males are connected by a thin and finely spinose membrane, which is deeply divided medially, but in all cases the distal extremities of the claspers are quite free and widely separated. Group III. (the *Morsitans* group):—This group comprises *G. morsitans*, Westwood, *G. submorsitans*, Newst., and *G. longipalpis*, Wiedemann. In these the claspers are completely united by a spinose membrane, and they are also fused medially. They are of a very remarkable form, their shape somewhat resembling the scapula of a mammal in miniature, and are altogether much more highly complicated structures than those in either of the preceding groups. Thus we see in these, three group forms, which are so widely different as to lead one to assume, without taking other external features into consideration, that they represent three distinct genera. Certain it is that these insects illustrate one fundamental principle of evolution, namely, that they have attained great development of one set of morphological characters, and have retained others apparently of an ancestral type.

It will be noticed that there is no obituary notice of our late Editor this month, as was promised in the last number. It has been thought by some that one whole number might well be devoted to notices by several contributors, giving an account of him as they individually knew him, an account and criticism of his work, with a complete list

of all his writings, in addition to a full formal biography of him. This it is proposed to do in the April number.

From the names on the front page of the cover it will be seen that the editorial staff of the magazine remain practically as they were, except that there will be no titular editor as before, but that each will take an active share in one part of the work or another, while Mr. Hy. J. Turner will, for a time at least, act as Editorial Secretary, to whom all matter for publication, original articles, material for examination, books for review, exchange, etc., should be sent. Mr. H. St. J. Donisthorpe will, as before, be pleased to receive all matters relating to Coleoptera, and Dr. Burr those relating to Orthoptera. Any of the other members of the editorial staff will receive, consider and forward contributions which it may be more convenient to give or send to them.

It has been customary to send Reports of Societies to the Rev. C. R. N. Burrows. We regret to say that latterly he has been in such poor health, that all mental work has been a strain to him. Will secretaries in future, and until further notice, kindly forward all Reports of Meetings to the Editorial Secretary.

We find that during the past year or two, there have not been by any means the number of Exchange Lists in our advertising columns which we would wish to see. We are quite sure that many of our subscribers must have specimens to spare, and we are also certain that their desiderata are numerous. May we ask that during the present season our active younger readers will make use of this opportunity and send us lists for insertion. Let them remember that the local forms of many a common species are most interesting.

We are informed that the collections of the late Editor, Mr. J. W. Tutt, will be sold by auction in five separate sales during the next two years, at intervals of at least three months between any two sales. Probably the first sale will take place in April of the present year.

The care and foresight of the late Mr. Dunning and his then colleagues on the Council of the Entomological Society, in the drawing up of the Bye-Laws of the Society, was admirably proved, by the solution of the most unusual position in which the Council was placed by the death of the President-nominate, which occurred after the date when it was allowable to send in nominations, but before the President occupying the chair had delivered his address and actually vacated the chair.

At the last meeting of the Entomological Society it was announced that the Rev. F. D. Morice had been nominated by the Council to fill the office of President for the ensuing two years. Mr. Morice is an ardent hymenopterist and also a distinguished linguist, a combination which is somewhat opportune at the present time. In the first place, there was a general desire among the Fellows that a choice should be made of one who was not a lepidopterist, and, in the second place, it was felt that, in view of the forthcoming International Congress of Entomologists to be held at Oxford in 1912, the chair of the Society should be occupied by one who, while in close touch with the Society, would at the same time be able to take an active part in the Congress.

As soon as the remaining MS. for the completion of the present volume of *British Lepidoptera* (vol. xi.), which the late Mr. J. W. Tutt was engaged upon at the time of his death, is obtainable from the executors, the Rev. G. Wheeler, Dr. Chapman, Mr. Stanley

Edwards, and others, will finish the work, but necessarily there will be some delay. In this connection we would like to point out that the account of *Polyommatus icarus* being practically completed in the parts already issued, there only remain the two species of Lycænids, *Aricia astrarche* (*agestis*) and *Lycaea arion* to be dealt with. Mr. Tutt had proposed to include also *Nemeobius lucina* in this volume, provided space permitted. We should therefore be pleased to obtain all and any material or information of any kind with regard to these species, that we may hand it over to be dealt with by the collaborators. We need particulars in detail of Gynandromorphs, Teratological examples, Pathological examples (see *Brit. Lep.* vol. x., p. 122, *P. icarus*), Varieties in size, in seasonal form, in colour, in shape, in local form, giving full particulars whether ♂ or ♀, upper or underside, etc. Especially is material needed from outlying parts of the British Islands, and for comparison from the whole of the Palæarctic region, wherever the two species may be obtainable. Imaginal and larval habits in different localities vary with circumstances, and want recording for assimilation and record in the life-history. The lists of localities and dates of capture are most useful, and the more one has of them the better can the distribution of the species be ascertained both geographical and seasonal. For all these items of information we shall be most grateful.

SOCIETIES.

ENTOMOLOGICAL SOCIETY OF LONDON.—The annual meeting of this Society was held on Wednesday, January 18th, at 11, Chandos Street, Cavendish Square, when the Officers and Council for the forthcoming session, 1911-12, were elected. Owing, however, to the death of Mr. J. W. Tutt, the President-nominate, no successor to the outgoing President, Dr. F. A. Dixey, M.A., M.D., F.R.S., was chosen, and a special general meeting will be held later in the year for that purpose. Meanwhile the following Fellows were elected to act as officers and members of the council:—Treasurer, Mr. A. H. Jones; Secretaries, Com. J. J. Walker, M.A., R.N., F.L.S., and (in place of Mr. H. Rowland-Brown, M.A., who resigns after eleven years' service) the Rev. G. Wheeler, M.A., F.Z.S.; Librarian, Mr. G. C. Champion, F.Z.S.; other Members of the Council: Mr. R. Adkin, Mr. G. T. Bethune-Baker, F.Z.S., Professor T. Hudson-Beare, B.Sc., F.R.S.E., Dr. M. Burr, D.Sc., F.L.S., F.Z.S., Dr. F. A. Dixey, M.A., M.D., F.R.S., Mr. H. St. J. Donisthorpe, F.Z.S., Mr. J. H. Durrant, Professor Selwyn Image, M.A., Dr. K. Jordan, Ph.D., Mr. A. Sieh, Mr. J. R. le B. Tomlin, M.A., and Mr. H. J. Turner. The President, in the course of his Address, after referring to the losses by death sustained during the preceding year, went on to speak of various events of special interest to entomologists, among these being the appointment of Professor Meldola, F.R.S., as Herbert Spencer Lecturer and Mr. Selwyn Image as Slade Professor of Fine Art at Oxford; the award of the Royal Society's Darwin Medal to Mr. Roland Trimen, F.R.S.; and the meeting of the first International Congress of Entomology at Brussels. He then proceeded to deal with certain problems of general biology on which special light had been thrown by entomological study, notably the demonstration that permanent races, differing from the parent stock, could be produced by artificial interference with the germ-plasm. This had been surmised from

early experiments of Weismann, followed by Standfuss and Fischer, and had now been placed beyond doubt by the careful work of Tower in America, who had also shown that the new form might stand in Mendelian relation with the stock from which it sprang. Other topics touched upon in the Address were the psychophysical character of the material presented to the operation of natural selection—a point particularly emphasised by Professor Mark Baldwin; and, in connection with this, the special interest attaching to the communities of the social Hymenoptera, where the group rather than the individual appeared as the unit of selection.

THE SOUTH LONDON ENTOMOLOGICAL AND NATURAL HISTORY SOCIETY.
 —December 5th, 1910.—Mr. Kidner, of Sidcup, was elected a member. A GELECHIID.—Mr. Sich exhibited, on behalf of Mr. Tutt, a pair of the beautiful Gelechiid, *Gelechia tessella (quadrella)*, taken on August 9th, 1908, in the Lower Engadine, between Sus and Lavin, over 4,600ft. elevation. ANTHROCERA HIPPOCREPIDIS.—Mr. R. Adkin, a series of *Anthrocera jilipendulae*, reared from pupæ gathered at Westerham, which emerged in late July, and also specimens captured at Northwood in late June some years ago. He then discussed the form known as *A. hippocrepidis*. PAPER ON BRAZIL.—Mr. W. J. Kaye read a paper entitled "Collecting in Brazil," being an account of a long visit paid to that country by Mr. Dukinfield Jones and himself in the early half of 1910. Mr. Jones then showed a large number of slides, most of them original, illustrative of the paper. January 12th, 1911.—Mr. Kaye, the President, referred to the great loss that the science of Entomology had incurred by the death of Mr. J. W. Tutt, a past president of the Society. Mr. Phillips, of Forest Gate, was elected a member. PHOTOGRAPHS.—Mr. Tonge exhibited photographs of the ova *in situ*, of *Plebeius argus (aegon)*, *Ruralis betulae*, and *Calamia lutosa*. TERATOLOGICAL SPECIMEN.—Mr. Lucas, a teratological example of *Anosia plexippus* with right forewing shorter and narrower than normally, and concave outer margin. ABERRATIONS OF LEPIDOPTERA.—Mr. Newman (1) extremely light and very dark forms, with unusually small and very large forms of *Malacosoma castrensis* and *M. neustria*; (2) a very red *Phlogophora meticulosa*; (3) second brood specimens of *Pericallia syringaria*, small and dark banded; (4) second brood of *Selenia lunaria*, *i.e.*, var. *delunaria*; and (5) living imagines, pupæ and full-fed larvæ of *Aphantopus hyperanthus* reared by Mr. Oliver. SERIES OF LEPIDOPTERA.—Mr. Adkin, selections of several broods reared originally from a black ♀, ab. *nigra* of *Boar-nia gemmaria*, and communicated a full note on the results. Mrs. Hemmings, bred and caught series of *Melitæa aurinia* from Wiltshire, where the species has been somewhat common. Mr. Hemmings, on behalf of Mr. P. A. Buxton, the same species, with the note that all emerged in the afternoon; he also showed series of *Adopæa flava* from Sussex, showing two distinct forms. PANOLIS PINIPERDA VARIETY.—Mr. Coote, two very dark green examples of *Panolis piniperda*. A GIANT PYRALE.—Mr. Kaye, *Myelobius murana*, a Sphingid-like Pyrale from S. America. THE GLOW-WORM.—Mr. Priske showed a number of slides illustrative of the life-history of the Glow-worm, which Mr. Main and he were observing, and read notes on what they had done so far. NEUROPTERA.—Mr. Lucas read a paper, "Notes on the Natural Order Neuroptera," and showed a large number of lantern slides to illustrate his remarks.

CITY OF LONDON ENTOMOLOGICAL SOCIETY.—*January 3rd, 1911.*—*ABRAXAS GROSSULARIATA*, AB.—Mr. G. Brooks, a specimen with usual yellow markings obsolete, but ground colour of all wings deep yellow. *EPINEPHELE IANIRA*, AB.—Mr. C. N. Collettere, a ♀ with all wings bleached, and only slight indication of ocelli and fulvous patches on superiors. *ÆGERIA (SESIA) SPHECIFORMIS*.—Mr. G. H. Conquest, a number of ♂s taken at Brentwood, June, 1895, by assembling with bred ♀. *MELANIC MELITÆA AURINIA*.—Mr. F. B. Cross, an example, with basal three-fourths of superiors almost entirely black, from Cumberland. *LEUCANIA C-ALBUM*.—Mr. H. M. Edelsten, a specimen bred 1910, ab. ovo from British parent ♀. *ARGYNNIS SELENE*—LOCAL VARIATION IN SIZE.—Mr. A. F. Hemming, comparative series from Princethorpe (Warwick), and Ashdown (Sussex), measurements showed that the largest and smallest ♂s, and largest and smallest ♀s from the former locality were 8mm., 3mm., 7mm., and 2mm. wider respectively in wing expanse than corresponding specimens from Ashdown. *MELITÆA AURINIA*—LOCAL VARIATION.—Dr. G. G. C. Hodgson, a series selected from over 100 specimens bred 1910, from Wiltshire larvæ; there was a marked melanic tendency in some cases, while in others the black marginal band approached obsolescence. Some examples approximated to var. *præclara*, and others showed almost unbroken fulvous coloration. *TRICHIURA CRATÆGI*, ABS.—Mr. L. W. Newman, dark forms from Selkirk, and pale forms from Lincoln. *GNOPHOS OBSCURATA*.—Mr. L. B. Prout, a variable series from Folkestone, August, 1910, including nearly white ♂s, blackish ♀s, many with two black lines very pronounced, and a good proportion of ab. *fasciata* (Prout). *VANESSA IO* VAR. *CYANOSTICTA*.—Mr. V. E. Shaw, three examples bred August, 1910, from Darent Wood larvæ. *ASYMMETRICAL ANTHROCERA FILIPENDULÆ*.—With confluent spots on left wing only, Dover, August, 1910. *EUVANESSA ANTIOPA*.—Mr. P. H. Tautz, a specimen taken inside a shop window at Oakham (Rutland), October 20th, 1910, by Mr. A. Hassan. *MELANIC CÆNOBIA RUFÆ*.—Mr. R. G. Todd, two very dark specimens said not to be identifiable with ab. *fusca*, and therefore apparently a new variety. *PIERIS NAPI*, AB.—Mr. H. B. Williams, a ♀ with black bar on underside of superiors faintly indicated on upperside and connecting up the two black blotches. *January 17th, 1911.*—*SENTA MARITIMA*, VARS.—Mr. C. E. Capper, a series from Isle of Wight, including vars. *bipunctata*, *nigro-striata*, *wismariensis*, and *combinata*. *DIANTHÆCIAS*.—Mr. F. B. Cross, a bred series of *D. conspersa*, N. Cornwall, including a very dark example, almost unicolorous, save for pale marginal line. Mr. H. M. Edelsten, a very variable series of *D. carpophaga* bred from Sussex pupæ, the emergence extending from end of May to mid-August; the specimens ranged from strongly marked dark forms to almost white, with only the stigmata faintly indicated. *ARGYNNIS PAPHIA*, ABS.—Mrs. C. Hemming, specimens bred 1909 and 1910 from New Forest parents, showing extension of black markings, also var. *valezina* with similar increase of black markings and general melanic suffusions. *FORMS OF HESPERIA LINEA*.—Mr. A. F. Hemmings, a series showing two different forms occurring together in a Sussex locality, the one with light ground colour and narrow border, and the other with dark colour and broad border. *TÆNIOCAMPA PULVERULENTA* VAR. *HAGGERTII*.—Mr. J. Morris, an example of this somewhat rare form taken near Godalming.

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Several papers and notes on British collecting in 1910, a paper on the Simplon district, Reports on Society Meetings, etc., etc., are unavoidably held over.

In the March number there will be a plate of several varieties of *Luperina gueneei*.

The April number will probably be a special "Tutt" number, containing a portrait, an obituary, contributions from various well-known entomologists "As I knew him." Criticisms of his work from Continental as well as British writers. Items of interest, excerpts from various notices, etc., and a complete bibliography of his writings.

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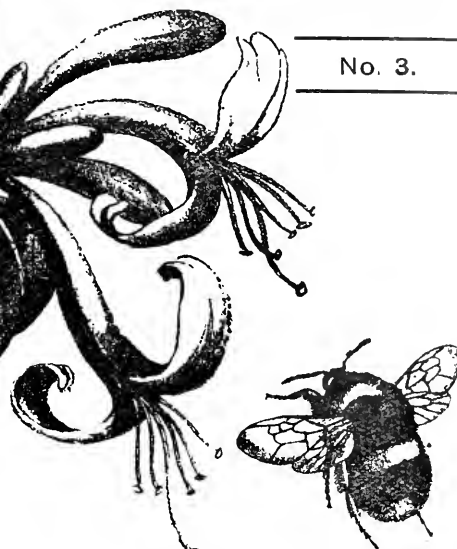
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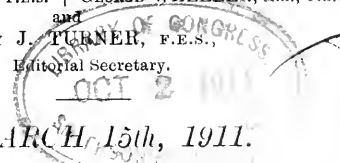
THE
ENTOMOLOGIST'S RECORD
AND
JOURNAL OF VARIATION

EDITED BY

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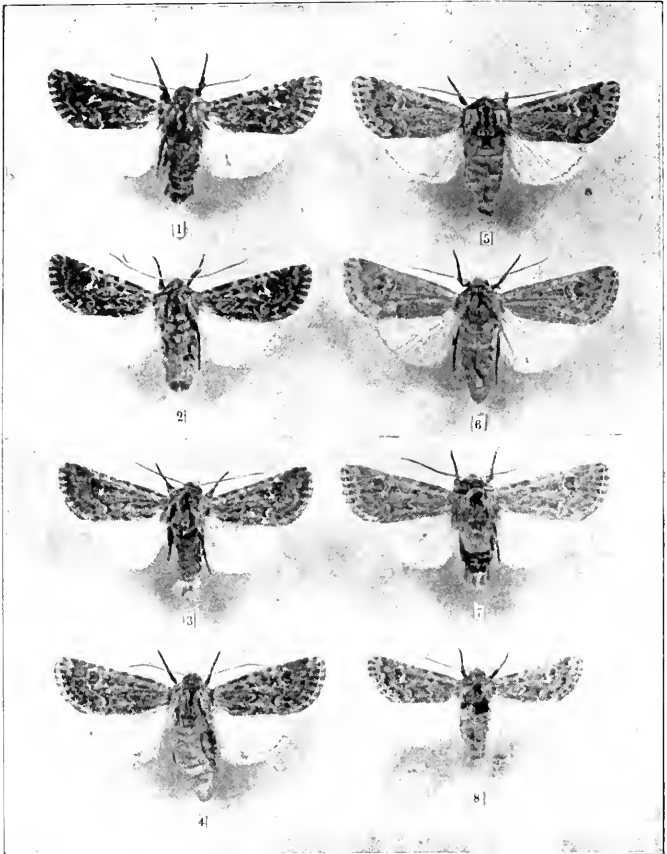


Photo. A. E. Tonge.

The Entomologist's Record, etc., 1911.

LUPERINA GUENEEL.

Figs. 1, 2, var. FUSCA.

Figs. 5, 6, ab. MURRAYI.

Figs. 3, 4, typical forms.

Fig. 7, var. BAXTERI.

Fig. 8, ab. MINOR.

Luperina (?) (Apamea) gueneei, Doubleday, as a species, and as a British species (with plates).

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

Through the kindness of Mr. Arthur Murray, of St. Anne's-on-Sea, Lancashire, I have recently had the opportunity of examining various forms of *Luperina (?) gueneei*, and I must say that I do not understand how it has been possible to confuse any of them with *L. testacea*. Both worn specimens and specimens taken when drying their wings, and therefore in bred condition, have been submitted to me, and it seems only feasible to suppose that most of the specimens reported up to the present rediscovery have been *L. testacea*, the littoral forms of which vary very considerably from the type form. When one looks down a series, such, say, as that in the cabinet of Mr. R. Adkin, of Lewisham, and compares it with the adjacent series of *L. testacea*, one can have no shadow of doubt as to the absolute specific distinction of the two species. In *L. testacea* the facies is very constant, and there is quite a distinctive look about the markings both in their unvaried, or practically unvaried, position on the wing, and relative to one another, as well as in their definition. *L. testacea* is rightly named, for almost every form has the whole wing suffused testaceous, even the melanic specimens show a trace of this colour, whereas in all the examples of *L. gueneei* taken during the past two seasons, and there have been a very large number, I have not heard of a single one with any approach to that distinctive suffusion. The colour of the latter species, on the other hand, is equally distinctive. Doubleday described it (*Ent. Ann.* 1864, pp. 123-4) as "pale testaceous, mixed with white." The testaceous tinge is so pale, and the white is so soft, as to give a silvery look to the wing texture, absolutely different to the texture ever attained by *L. testacea*. Doubleday gives the hindwings as pure white in both sexes, whereas with regard to *L. testacea*, Newman says, "hindwings delicately pale." They can certainly be described as such, but there is always a tinge of the testaceous, and in the melanic specimens, whatever the duskiness of the forewings, never at any time do they approach the delicate pearly purity of whiteness attained in all the specimens of *L. gueneei* which I have seen. There is a tarnished look about *L. testacea*, of which one never gets an idea in the other species, which strikes one by the soft beauty of its general texture of forewing as well as by the purity of its untarnished hindwings. Newman refers to the most conspicuous marking of *L. testacea*, as being the capital **I** placed longitudinally below the two discoidal spots.* This **I** is practically always present and more distinct rather than less, even in the darkest examples it is quite easily traced, while it is only by a stretch of the imagination that it can be seen as at all present in the other species. By taking a more emphasised portion of the transverse line outside the discoidal spots in *L. gueneei*, as the top of the **I**, and a more emphasised portion of the transverse line nearer the base than the discoidals as the bottom of the **I**, one can sometimes "see" an indefinite union, but the idea is a strained one. In all specimens of *L. testacea*, one

* Dr. Chapman, after examination of the figures in numerous illustrated continental works, suggests that in continental specimens this character is much less emphasised and even absent.

immediately notices the tripartite character of the depth of colour, which is well shown, although in an exaggerated way, in Newman's figure (*Brit. Moths.* p. 297.), *i.e.*, the dark transverse central band, the lighter basal area, and the lighter outer area. Even in extremely light and extremely dark specimens this division of the wing area is always apparent, while in none of the specimens of *L. gueneei* is that impression ever suggested. In the latter species it is only with difficulty that the transverse lines can be traced throughout their whole length, in many examples they are much interrupted and imperfectly or indistinctly continued. In all specimens of *L. testacea* there is a somewhat dark submargin of irregular width, always very clearly defined on the inner side and never crossed by striae. A similar marginal area occurs in *L. gueneei*, but it is rarely even a shade darker than the general wing area, if anything it is in most specimens a shade lighter, in the *ab. murrayi* it is almost pure white. In all examples of *L. gueneei* this margin is edged on the inner side by a uniformly wide well defined light line, while the corresponding feature in *L. testacea* is only weakly defined in the darker forms, and in the lighter forms scarcely traceable and never white. Even to the antennae does the testaceous tinge seem to have penetrated, for in the latter species they are darker, while those of *L. gueneei* are lighter, partaking of the softness of the wing colour. As someone remarked to me the other day there is a suggestion of the mealiness which *Agrotis ripae* has when bred, an appearance which one can never attribute to the texture of wing in *L. testacea*. I am omitting the comparison of the two main transverse lines, for they are so indistinct and difficult to trace, as well as being features liable to vary considerably in their relative position, that I consider that in the case of closely allied species no reliance can be placed on them for the purposes of specific distinction. Doubleday says of *L. gueneei*, "on the costa there are two oblique white spots," and much note has been made of these small dots. Numbers of species of Noctuids possess such spots along the costa, varying in number, size, and position, and to me they have always seemed so uncertain in development as to be of very little use to identify species. I have, for some time, looked upon them as interesting remains of the past, the remnants of transverse lines formerly possessed by the ancestors of a species, by the "dissolving away" of portions of which lines, the present markings have been composed. Phylogenetically they probably have their value, but as reliable characters for specific identification, I think that they may, as a rule, be neglected. Figures which I have of *L. dumerilii* and of *L. nickertii*, as well as my specimens of *L. testacea*, all show light spots in this position, and in most specimens of *L. gueneei* they are equally conspicuous, although, of course, the lighter the ground colour the more difficult it will be to trace them. On the other hand, they are certainly the more easily noticed the darker the general colour of the insects. Of course they would be white in *L. gueneei* just as they are testaceous in *L. testacea*, in accord with the rest of the lighter markings in each species respectively. The thorax and abdomen follow the general colour in each species. As to the size of the two species, although *L. testacea* varies very considerably in expanse of wing, still it is undoubtedly the larger, does not look so slender, has a soiled appearance, and as a rule is a broader winged species than *L. gueneei*.

(To be continued).

Notes from Gloucestershire: Lepidoptera in 1910.

By J. F. BIRD.

The following notes relate to Lepidoptera taken or observed during 1910 in St. Briavels, a large Wye-side parish in Gloucestershire. The season was very unfavourable so far as the Diurni were concerned, and as I captured nothing worth noting in this group my notes will, with one exception, deal only with the Heterocera.

On June 2nd, I watched, with interest, a female *Euchloë cardamines* busily occupied in ovipositing on *Lunaria bicunns* (honesty). She fluttered around a large clump of this plant in the garden for several minutes; flitting from plant to plant to lay her eggs, and frequently visiting the flowers for refreshment. Quite a large number of eggs were laid, all deposited singly on the stalks of the withering flowers and young seed-vessels, and also on the flat sides of the nearly fully developed green discs. I also found the larvæ in the garden feeding on the long seed-pods of *Hesperis matronalis*. I may mention, *en passant*, that the flowers of this Crucifer are attractive to night-flying moths, especially the smaller *Geometrides* and *Pionea forficalis*.

I paid special attention to the two species of *Zygaena* common in this district, *i.e.*, *Z. filipendulæ* and *Z. trifolii*. The former is much the commoner and is well distributed, while the latter is rather local and keeps more to rough land, but I met with several flying in the company of *Z. filipendulæ* in the hayfields. Finding both these species equally common on one rough piece of land, I kept a look-out for mixed pairs, but although I came across a good many of both species *in cop.*, I did not meet with a single case of cross-pairing. On June 21st, I observed a peculiar specimen of *Z. filipendulæ*, flying in one of my meadows while the grass was being mown, which appeared, while on the wing, to have one white hindwing. It kept out of my reach by flying over the uncut grass, and when it settled, did so some distance from where the grass had been mown, so I was then unable to capture it. Next day, however, I met with it again in an orchard adjoining the field it frequented the day before and captured it with my hand just as it flew down to feed at the blossom of *Centaurea nigra*. When I came to set it, I found that its right hindwing was pale yellow slightly tinged with reddish towards the base; otherwise the specimen, a male, was quite typical. I collected a quantity of Zygaenid cocoons in the hopes of obtaining aberrations, but the only remarkable specimen was the last one bred, on July 11th, a female with the left hindwing totally absent. From the cocoons obtained I bred two examples of *Z. trifolii*: one from a rather flimsy, greyish cocoon spun on heather, while that from which the other emerged differed in no way, so far as I could see, from those of *Z. filipendulæ*. I captured the following aberrations of *Z. trifolii* which are, perhaps, worth mentioning:—(1) Two examples of *ab. basalis*: the 3rd and 4th spots are united with the basal pair. (2) A male with the spots and hindwings orange; the 3rd and 4th spots are united and form one large blotch, while the 5th spot is larger than usual; further, the hindwings have very broad borders.

During the beginning of June, when thunderstorms were, I believe, of daily occurrence throughout the country for a week or more, I have no doubt users of illuminated moth-traps must have secured an

abundance of insects. From June 5th to June 12th, thunder was heard here every day, and nearly every day a storm, sometimes more than one, passed overhead or quite close to us. On four nights during this tempestuous period moths came freely into the house attracted by the lamps. The first of these exciting nights was that of the 4th, the day before the stormy weather commenced here. Next day it rained nearly all the day and in the night a thunderstorm passed by within four or five miles of us. On the 7th there was, I think, the most terrific thunderstorm I have experienced in England, which, for twenty minutes, reminded me of a storm in the tropics. That night also after the storm had passed, moths swarmed into the open window and kept me busy netting and examining them until 1.30 a.m. The other two nights when light was especially attractive were those of the 10th and 11th. The following were the species attracted into the house during this remarkable week:—*Nola confusalis*.—June 10th. *Euchelia jacobaeae*.—June 4th. *Spilosoma menthastri*.—June 4th, 7th, 10th, 11th and 12th; a perfect nuisance: one, however, is a splendid aberration very nearly, if not quite, as spotless as *S. urticae*. *Dasychira pulibunda*.—June 4th and 7th. *Drepana falcataria*.—June 11th. *Cillie glaucata*.—June 7th. *Lophopteryx camolina*.—June 4th. *Cynatophora fluctuosa*.—June 11th. *Phaetra runcicis*.—June 11th. *Ayrotis exclamationis*.—June 7th, 10th and 11th. *Noctua plecta*.—June 11th. *N. festiva*.—June 10th. *N. rubi*.—June 7th, 10th and 11th. *Aplecta prasina*.—June 11th. *Hadena thalassina*.—June 4th. *H. genistae*.—June 7th and 11th. *H. dentina*.—June 4th, 7th, 10th and 11th. *Dianthoccia cucubali*.—June 7th. *Nyctophasia rurea*.—June 4th, 9th and 11th. *Apamea gemina*.—June 11th. *Euplexia lucipara*.—June 7th and 11th. *Rusina tenebrosa*.—June 4th and 11th. *Grammesia trigrammica*.—June 4th, 7th, 10th and 11th; the commonest visitor: *ab. bilinea* turned up on the 4th and 11th, and I also took some nice intermediate forms. *Habrostola urticae*.—June 10th. *Cabera pusaria*.—June 7th, 10th and 11th. *Bapta temerata*.—June 7th and 11th. *Panagra petrarica*.—June 7th. *Eurymene dolabraria*.—June 4th. *Odontopera bidentata*.—June 4th, 7th, 10th and 11th. *Tephrosia crepuscularia*.—June 7th. *Iodis lactearia*.—June 4th and 11th. *Acidalia subsericeata*.—June 11th. *A. remutata*.—June 4th, 7th and 11th. *Melanippe substristata*.—June 11th. *M. unangulata*.—June 11th. *M. montanata*.—June 4th, 7th, 10th, and 11th. *M. fluctuata*.—June 4th. *Coremia designata*.—June 11th. *C. ferrugata*.—June 7th and 11th. *C. unidentaria*.—June 11th. *Asthena blomeri*.—June 11th. *Emmelesia albulata*.—June 7th and 11th. *Cidaria corylata*.—June 4th and 11th. *C. ruscata*.—June 7th, 10th and 11th. *C. suffumata*.—June 7th. *C. silvata*.—June 7th and 10th. *Hypsipetes impluriata*.—June 4th. *Anaitis plagiata*.—June 7th and 11th. *Eupithecia pulchellata*.—June 7th and 10th. *E. lariciata*.—June 7th. *E. vulgata*.—June 4th, 7th, 10th and 11th. *E. rectangulata*.—June 10th. *Pionea forficalis*.—June 11th. *Perinephele lancealis*.—June 10th.

On August 11th, and on another day within a week of that date, I searched a number of small poplar bushes (about three dozen growing together in one group), and found half-a-dozen or more ova of *Leiocampa dictaea*, and also a good many empty egg-shells of this species, *Cerura rinula*, and a few of *Amorpha populi*. With the exception of one larva of *L. dictaea*, just emerged from the egg and resting beside the empty shell,

I found no larvæ of these insects, and hardly any of the leaves showed signs of having been eaten by lepidopterous larvæ. On one little tree, not more than three feet high, I found four empty egg-shells of *C. vinula*, but there were no signs of the larvæ, and I am sure, if four of these voracious caterpillars had fed up to full-size, this small bush would have been stripped of its foliage. On the outskirts of this group of little poplars was a huge nest of wood-ants built on the stump of a tree, and the surrounding bushes swarmed with these unpleasant insects. Do they destroy caterpillars? I am wondering if the absence of larvæ was due to them. Although lepidopterous larvæ were not to be found, I noticed plenty of coleopterous larvæ feeding gregariously in small batches on the surface of the leaves, and a few larvæ of saw-flies, so they, evidently, had been left in peace. On one of the bushes furthest from the ants' nest, I found one young larva of *C. bijida* and no ants. This makes me feel more inclined to think that the ants had cleared the other bushes of lepidopterous larvæ.

While passing through, at a quarter to seven (p.m.), on August 10th, one of the special haunts of *Emmelesia blandiata*, I noticed several of these moths flying slowly, in the evening sunlight, above the *Euphrasia officinalis*. Guessing that they were females ovipositing, I watched one in particular. She at length settled on the very tip of a shoot, and rested in a very erect position (one might almost say perpendicularly) with wings considerably raised behind her back; then, curving her body slightly, she laid a single egg in the interstices of the crown of young leaves and buds. After ovipositing she rested in this position for several seconds before continuing her flight.

I will now conclude my notes by mentioning some of my captures during the year, to which I have not already referred: *Hepialus humuli*.—An enormous male, netted on June 19th, measuring 62mm. in expanse. I think this must be almost a record. *Hylophila prasiniana*.—Netted at dusk. *Nola confusalis*.—On tree trunks in May and June. *Spilosoma mendica*.—One ♀ flying in the daytime on May 29th. *Demas coryli* and *Funca casta*.—Bred. *Drepana falcataria*.—I bred, on August 11th, a rather nice example of the 2nd brood with all the wings suffused with purplish-grey. *D. binaria*.—July 30th. *Leiocampa dictacoides*.—One larva off birch. *Pterostoma palpina*, *Gonophora derasa*, *Thyatira batis*, *Cymatophora fluctuosa* and *Acronycta leporina*.—All netted at dusk. I also found larvæ of the last named on birch. *Cnispidia megacephala*.—One larva off aspen. This moth, so plentiful about London, is, apparently, very uncommon in this district. Is it more especially an urban than a rural species? *Agrotis nigricans*.—One flying round a flowering privet bush. Is this moth quite as common as the text-books make out? *A. strigula*.—Netted at dusk over heather. *Aplecta prasina*.—Netted at dusk. *Hecatera serena*.—Bred from larvæ found feeding on the flowers of *Crepis*. *Pala flavicincta*.—Bred. *Cleoceris viminalis*.—Netted at dusk. *Taeniocampa opima*.—At light on April 9th. *Plusia pulchrina*.—Netted at dusk. *Heliodes arbuti*.—This little day-flier seems very fond of daisies. *Phytometra aenea*.—Besides meeting with this moth in May, I captured a female of the 2nd brood on July 30th. *Sarrothripa verayana*.—I netted a very worn specimen on June 21st! *Euelidia*

* I have seen these ants coming down the trunks of trees with small larvæ in their mouths.—(H.J.T.)

glyphica and *E. mi.*—Both common on rough land. *Brephos parthenias.*—On March 30th, a warm, sunny day, I went in the afternoon after this insect and found it plentiful, but flying high above the birches and seldom descending within striking distance of my net, so I only captured two males and one female. Next day was equally sunny and I visited the same spot, but only saw one or two on the wing. No doubt the piercingly cold east wind, which was blowing on that day, was not to their liking. *Hyphenodes costaestrigalis*, *Bomolocha fontis*, *Herminia tarsipennalis* and *H. grisealis.*—Netted at dusk. *Angerona prunaria.*—Netted at dusk. *Macaria liturata.*—Netted at dusk and also taken at rest. *Gnophos obscurata.*—Disturbed from the herbage on the rocky slopes of the valley. *Boarmia repandata.*—I took a fine melanic specimen at rest under the gutter of the house. I think this specimen is best described as a melanic example of *ab. conversaria* with greyish-white submarginal lines. *Abra. vas sylvata.*—Netted at dusk. *Geometra papilionaria.*—I took a ♀, just out of the chrysalis, on a wall under a birch tree on July 31st. *Zonosoma porata.*—August 11th-13th. *Acidalia bisetata.*—I netted a lovely specimen with very dark borders to the wings. *Melanippe hastata.*—I have not found this species so common this side of the river as in Monmouthshire. *M. procellata*, *M. unangulata*, *Melanthia ocellata*, *M. albicillata*, *Asthena blomeri*, *A. sylvata* and *A. luteata.*—All netted at dusk. *Emmelesia affinitata.*—Last year I noted in the *Ent. Record* (xxii., p. 41), the absence of this moth, and that *E. alchemillata* appeared to be less uncommon here than across the river; but last season the former species was fairly common here while the latter was the absentee. *E. albulata.*—Beaten from bushes and also netted flying in the evening. I have taken it on the wing as early as 5.15 p.m., before the sun had set. On August 15th, I took one of the second brood. *E. blandiata.*—Netted late in the afternoon and at dusk during July and August. *Cidaria corylata.*—Exceptionally plentiful last year. *C. picata.*—Taken at rest on tree trunks. *C. russata* (both broods), *C. suffumata*, *C. silaceata* (both broods), and *C. testata.*—All netted at dusk. *Eucosmia undulata* and *Phibalapteryx tersata.*—Netted at dusk. *Lobophora hecapterata.*—One bred from a larva off *Populus tremula*, and another taken at rest on a plum tree. *Chesiasobliquaria.*—Larvæ off broom. *Enpithecia pulchellata.*—Taken at rest on tree trunks and stone-work, and also netted at dusk. *E. subfulvata*, *E. lariciata*, *E. castigata*, *E. absynthiata* and *E. coronata.*—Netted at dusk. *E. pumilata.*—Bred from a larva found feeding on snapdragon in the garden. *Pyrausta octomaculalis.*—Both the West of England form, with the extra spot on the forewing, and the type are to be obtained here. *Botys pandalis.*—Netted at dusk.

Myrmecophilous Notes for 1910.

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

COLEOPTERA.—*Atemeles emarginatus*, Pk.—On May 1st I took specimens of this beetle in a nest of *Myrmica scabrinodis*, at Box Hill. I brought them home and introduced them into a nest of *Formica fusca* from Darenth Wood. The beetles remained in the last compartment of the nest, by themselves for 24 hours, and then joined the ants, when they were readily received. On May 9th I repeated the experi-

ment with more specimens taken the day before at Box Hill, in nests of *Myrmica scabrinodis*, the same results being obtained. This simply illustrated how the beetles go into quarantine when they leave the *Myrmica* nests in the spring, before they enter a *fusca* nest, where the eggs are laid and the larvæ develop. Wasmann* has carried out more elaborate experiments to elucidate these facts, and also to prove that *Atemeles emarginatus* goes to *F. fusca*, and *A. paradoxus* to *F. rufibarbis* (and its race *rufibarbis* var. *fusco-rufibarbis*) when they leave the *Myrmica* nests. On May 20th I found the *Atemeles* in *fusca* nests at Box Hill, showing they had then left the *Myrmica* nests in nature. On August 21st Taylor and I found this species in a *Myrmica scabrinodis* nest in Parkhurst Forest, the beetle here having returned to the *Myrmica* nests for the winter.

Dinarda dentata, Gr.—On April 19th I found a number of this species at Woking, in nests of *F. sanguinea*. I introduced some of them into my *sanguinea* observation nest at home, where they lived all through the summer. The last specimen died on November 4th, it thus having lived seven months in captivity. On May 18th a *Dinarda* and a *fusca*, one of the slaves in the nest, were observed each pulling at an ant larva, one of several I had given to the ants for food. When the beetle found it could not drag the larva away from the ant, it raised its tail over its back, and poked it in the ant's face, giving off the vapour, with which I have shown the Myrmecophilous "staphs" protect themselves. The ant immediately let go and hurried away, the beetle carrying off the larva in triumph into a corner to devour at leisure. On June 20th a ♂ and ♀ were observed *in cop.* Copulation is the same as in *Atemeles*, *Lomechusa*, and *Myrmedonia*, that is, the ♂ places his head under the body of the ♀, and raises the tail and bends it over his head till it reaches that of the ♀. These beetles were observed to eat dead ants, as well as any prey given to their hosts. On May 10th I found this species very abundant in a *sanguinea* nest at Weybridge. It was first taken in Britain at Weybridge† by F. Smith. The earlier records really referred to *D. märkeli* and *D. pygmaea*.

D. hayensi, Wasm.—On May 15th Taylor and I found a number of specimens with *F. exsecta* in Parkhurst Forest. I introduced some into my *exsecta* nest at home. These lived till September. This colony is contained in a combined "Fielde and Janet" nest, in which are slices of damp sponge. The beetles laid their eggs in one of the sponges, and larvæ were hatched in July.

Myrmedonia humeralis, Gr.—On December 8th, Crawley and I dug up a *Lasius umbratus* nest, which I had known for some time, at Weybridge. In it we found two specimens of this beetle. The nest was partly in the root of an old stump. Its primary host is *L. fuliginosus* (secondly *F. rufa*), and I am inclined to think the stump had originally been inhabited by the former ant, as some of the inner wood showed traces of the black colour caused by this ant in trees infested by it.

Myrmedonia laticollis, Märk.—A specimen was captured in a nest of its host, *L. fuliginosus*, at Darenth Wood, on May 28th, with one of the ant's larvæ in its jaws.

* *Biolog. Central.*, 1910, xxx., p. 135.

† *Zool.* 1860, p. 7292.

Drusilla canalienlata, F.—A specimen was taken at Hanwell on July 21st, which had just killed a *L. niger*, and was carrying it off, and on September 6th another was found at Ditchling with a dead *M. scabrinodis* in its jaws.

Queclius brevis, Er.—Crawley and I found specimens with *F. rufa*, at Weybridge, on December 8th. Its other normal host is, of course, *L. fuliginosus*. Wasmann* recorded it with the former in Dutch Limburg, from January to December, and with the latter from April to October, or December. In looking up all my records of this beetle I find I have taken it with *rufa* in January, February, March, April, May and December, and with *fuliginosus* in April, May, September and October. I found its young larvæ in numbers with the latter, at Wellington College, in May, 1906.

Bythius glabratus, Rye.—Bedwell and I found this beetle with *Ponera contracta* at Box Hill, in May. Bennett took it with the same ant, at Mickleham, in 1908.

Heterius ferrugineus, Ol.—Bedwell and I found two specimens of this rare little Histerid in a nest of *F. fusca* at Box Hill, in the same locality where he discovered it last year. I must express my best thanks to him for kindly taking me to this spot. It is evidently very rare there, as much search in other nests, and further visits by both of us on other occasions, failed to produce any more. Indeed it must be very scarce in Britain, when one considers the hundreds, probably thousands, of *fusca* and other nests I have investigated in the last twenty years, and have never had the good fortune to come across it before.

Dendrophilus pygmaeus, L.—This beetle has bred out of my *F. rufa* nest as usual this year. On September 28th I put a specimen into a small plaster nest with some fifteen *rufa* ♀s. On December 1st I noticed one of the workers licking the back of the beetle, which remained motionless, for a long time. It is still alive to day, February 19th.

Opatrum sabulosum, L.—On May 14th I found this common beetle with *L. niger* at Sandown, Isle of Wight. On April 18th, 1909, I found several specimens in nests of the same ant at Whitsand Bay and Tregantle, and have before found it in ants' nests. I think it is as well to record these facts, because Rupertsberger† found the larvæ of this beetle in plenty with *F. fusca*, and more sparingly with *F. sanguinea*, in Austria, and considered they were undoubtedly the tolerated guests of the ants. H. Klene, S.J., found the beetle near Feldkirch, in February, in numbers, on the top of a *pratensis* nest, for the purposes of laying their eggs. As Wasmann‡ remarks, it would be interesting to find that this very common beetle is a regular myrmecophile in the larval state. I put the *Opatrum* from Sandown into my *fusca* nest from Darenth Wood. It was not much attacked by the ants, and it lived in the nest for three or four months before it died.

DIPTERA.—*Ceratopogon myrmecophilus*, Egg.—On May 18th I captured a ♀ of this myrmecophilous fly in a nest of *F. exsecta*, which I had brought up from Parkhurst Forest on May 15th. This is a new locality and host for the species, it having only occurred with *F. rufa*

* *Ameisen u. Ameisengüste v. Holländisch Limburg*, 1891, pp. 56 and 60.

† *Wien. Ent. Ztg.*, 1893, pp. 247-249.

‡ *Krit. Verz. d. Myr. u. Ter. Arth.*, 1894, p. 157.

at Weybridge, Oxshott, and Darenth Wood before. On October 1st I found ♂s hovering over a *rufa* nest at Weybridge.

Melichia ludens, Wahl.—I captured a ♂ of this species on May 24th in the nest of *L. fuliginosus* at Darenth Wood, where I discovered the species new to Britain last year, when I took a ♀.

Phora rata, Wood.—On the morning of January 8th, 1910, I noticed a small fly in my *ersecta* nest, which was running and flying swiftly about. When it met an ant it shot quickly away. An *ersecta* ♀, which had just died, was being carried about by another ♀. It is probable that it had bred out of the dead ant. It may be remembered that I bred specimens of this fly, which came out as larvæ, from a beetle, *Clerus formicarius*, which I had captured alive in Sherwood Forest.

Phora aequalis, Wood.—This species was again common at Darenth in the *fuliginosus* nest, on April 2nd.

Phora ciliata, Zett. (*inaequalis*, Wood).—This species was captured in the same nest as the above species. I found it with the same ant in numbers right in the nest in a hollow post, at Wellington College, in 1906.

HETEROPTERA.—*Pilophorus perplexus*, D. and Sc.—A young larva of this bug was found in a nest of *F. sanguinea*, at Woking, on May 9th, 1909, and several adults were beaten from pines in company with *L. niger* on July 30th, 1910, in the same locality.

BRACONIDÆ.—*Euphorus histigmaticus*, Morley.—Females were observed on October 1st hovering over a *rufa* nest at Weybridge.

Chasmodon apterus, Nees.—I captured a specimen in a *fuliginosus* nest at Darenth Wood, on October 27th.

PROCTOTRUPIDÆ.—*Trichopria formicaria*, Kief.—This species, which is new to science, was found in a nest of *F. fusca*, under a stone, at Box Hill, on May 20th.

Amblyaspis scutellaris, Kief., var. *hyalinus*, Kief., and *Belyta furcata*, Kief., var. *formicaria*, Kief.—These two insects, which are both new varieties, were taken in the *fuliginosus* nest at Darenth Wood, on October 27th. I must again thank Prof. Dr. T. T. Kieffer for kindly naming my specimens for me.

COLLEMBOLA.—*Gyphodirus* (*Beckia*) *albinus*, Nicol.—This little creature occurred in great numbers in my *rufa* nest, and as many as six and seven would often be on one ant at a time. I have never seen them on the ants before. It also occurred in my *ersecta* nest, and on December 8th, Crawley and I found it in a *L. umbratus* nest at Weybridge.

MYRIAPODA.—*Polyrenus lagurus*, L.—I captured several specimens of this curious little species in my *F. rufa* nest on November 11th. I have frequently seen it in great numbers with this ant at Weybridge, where my nest came from. Bagnall tells me he has taken it with *F. rufa* and *F. fusca* in Norway, and Randell-Jackson writes to me that he has found it with *F. rufa* at Burnham Beeches, on May 30th, 1908, and has on several occasions found it with the same ant in different localities, always in some numbers. It is figured in the Cambridge Natural History,* where it is stated it defends itself by means of the long and stiff bristles with which it is provided. The yellow tuft of hairs at the end of the body have a rather Myrmeco-

* Myriapods, 1895, p. 37.

philous appearance, and it is probable that it is frequently a dweller in ants' nests.

ARANEINA.—*Micarisma minimus*, C. L. K.—I captured an adult and a young ♂ of this species, which is new to Britain, in a nest of *F. fusca* at Box Hill, on May 8th. Wasmann records it with ants in the Rhineland. I must thank my friend Dr. Randell-Jackson for kindly naming it for me.

Thyreosthenius biorata, Camb.—I found this little spider in a *rufa* nest at Braemar, a new locality for it, on June 12th. It bred in my *rufa* nest, as usual, and was observed with the same ant at Weybridge, on December 8th.

Evansia merens, Camb.—Taken with *F. rufibarbis* var. *fusco-rufibarbis*, on June 10th, at the foot of Mt. Marrone, and with *F. fusca*, on June 14th, at the foot of Ben-na-buirid; new localities for this species.

Cryphoea recisa, Camb.—I took this spider with *L. umbratus* at Weybridge, on December 8th.

Cicurina cinerea, Pz.—Females, and very young, of this species, were taken with *L. fuliginosus* at Darenth again, on April 2nd and October 27th.

Micaria pulicaria, Saund.—This spider occurred with *F. sanguinea* and *F. fusca* on May 10th.

Harpactes hombergi, Scop.—This spider occurred with *L. fuliginosus* at Darenth, on April 2nd, and in a nest of *F. sanguinea*, in the New Forest, on May 30th.

Dysdera cambridgei, Thor.—This species was taken with *F. sanguinea* at Woking, on May 7th, and with *L. fuliginosus* at Darenth, on April 2nd, and Ninham, Isle of Wight, on May 16th.

Asagena phalerata, Pz.—On June 17th I captured two specimens of this spider in a nest of *Myrmica laevinodis*, on Mt. Marrone, Braemar. I observed the larger specimens catching ants. When an ant approached it was entangled in threads of web, the spider just kept out of reach and threw the threads at the ant. In this way four or five ants were entangled together, and the spider carried them off. I put the spider and captured ants together into spirit.

ACARINA.—*Urotachytes formicarius*, Lubb.—This mite was taken in nests of *L. flavus* at Box Hill,* on May 1st.

Urodiscella ricasoliana, Berl.—This species occurred on the larvæ and ants in nests of *L. fuliginosus* at Darenth Wood,* on July 23rd.

Cillibano comata, Leon.—This mite was found on the young larvæ in nests of *L. flavus*, at Box Hill,* on May 1st.

Laclaps myrmecophilus, Berl.—This species was taken with *F. fusca* at Box Hill* on May 1st, at Parkhurst Forest* on May 15th, and with *F. rufibarbis* var. *fusco-rufibarbis* at Luccombe Chine,* May 16th.

Laclaps cuneifer, Mich.—This species was taken in a nest of *F. rufa* at Braemar,* on June 12th. It also occurred again with *L. fuliginosus*. In my observation nest of that ant, I find it follows in the "tracks" of the ants. When the ants were disturbed, and removed all their larvæ from the plaster nest to the glass bowl, through the long glass tube which connects the two, the mites were seen to mount the tube also, and they returned again with the ants when the latter came back.

Sphaerolaelaps holothyroides, Leon.—This mite was found in nests of *L. umbratus* at Box Hill*, on May 1st, and at Weybridge* on

December 12th. I introduced a number from Box Hill into my *umbratus* observation nest, where they lived for a few months. They sit about with the ants and run in and out among them. The ♂s sometimes appeared to threaten them with their jaws, but never bit them.

Antennophorus pubescens, Wasm.—This mite was taken on the ants in nests of *L. jarvis* at Ripley,* on April 27th, and Sandown* (Isle of Wight), on May 14th. I introduced specimens into my *umbratus* observation nest, and they at once fastened themselves on to the ants.

Tropoda oralis, Kram.—I found a number of this species, which is new to Britain, on ants in the *umbratus* nest from Weybridge. The mites were fastened to the front legs of the ♂s. In some instances, an ant had one on each front leg. It is figured in Wheeler's* book on ants, after Janet, the mite being shown, however, fastened to the middle leg of *Lasius mixtus*, ♀. (*L. mixtus* is a race of *L. umbratus*, it is without the exerted hairs on the tibiae, etc. It has been recorded from Bickleigh, near Plymouth, by Bignell,† and Isle of Man, by Grimshaw‡). The localities marked * are new records for the species in question. I must again thank Mr. N. D. F. Pearce for kindly naming many of the species for me.

MYRMECOCORUS SEEDS.—Professor Weiss sent me some seeds of the greater celandine, gorse and broom, to test my ants with. On July 8th, I put a number of the celandine seeds in a small box lid, where the ants in my *fuliginosus* nest could obtain access to them. One ant took a seed. By July 14th, more seeds had been carried off, and by July 19th, all the seeds had been collected by the ants and taken away; some were partly eaten. These ants treated the gorse and broom seeds in the same way. *Formica cæsecta* also collected all these seeds. They seemed to eat part of the seeds, but the majority they placed on one of their damp sponges, where the seeds grew and the ants used to climb up and down the small plants.

In my *F. rufa* nest, however, the ants never touched a single seed, though they had lids of all three species presented to them. This was curious, as Prof. Weiss§ has shown that *F. rufa* has dispersed the seeds of gorse and broom in nature.

Notes on the Season, 1910.

By RUSSELL E. JAMES.

Everywhere one hears complaints of the past season, but my own experience during the several short trips that my little leisure has allowed me, has been, that we have had the greatest year with *Noctuae* since 1892.

Probably they have been no more plentiful, but as they have come to treacle in great numbers wherever and whenever I have tried, from early June to early September, they have at least been more in evidence and more obtainable than usual.

Light on the other hand has been singularly unattractive, and an apparently ideal night in July stands out in my memory as the great

* *Ants, Their Structure, Development, and Behaviour*, 1910, p. 411.

† *Entom.*, xiv., 1881, p. 262.

‡ *Ann. Scot. Nat. Hist.*, 1908, p. 89.

§ *The New Phytologist*, vii., 3, 1909, pp. 81-89.

disappointment of the year. Tempted by the exceptional conditions, I carried heavy apparatus—poles, sheet, etc.—three miles to a particularly likely-looking marsh by Ormesby Broad, and the sum total of visitors to the sheet were three common *Crambi*, *Lithosia griseola*, and one *Rivula sericealis*. The latter were swarming at dusk, in company with many other things, including a fine ♀ *Schoenobius gigantellus*, and a nice lot of *Acidalia emarginata*. There was no apparent reason why they should shun the light, but so it was on this, and on every other occasion on which I tried it. I did no collecting before Easter, but when on a visit to Hindhead, I worked the tallows for several nights (March 24th to 28th). There were only half-a-dozen convenient bushes, but on these, moths swarmed. *Taeniocampa pulverulenta* (*crula*) and *T. stabilis* of course constituted the bulk, but among them were some nice *Xylocampa lithorhiza*, *Taeniocampa munda*, *Panolis piniperda*, and one good female *Dasygampa rubiginosa*. The last named, after six weeks' feeding, laid one infertile ovum, and then drowned herself in moist sugar, incidentally destroying herself as a specimen. *Brephos parthenias* was on the wing in great force, and *Asphalia flavicornis* at rest on stunted birches in numbers—frequently three or four on one small bush, and remarkably conspicuous. In nearly every case they were resting on twigs about as thick as themselves, around which their wings were partially rolled. The habits of the species are curious. Apparently they rarely fly, as at least 80 per cent. of those I left on the birches remained in the same position day after day during the length of my visit. On the other hand, the occasional afternoon flight that I had heard of, but had never seen, was fully confirmed. Each afternoon two or three were seen flying swiftly in the sunshine, through the birches and over the adjoining heather. I only succeeded in netting and examining three of these, and all were females, more or less worn.

After a long interval of inactivity, I had my first treacling experience, when staying the week-end with a friend in North Berkshire. This Saturday, June 4th, was my one big "Butterfly" day of the year. We visited a select corner, where *Melitaea aurinia* (*artemis*) was on the wing in scores. Some beautiful forms were selected including three nice upperside and half-a-dozen underside varieties. *Hamearis lucina* abounded, and I have never seen so many *Euchloë cardamines* before, although they were mostly remarkably small in size. Larvæ of *Callimorpha dominula* were feeding on wild hops in an adjoining copse, and some distance away, sembling with a female *Aegeria spheriformis* resulted in the capture of six males. In the evening a row of treacled posts swarmed with useful *Noctuae*—large numbers of *Xylophasia rurea*, and some var. *combusta*, a couple of dozen *Hadena adusta*, and ten beautiful *H. genistæ*, besides many others. The same ground, later on, yielded to my friend a quantity of *Aplecta prasina* (*herbida*), *A. advena*, and *Neuria saponariæ*, a dozen or so each of *Noctua stigmatica*, *Triphaena orbona* (*subsequa*), and many other things. Larvæ beating in an oak wood the following afternoon produced little else than full-fed *Bithys quercus* in bulk, and a single *Hylophila bicolorana*. Odd specimens of *Drepana hamula*, *Eurymene dolabraria*, and *Nemeophila plantaginis* turned up, but the weather was breaking, and treacle that night was impossible.

One of the greatest treacling experiences, in point of numbers, I

have ever had, occurred during my next short trip, in the woods near Huntingdon and in the fens round Peterborough. On the nights of July 2nd, 3rd, 4th, and 5th, Messrs. Galpin and Rippon, of Oxford, and myself, treacled in the woods, and after the first night moths were literally crowding each other off the patches. *Triphaena pronuba* was probably responsible for hustling off many of the shyer species. There must have been many thousands of them, as on one tree alone, I counted, for curiosity, no less than 74 of this species. However, in spite of their hustling, we each got a fine series of *Dicycla oo* with a good large proportion of var. *renago*. *Aplecta advena* was common, but getting worn, and *A. prasina* was almost over. *Thyatira deorsa* was very abundant, but curiously only a single *T. batis* turned up. *Neuria saponariae* was common but worn. *Argylia putris*, *Apamea gemina*, and *Nyctophasia hepatica* were in plenty, and *N. sublustris*, *Phaenocarpa ruficincta*, *Triphaena jimbria* and *Agrotis obscura (rarida)* occurred from time to time. *A. corticea* was common on the outskirts of the wood, where Messrs. Rippon and Galpin were working, and they took some fine dark forms of this species, but on the other hand, working farther inside, I had the best success with *D. oo*.

On the 4th, while the others remained in the woods, I visited the fens with a friend from Peterborough. The spot we chose for this one night is very ungetatable, happily—far from the railway and apparently quite unworked. In richness, however, this one night proves that it rivals Wicken. We treacled posts, flowers, alder and willow twigs, reed stems and knots, and all simply swarmed with moths. *Senta ulrae* was getting over, but half-a-dozen excellent specimens were picked out, and it had evidently been abundant. Other species taken at treacle were *Tapinostola concolor*, *Acronycta leporina*, *Hadena adusta*, *Leucania impudens* (swarms), *Apamea unanimis*, *Orthosia suspecta*, *Aplecta advena*, *Leucania obsoleta*, *Agrotis obscura (rarida)*, *Toxocampa pastinum*, and many other common ones—a goodly list for one night, and hard to beat anywhere. The short time we had at dusk showed *T. pastinum* in great numbers, and among Geometers *Acidalia emarginata* and *Emmelesia alchemillata* were noticed. We found other insects to be hungry, besides *Noctuae*, and in spite of "Terrific," we were most unsightly objects next day from the effects of fly bites. Altogether, with fen and wood, the four nights turned up seventy species of *Noctuae* alone.

The weather was almost sunless, but by day a few *Strymon pruni* were seen in the woods. They were distinctly scarce, however, and, I should think, could do with a rest. The blackthorns still showed signs of having been heavily beaten earlier in the year, and I should imagine the species is being somewhat overworked. *Dryas paphia*, *Argynnis adippe*, *Melanargia galathea*, and *Diacrisia sanio (Eutheonia russula)* were also occasionally seen, and one meadow near Peterborough was simply swarming with *Anthrocera jilipendulae* and *A. trifolii*, both in pupal and imaginal states.

Following on this trip, a fortnight spent at Hemsby on the Norfolk Coast (July 8th-25th), was more remarkable for quantity than quality. The numbers night after night nearly, but not quite, equalled those of the Huntingdon Woods. The round consisted of posts and flowers on the sandhills, and trees in a small apple orchard. Again *Triphaena pronuba* had first place and the most interesting

result of the visit is the series selected of this species. Each night I carefully selected good forms from the thousands on the patches, and my series, picked from two or three hundred that I set, are a very beautiful and interesting lot. *Mamestra albicollis* was nearly over, but *Prodenia littoralis* was very abundant and fine. *Tapinostola elymi* was scarce and did not come to treacle, but a few were found at rest on the *Elymus* and Marram grasses with one or two *Agrotis ripae*, which was nearly over. Other species taken on treacle included *Neuria saponariae*, *Thyatira derasa*, *Acronycta tridens*, *Peridroma suffusa*, *Axyليا putris*, *Mamestra anceps*, *Dipterygia pinastri*, *Miana literosa*, *Tethea subnusa*, and to my surprise *Leucania pudorina*, and *Herminia cribralis*, two species I had never before connected with sandbills. In the orchard several *Eupithecia rectangulata* came to treacle each night, and of course were found at rest by day. This being a family holiday, I did little day collecting, but very hard work from a boat on Barton Broad resulted in some *Nonagria cannae* larvae (I was too early for pupæ), from which I succeeded in breeding seven specimens. When one takes into consideration the labour of working from a boat (especially in the half-a-gale that I had to endure each time), the immense numbers of misleading *N. arundinis* (*typhae*), the ravages of moorhens, and the difficulty of rearing the larvae, the man who gets a good series of *N. cannae* deserves them. Of course I can understand that the labour would be reduced in working for pupæ, as the rushes containing them are distinguishable at a glance, by the faded round disc covering the emergence aperture. On breaking this disc, moreover, the species is at once determined; if the burrow runs downwards it is *N. cannae*, which pupates head upwards, and if the burrow run upwards it is *N. arundinis* (*typhae*), which pupates head downwards. On the other hand, however, there is nothing to distinguish stems containing larvae, from those where the larvae have been, and an immense amount of time is wasted splitting up empty stems.

The week-end after my return, found me again in the North Berks locality, especially for *Lithosia complana* on the heather. A nice lot were taken by this means, also two on the wing and two on treacle. They appear to continue crawling up from the heather roots to the top until at least 11 p.m., as specimens were frequently found on clumps of heather that were not there a few minutes before, and had they arrived by flight we must have seen some flying. As it was, the only two seen on the wing were at late dusk. *L. complanula* was pre-ent in about 25% proportion, and was readily distinguished at rest by the broader appearance of the closed wings. *Eupithecia nauata* and *E. minutata* were very plentiful—nearly all in pairs—and *Agrotis strigula* (*porphyrea*) were all over the place. A surprise for heather blossom was a large female *Hylophila quercana*, and other species taken included *Triphaena janthina* and *T. interjecta*. On treacled posts close by, moths still abounded, the best species being *H. quercana*, *Nyctophasia scolopacina*, *Triphaena sibirica*, *Agrotis tritici*, *A. nigricans* (in numbers), *A. vestigialis* (*ralligera*) (nearly over), *Cosmia affinis*, *Hydroecia nictitans*, and *Nudaria mundana*.

Being twice in Glasgow during August and September, I, on each occasion, contrived to get a night's collecting at Garelochhead. The numbers on treacle had diminished, but were still considerable, and the results to a southerner most interesting. The ground worked was

on each side of the railway line, up the hill from the loch, and into the wood beyond. A nice patch of heather blossom on the railway bank itself also proved very attractive. Posts, trees, and ragwort blossom were treacled, and the latter proved to be far the most attractive. On the first night (August 19th) the moth of the evening was *Noctua dahlii*. They wanted picking over, but were very abundant, and a fine lot were selected. *N. glareosa* was nearly as common, especially on heather, and one very beautiful variety was taken. This was of the typical *glareosa* grey colour, but marked almost like *Agrotis tritici*, with pale whitish costa and strong pale streak below the stigmata. *Citria lutea* (*silago*) was common, and *Hadena protea* just coming out and most strongly marked. *Hydroecia micacea*, *H. lucens* (?), and *Triphaena jimbria* were not uncommon, and two *Xylophasia monoglypha* (*polydon*) occurred, one absolutely fresh specimen being the blackest I have ever seen. *Polia chi* was common on stone walls, and on one wall up the hillside *Cidaria immanata* was in great numbers. This latter species also came freely to heather blossom, and on my next visit (September 3rd and 4th) they were even more plentiful, especially on ragwort and on scabious blossom in the wood. Treacle on this latter date had a much more autumnal appearance. The two principal species were *Anchocelis rufina* and *Hadena protea*. They were both very common and very richly coloured—much darker and more strongly marked than our southern forms. *Noctua dahlii*, *Triphaena jimbria*, *Citria lutea*, *Hydroecia micacea* and *H. lucens* (?) were still in evidence, and new comers were *Anchocelis litura* (common), *Calocampa retusta*, *C. solidaginis* (two, one of them on heather), *Epunda nigra*, *Scoliopteryx libatrix* and *Miselia oxyanthae*. *Polia chi* this time also came to treacle and heather.

Except for a couple of evenings at Richmond Park and a very successful hunt for *Nonagria sparganii* pupæ in Kent, this finished up my year's collecting. In the former locality the two wet summers have greatly strengthened up the rushes on the ground tenanted by *Tapinostola fulva*, and this species was in immense numbers and great variety. *Luperina cespitis* was rarer than usual and the other regular species, *H. testacea*, *Characis graminis*, *Heliophobus popularis*, *Anchocelis limosa* and *Hydroecia nictitans* were about normal. One *Noctua glareosa* was taken, but I did not try treacle, and only worked for moths at rest on the grass.

I have no personal knowledge of autumn work this year, but believe, from all accounts, that the attraction of treacle failed entirely after August. Still without this, I have taken, or seen, far more species of *Noctuae* than ever before in a single season, and I shall be very well satisfied if I never experience a worse collecting year than 1910.

***Choleva fuliginosa* (*Catops fuliginosus*), Er., a species new to Britain.**

By G. W. NICHOLSON, M.A., M.D., F.E.S.

On going over the *Cholevae* I had taken last year, with the help of Ganglbauer's book, I came to the conclusion that I possessed specimens of *Choleva fuliginosa*, Er. Captain Deville has kindly supplied me with continental types of this species, which are identical with my specimens.

The following is a translation of Ganglbauer's description of this insect (*Käfer v. Mitteleuropa*, vol. iii., p. 132):—

Closely related to *nigricans*, but differs from it by its much smaller size, much less convex form, and shorter antennæ, which are nearly always blackish towards apex, and whose eighth joint is much shorter in both sexes, being transverse even in the ♂. The posterior angles of the thorax are less produced posteriorly, and the base of the thorax is more weakly sinuate on each side. The elytra are flatter. The anterior tibiæ of the ♂ have a much more distinct hump-like dilatation in the middle of their inner sides. Very closely resembles specimens of *nigrita*, in which the apical joint of the antennæ is not lighter, and differs from these only by the somewhat acutely produced posterior angles of the thorax, by the presence of faint longitudinal striæ on the anterior half of the elytra, and by the hump-like dilatation on the middle of the inner sides of the anterior tibiæ of the ♂. Length, 3·5mm.-4·5mm.

I took five specimens of this insect (two ♂s and three ♀s) at Alphington, Devon, from under dead leaves in a small plantation, in company with *C. fusca*, *C. tristis*, and *C. kirbyi*. Mr. Dollman has a series from the Harrow district from moles' nests, and Mr. Donisthorpe a specimen from Hartlepool out of carrion. There are also several specimens in the Bates' collection standing under *nigricans* and *nigrita*. It is probably a fairly widely distributed species in this country. Captain Deville says it is common in France, and the types he has kindly sent were taken in rabbit-burrows.

As the subgenus, *Ptomaphagus*, Hellwig, or, as it is now called in the European catalogue, the genus *Catops*, Th., is considered by English coleopterists to be a very difficult one, I venture to give a translation of Ganglbauer's table, in-so-far as it deals with the British species, since I was surprised at the ease with which I could name all my specimens by its aid.

- | | |
|--|---|
| 1. Outline of body elliptical. Thorax at base as broad, or hardly narrower than elytra, only narrowed and rounded in front. (Subg. <i>Sciodrepa</i> , Th.).. .. | <i>watsoni</i> , Spence;
<i>fumata</i> , Spence. |
| Body with an angular constriction between thorax and elytra. Thorax plainly narrowed towards base, at base narrower than base of elytra | 2. |
| 2. Thorax finely, and very closely, granulate, without punctures | <i>kirbyi</i> , Spence. |
| Thorax finely punctured, the punctures impressed obliquely from behind forwards | 3. |
| 3. Antennæ more or less slender, with feebly marked club, sixth joint never transverse | 4. |
| Antennæ with strong club, sixth joint transverse .. | 10. |
| 4. Thorax broadest in posterior third | <i>fusca</i> , Pz. |
| Thorax broadest at, or just behind, middle | 5. |
| 5. Body short and broad. Thorax of ♂ broader, or at least as broad as, elytra, very strongly rounded at sides | <i>grandicollis</i> , Er. |
| Body more slender. Thorax in both sexes narrower than elytra | 6. |
| 6. Size larger, 4·5mm.-5·5mm. Elytra convex, falling off more strongly towards apex. Thorax with posterior angles strongly produced, base plainly sinuate on each side | <i>nigricans</i> , Spence. |
| Size smaller, 3mm.-4·5mm. Elytra less convex, falling off more gradually towards apex | 7. |
| 7. Thorax with posterior angles produced, and base sinuate at each side (but not as strongly as in <i>nigricans</i>). Anterior tibiæ of ♂ with a hump-like dilatation on inner side | <i>fuliginosa</i> , Er. |
| Base of thorax almost straight; posterior angles, | |

right angles. Anterior tibiæ of ♂ without a hump-like dilatation	8.	
8. Anterior tibiæ of ♂ with a small knob on inner side before middle		<i>coracina</i> , Kell.
Anterior tibiæ of ♂ without knob	9.	
9. Head moderately finely and very closely punctured		<i>nigrita</i> , Er.
Head strongly, and not so closely punctured ..		<i>morio</i> , F.
10. Last joint of antennæ only slightly shorter than the two preceding together		<i>chrysoloides</i> , Pz.
Last joint of antennæ much shorter than the two preceding together	11.	
11. Eighth joint of antennæ only slightly shorter than sixth. Body oblong		<i>longula</i> , Kell.
Eighth joint of antennæ only about half as long as sixth. Body shorter		<i>tristis</i> , Pz.

In copying the above table, I have not considered the presence or otherwise of traces of longitudinal striæ on the anterior half of the elytra, since, with a high power, these are found to be present in most of the species, and appear to be subjected to considerable individual variation.

NOTES ON COLLECTING, Etc.

A FEW NOTES ON MY 1910 COLLECTING.—I found the past year a poor one for butterflies, due principally, I consider, to the wretched weather which prevailed during the greater part of the season. The week-ends were particularly dismal, and often enough not an insect would be met with on the wing. I did little with the butterflies beyond rearing about a dozen *Satyrus semele* from wild larvæ, and a few *Euchloë cardamines* from ova found on hedge mustard. I was much more successful with the moths, though upon reference to my diary I find very few were taken either at sugar or at light. Sallowing at Chislehurst, on April 12th, disclosed that *Taeniocampa cruda* was abundant; *T. gothica*, *T. incerta*, *T. gracilis*, and *Pachnobia rubricosa* also putting in an appearance, though not in any numbers. On April 14th and next few succeeding days a nice brood of *Pocilocampa populi* hatched out from ova obtained by pairing a ♂ and ♀ taken in the pupa state the previous autumn at Haslemere. The young larvæ did not seem inclined to feed freely in glass-topped metal boxes, though supplied with a variety of foodplants to choose from. Upon sleeving them out they did much better, but after a short experience it was apparent that they preferred willow to poplar, birch, or oak, and eventually all were brought through on willow. They were a handsome looking lot when fullfed, differing materially in colour and design, all the varieties of the larvæ figured by Buckler being represented. The larvæ spun up in the folds of the leno, and the pupæ were left *in situ* when the sleeves were removed from the trees and brought indoors. The moths commenced to emerge on November 8th (when five males appeared), and continued with intervals to do so till December 2nd, the first ♀ putting in an appearance on November 10th. Altogether 31 moths were bred, but of these quite a number were crippled, due, I presume, to their inability to escape readily from their cocoons. Doubtless it would have been better to have removed the larvæ, when nearly fullfed, from the sleeves to a roomy breeding cage, and thus have afforded them an opportunity of spinning up in rough stuff at the bottom of the cage. Several of the pupæ are remaining over. I was successful also

in rearing a fine series of *Phorodesma smaragdaria* from Essex, the bulk of which were from ova obtained by pairing a ♂ and ♀ in captivity, the remainder being from larvæ taken wild in the autumn of 1909. The whole of the larvæ were hibernated and brought through on garden southern wood. Nearly all the resulting imagines emerged between June 21st and July 13th. Four of the larvæ, however, from the egg batch, were found to be still feeding on July 3rd. Two of these only succeeded in attaining the pupa state, and one insect only was finally bred; this, a ♂, emerging on August 8th. The moths bred from the eggs were, in many instances, finer than those bred from the wild larvæ. When searching in Berkshire for larvæ by light, in the middle of May, a dozen and a half larvæ of *Gnophos obscuraria* were taken, feeding on clumps of stunted heath. The larvæ, though not full-fed, were fairly well grown, and on returning home they were offered willow and strawberry as substitutes for heath, which was not easily procurable by me. They seemed to fancy the willow, but not the strawberry; although they remained up for about three weeks, they fed but very little. Only thirteen changed to pupæ, and from these were bred 5 ♂s and 5 ♀s, all of the dark form, the perfect insects emerging between August 2nd and August 15th. In May also were bred a good series of *Numeria pulveraria*, the progeny of a grand female taken at Hailsham, early in June, 1909, and during June, 1910, a long series of *Myelois cribrum* from larvæ taken in North Kent on May 7th, in thistle stems. In June and July a few *Plusia moneta*, were bred for the purpose of renewing my series, the larvæ being taken earlier in the year on delphinium in my garden. I cannot say whether *P. moneta* occurs at Purley generally, the larvæ I had were probably the successors of those brought in the larva state with the delphinium, when removing from Southend (Catford). In July also a short but satisfactory series of *Geometra papilionaria* were bred from larvæ beaten from birch in Berkshire in May. The larvæ were sleeved and allowed to pupate in the sleeves. The smallest ♂ and ♀ were paired, and from the ova I obtained a brood of young larvæ, which are now hibernating on birch in the garden. During the autumn when in Berkshire, with one of my brothers, the following with other larvæ were taken either by searching or by beating; *Amorpha populi*, *Gnophria rubricollis*, *Dasychira pudibunda*, *Drepana lacertinaria*, *D. falcula*, *Stauropus fagi* (2), *Lophopteryx camelina*, *Leiocampa dictacoides*, *Notodonta dromedarius*, *N. sicca*, *Clostera reclusa*, *Demas coryli*, *Hylophila prasinana*, *Amphidasys betularia*, *Cabera pusaria*, *Cidaria corylata*, etc. Most of the above larvæ seemed to do well sleeved, but *L. dictacoides* is apparently a most difficult larva to get into pupa, and then one is not sure of breeding the perfect insect. In my own immediate neighbourhood I took half a dozen *Theretra porcellus* larvæ on ladies' bedstraw, also several larvæ of *Dianthoecia carpophaga* on bladder campion, and from ova obtained from a grand female taken at Oxted, a good series of *Pachnobia rubricosa* should be bred in the near future. I have many other species lying over in the pupal state, and if all goes well should have a very busy time when the spring arrives and insects commence to emerge.—A. RUSSELL, F.E.S., Wilverley, Dale Road, Purley.

CURRENT NOTES.

The last meeting of the Entomological Club was held at the Holborn Restaurant on the evening of January 17th, when Mr. G. H. Verrall was the host. The preliminary meeting was attended by a large number of friends and guests, many of whom take this annual opportunity of renewing friendships of the past. We understand that this was the most successful meeting ever held, for the number who sat down to supper at 8.30 p.m. was just upon ninety. Most of those throughout the country, who are known for their keen love of entomology, receive invitations, and among others whom the genial host was delighted to welcome we noted Messrs. R. Adkin, H. W. Andrews, Professor W. Bateson, Rev. E. N. Bloomfield, Mr. Bower, Dr. Malcolm Burr, Messrs. E. Bedwell, F. M. Carr, F. Noad Clark, Dr. T. A. Chapman, Messrs. J. E. Collin, G. C. Champion, A. Cant, J. H. Carpenter, W. C. Crawley, H. C. Dollmann, W. L. Distant, H. St. J. Donisthorpe, J. H. Durrant, Dr. F. A. Dixey, Messrs. F. Enock, Stanley Edwards, H. J. Elwes, H. Eltringham, C. Fenn, F. W. Frohawk, C. J. Gahan, A. E. Gibbs, A. Harrison, T. W. Hall, P. Harwood, Prof. Selwyn Image, Messrs. A. H. Jones, F. B. Jennings, O. E. Janson, O. J. Janson, N. H. Joy, E. C. Joy, Dr. Jordan, Messrs. J. H. Keys, W. F. Kirby, W. J. Kaye, J. W. Lucas, R. W. Lloyd, Dr. G. B. Longstaff, Messrs. H. Main, G. Meade-Waldo, Guy Marshall, Claude Morley, Rev. F. D. Morice, Dr. G. Nicholson, Messrs. G. T. Porritt, H. Rowland-Brown, R. Stenton, E. A. Smith, W. Sheldon, R. South, R. S. Standen, E. Step, W. E. Sharp, H. A. Sauzé, B. H. Smith, J. R. le B. Tomlin, Henry J. Turner, A. E. Tonge, C. O. Waterhouse, E. A. Waterhouse, Commander J. J. Walker, Rev. G. Wheeler, etc. The host, in accord with custom, proposed the health of the "Entomological Club," and in doing so referred to the losses which the ranks of entomology had sustained during the past year, particularly mentioning the death in the early part of the year of Mr. Edw. Saunders, and the quite recent and most regrettable death of Mr. J. W. Tutt. Later in the evening the only other toast, that of "Our Host," was proposed by the President of the Entomological Society, Dr. F. A. Dixey, and responded to in the most hearty manner. In discussing entomological and other matters, a very pleasant evening was passed, and the company finally dispersed at a late hour.

We understand that that most ambitious of newer entomological works, *Seitz's Macro-Lepidoptera of the World*, has been acquired by a new firm of publishers in Stuttgart, and they have promised to issue it more regularly than has been done hitherto. Some seven parts have just come to hand, and although the letter press is condensed to the smallest possible limits, the coloured plates are marvellously well done for the price charged. The usefulness of the work will be immense to the workers in all parts of the world for the purposes of identification. What takes hours, days, nay perhaps is never done, will, when this work is complete, be obtainable by a few minutes search. The more ease with which the identification of specimens is made, the sooner can one get to work at life histories. Such a work is a distinct advance, and its completion will form an epoch in entomology. We wish it success.

After an interval of some thirteen months several further parts of the work *Rhopalocera Palaearctica* by Mr. Verity, of Florence, have just

come to hand. Twelve of the nineteen plates just issued are reproduced in black and white from the actual specimens, and have come out extremely well. Most of the plates previously given have been coloured by a special process which has not always given irreproachable results. The remaining seven plates with this issue, show the scale arrangement on the wings of various species of the genus *Parnassius*, and in many instances are characters of quite specific value.

Mr. J. H. Wood announces (*Ent. Mo. Mag.*) a species of *Anthomyza*, *A. bifasciata*, as new to science. It was taken in a restricted swampy locality near Hereford in August last by sweeping.

We have just looked through the Noctuid portion of the collections of the late Mr. J. W. Tutt, upon which his work, *British Noctuae and their Varieties*, was based. It struck us as being in remarkably good condition. The series are very long, especially of those species where the variation is considerable. In nearly all species the variation is indicated in a double way, primarily in accordance with the varietal nomenclature detailed in the above work, and subordinately in geographical sets of specimens. In fact a great feature throughout the collection is the prominence given to local and general variation as distinct from aberration. Most of the type forms and series of the Noctuid variations established by Mr. Tutt, are contained in that part of the collection to be first dispersed.

We understand that the interesting and beautiful collection of British *Lycaenidae* made by the late Dr. G. G. Hodgson, of Red Hill, and arranged for the express purpose of attempting to illustrate, and, if possible, elucidate, the intricate relations and the origin of colour variation in the family, has been offered by his sister, Miss G. E. Hodgson, to the Trustees of the British Museum (Nat. Hist.). It has since been ascertained that the gift has been accepted, and that the collection will not be absorbed in the general collection, but kept intact, which proviso is of course essential, considering the aim with which the specimens had been selected and arranged.

In view of the special "Tutt" number of *The Entomologist's Record*, to be issued either in April or May, we should be pleased to include short items of interest from many contributors, if sent to us without delay. Besides a portrait of our late editor, we have, through the kindness of Prof. Chas. Blachier, of Geneva, the permission to reproduce a photograph of him taken last summer, net in hand, in the famous collecting ground at Versoix, near Geneva. Among those who have already sent us contributions, or have promised them, are—Prof. W. Bateson, F.R.S., Mr. G. T. Bethune-Baker, Prof. C. Blachier (Geneva), Rev. R. Ashington Bullen (S.E.U.S.S.), Dr. Malcolm Burr, Rev. C. R. N. Burrows, Dr. T. A. Chapman, Mr. H. St. J. K. Donisthorpe, Mr. Stanley Edwards, Herr M. Gillmer, Rev. Stewart Headlam (L.C.C.), Prof. Selwyn Image (Slade Prof. Oxford), Mr. Oscar Ion (Russia), Mr. W. J. Kaye, Mon. L. F. Lambillion (Belgium), Messrs. E. Merrifield, P. A. Muschamp, H. E. Page, G. T. Porritt, L. Beethoven Prout, Alfred Sich, Hy. J. Turner, Rev. G. Wheeler, etc., etc.

Looking through the earlier volumes of *The Entomologist's Record*, we notice the large number of valuable short notes which were contributed by many of our subscribers. Of late these have fallen off very considerably in numbers. This we regret, and hope that such records may soon again become as strong a feature as of old. Surely numbers

of our readers have short notes of observations and experiences from the past season, which are of more than personal interest. Even of the commonest species there is often a great deal of life history yet unwritten and unknown.

From Mr. R. S. Bagnall, F.E.S., we have received copies of reprints of articles contributed by him to the *Journal of Economic Biology*, and to the *Transactions of the Nat. Hist. Soc. of Northumberland, Durham, and Newcastle-on-Tyne*, on the subject of the *Thysanoptera*. From the former Journal we have *Notes on some new and rare Thysanoptera (Terebrantia): with a Preliminary List of the known British species*. He describes the following species as new to science, all having been discovered in the British Isles:—*Frankliniella breviceps*, from Acton, *Amblythrips ericæ*, from Ravenscar, Yorks, *Oxythrips brevicollis*, from the same place, *Bagnallia agnessæ*, from Gibside, co. Durham, and *B. halidayi*, from near Chingford. At the same time he records the following species as new to Britain:—*Enthrips pallipennis*, from Hart, co. Durham, *Oxythrips brevistylis*, from various places in Northumberland and Durham, on flowers of pine, *Thrips albopilosus*, from Nethy Bridge, Inverness-shire, on juniper, and *T. validus*, from Gibside. The List of British species contains the names of 74 species, exactly double the number recorded many years ago by Haliday, who, up to the present time, was the only serious student of this "neglected," but economically important order. The second reprint contains descriptions of two species new to science, both first met with in the Derwent Valley at Gibside, etc., viz.:—*Tricothrips propinquus* and *T. longisetis*. We also note that in the *Annales de la Société Entomologique de Belgique*, recently received, Mr. Bagnall contributes a series of notes on various continental species of *Thysanoptera*. Mr. Bagnall urges his friends to send him further material from all parts, but he would especially welcome it from the South of England, where, he is convinced, many new forms await discovery.

In the same *Annales*, dated February 3rd, we notice a somewhat strong criticism of the work of one of our best known Hemipterists, Mr. W. L. Distant, written by Mr. E. Bergroth.

SOCIETIES.

ENTOMOLOGICAL SOCIETY OF LONDON.—*Wednesday, February 1st, 1911.*—Mr. G. T. Bethune Baker in the chair. NOMINATION OF PRESIDENT.—It was announced that the Council had nominated the Rev. F. D. Mörice, M.A., as President for the current year. SPECIES OF THE GENUS *HELICONIUS*.—Mr. W. J. Kaye exhibited several species of this genus from Eastern Ecuador, including the forms *rubripicta*, *adonides*, and *feyeri*, with streaked hindwings. He observed that it seemed now to be possible and even likely that *H. melpomene aglaope* would eventually be proved to be linked with *H. plesseni* through these newly discovered forms, and that this species would then have to be sunk as a subspecies of *H. melpomene*. Similarly, *H. notabilis* through *ilia* and *feyeri* was probably only a subspecies of *H. crato*, though the material was insufficient at present to form a conclusion. *TACHYPORUS FASCIATUS*.—Dr. Nicholson showed two specimens of *Tachyporus fasciatus*, nov. sp., taken at Wicken Fen from under sedge-refuse, the one in April, the other in August, 1910. This species is intermediate between *T. solutus*, Er., and *T. chrysomelinus*, L. It differs from the former in the shape of the antennæ, which are of the same length, but

are not thickened towards the apex; by its finer punctuation throughout; by the pronounced broad black band on the elytra; and by the fact that the marginal bristles of the elytra are long and stout, as in *T. chrysomelinus*, and not short and fine, as in *T. solutus*. VARIATION IN *LUPERINA GUENEELI*.—Mr. Hy. J. Turner exhibited several very interesting forms of the little known species *Luperina gueneei*, sent to him for examination by Mr. Murray of St. Anne's-on-Sea, Lancashire, including two new aberrations, *viz.* (i) ab. *murrayi* (n. ab.), named after its captor, which is quite typical *L. gueneei* in texture, shade of colour, and in markings, with this very marked difference, that the submarginal area, between the dark marginal lunules and the submarginal line, is much paler than any other portion of the wing, throwing out by contrast these dark lunules very conspicuously. In the worn specimen this feature was even more apparent than in the perfectly fresh example. In var. *bacteri* this same area instead of being lighter or uniform with, is distinguishably darker than the general wing colour. (ii) ab. *fusca* (n. ab.), of which three specimens were exhibited, which are undoubted *L. gueneei* in all their characters but depth of colour; these are believed to be the first melanic specimens which have been so far obtained. All the markings are much intensified, the ground colour is much darker than in typical examples, very dark grey with, in a good light, faint flushes of a ferruginous tint. The contrast between ground colour and markings is very much stronger than in any of the other forms. In the worn specimen of this form this contrast appears almost equally strong. There is no trace of the "ochreous tinge" of the type nor of the typical "pale grey ground colour." VARIETIES OF COLEOPTERA.—Mr. Champion exhibited on behalf of Mr. J. H. Keys the black variety of *Athous haemorrhoidalis*, F., from Dartmoor, recorded by the latter in the *Ent. Mo. Mag.* xlvii., p. 262; and also a red variety of the ♂ of *Agabus bipustulatus*, L., from the same locality. POLYGONIA C-ALBUM, VAR. HUTCHINSONI IN THE 2ND BROOD.—The Rev. A. T. Stiff, who was present as a visitor, was introduced by Dr. Chapman, and exhibited some 2nd-brood specimens of the var. *hutchinsoni* of *Polygonia c-album*. He remarked that they were bred from Wye Valley larvæ, received from Mr. L. W. Newman, F.E.S., September 24th, 1910. The vars., including three intermediates, emerged on October 16th, 19th (three), 20th, 21st (two), 22nd, 23rd and 26th, 1910. It is believed that there is no record of var. *hutchinsoni* having been bred in the 2nd brood of *c-album*. Mr. Newman writes: "I have bred thousands of *c-album* of the second brood in various years, and never one *hutchinsoni*, and I have never heard of any one else doing so." Mr. Rowland-Brown and the Chairman both observed that on the continent they had taken hibernated specimens of *P. c-album* of the *hutchinsoni* form. PAPERS.—Dr. O. M. Reuter communicated a paper entitled "Bryocorina nonnulla Aethiopica descripta ab. O. M. Reuter et B. Poppius."—Col. Manders sent a paper, which was read by Com. Walker, entitled "A factor in the production of mutual resemblance in allied species of butterflies," which was the subject of some criticism from Dr. Chapman and Mr. G. A. K. Marshall. Mr. Merrifield added a few observations with regard to the comparative immunity of Pierine butterflies from the attack of birds. VOTE OF CONDOLENCE.—A vote of condolence with the family of the late Mr. J. W. Tutt was moved from the Chair, all the Fellows present signifying approval by rising.

LANCASHIRE AND CHESHIRE ENTOMOLOGICAL SOCIETY.—*January 16th, 1911.*—AGROTIS CURSORIA AND ITS VARIATIONS.—Mr. W. W. Mansbridge opened a discussion on *A. cursoria* which was continued by Mr. T. Baxter, of St. Anne's-on-Sea, Mr. F. N. Pierce, and other members. Mr. Baxter brought his fine varied series of *cursoria* for exhibition, which included some very rare forms, as well as the commoner vars. *brunnea*, *ochrea*, *sagitta*, *caerulea*, *costa-caerulea*, and *obsoleta*. Mr. W. W. Mansbridge also brought a varied series from St. Anne's. At Wallasey and Crosby, *A. cursoria* is of extremely rare occurrence and, though still common on the North Lancashire sandhills, it is not nearly so abundant as was the case some twenty years ago, owing to the encroachments made by builders and golfers upon its haunts. Mr. Baxter said, that having given particular attention to the matter, he had never seen the ordinary mottled form *in coitū* with the streaked form *sagitta*. He suggested that there might be two species in collections under the same name; he had seen many pairs in copulation during the last season, but they were always of similar varieties.

LARGE CALIFORNIAN POMPILID.—Mr. George Arnold brought *Pepsis formosus* from California, locally called the "Tarantula Killer," together with our largest British Pompilid, *Salix fuscus*, for comparison, also *Anomma burmeisteri*, ♂ and ♀, the "Driver Ant," from Central Africa.

THE BIRMINGHAM NATURAL HISTORY AND PHILOSOPHICAL SOCIETY.—*November 21st, 1910.*—ENTOMOLOGICAL SECTION.—Mr. G. T. Bethune-Baker, President, in the chair. TERATOLOGICAL SPECIMEN, ETC.—Dr. Beckwith Whitehouse exhibited a round-winged deformity of *Eugonia polychloros*, and eighteen specimens of two varieties bred from larvæ from the New Forest, 1910. Also the following:—*Nemeophila sanio* (*russula*), *Sesia scoliaeformis* (Rannoch), *S. spheciformis*, Fb. (Tilgate Forest), *S. andrenaeformis* (W. Kent). PYRALES.—Prof. E. Wace Carlier, series of *Herminia cribralis* and *livula sericealis*, both from Brundal Marsh, Norfolk. ASILIDÆ.—Mr. G. T. Bethune-Baker, a predaceous Asilid taken with a specimen of *Lycaena semiargus* on its proboscis. The food of the *Asilidae* consists chiefly of *Diptera*, but they have been known to prey on Coleoptera, and the above observation is of additional interest.

THE SOUTH LONDON ENTOMOLOGICAL AND NATURAL HISTORY SOCIETY.—*January 23rd.*—ANNUAL MEETING.—The Report of the Council was adopted. It stated that the membership stood at 164, and that the average attendance at the 23 meetings was 33. The volume of *Proceedings* published consisted of 150 pages, with 13 plates, and was the most attractive that the Society had produced. The following is a list of the members elected to fill the offices of the Society for the ensuing year:—*President*:—W. J. Kaye, F.E.S. *Vice-Presidents*:—A. Sich, F.E.S., and A. E. Tonge, F.E.S. *Treasurer*:—T. W. Hall, F.E.S. *Librarian*:—A. W. Dods. *Curator*:—W. West (Greenwich). *Hon. Secretaries*:—Stanley Edwards, F.L.S., F.Z.S., F.E.S. (*Corres.*), and Hy. J. Turner, F.E.S. (*Report*). *Council*:—R. Adkin, F.E.S., F. W. Cowham, E. C. Joy, F.E.S., R. A. R. Priske, F.E.S., A. Russell, F.E.S., B. H. Smith, B.A., and E. Step, F.L.S.

ADDRESS.—The President, Mr. W. J. Kaye, then read his Address. After dealing with the affairs of the Society, and making suitable references to those who had passed away during the year, particularly to the irreparable loss, not only the Society, but the entomological world, had incurred by the death of a past president, Mr. J. W. Tutt,

he proceeded to the subject of his address, "Neuration in its bearings on the Classification of Lepidoptera." Votes of thanks were then passed to the retiring Officers and Council. *LUPERINA GUEENEI*.—Mr. Turner, on behalf of Mr. Murray, of St. Anne's-on-Sea, exhibited a series of *Luperina gueenei* taken at the above place, including the typical form, the var. *bacteri*, and two new and very distinct forms, one of them with a very pale, almost white, submarginal band, which he was naming var. *murrayi*, and the other several very dark melanic specimens, which he was naming var. *fusca*. SECOND BROOD *POLYGONIA C-ALBUM* VAR. *HUTCHINSONI*.—Mr. Newman, autumn bred specimens of var. *hutchinsoni* of *Polygonia c-album*, hitherto only obtained in the summer brood, they were from the same ♀ as the yellow forms previously shown.

(2) BITUARY.

Gerald George Hodgson died on February 3rd, 1911, in his 51st year. Some dozen years ago he had a very serious illness, and on recovering, went to Queensland to recruit, and returned to England in 1901. Since that he has lived in Redhill, but though active and laborious, his health does not seem to have always been satisfactory. Son of a Surgeon and Aurist, of Brighton, he entered the Medical Profession as M.R.C.S. and L.S.A.

Dr. Hodgson was one of our more thoughtful entomologists, he was very keen in the field, and always in search of variations, not for the sake of valuable specimens, but to elucidate by observation in their natural environment and in the cabinet, the precise value and meaning, both of the variations and of the normal forms. His observations were made chiefly on the butterflies of our Southern Counties, but he also went further afield, having collected even in Queensland.

Unfortunately, he published very little on his observations, but two papers read before the City of London Entomological Society in 1908 and 1909, are worthy of much wider recognition than they are likely to obtain in the Transactions of that Society.

The first deals with "The Effect of Climatic Conditions on Sexual Dimorphism," and in the volume for 1909, just published, the paper is ostensibly a claim to more attention being given to the undersides of butterflies, instead of so commonly chiefly to the upper. Really it is an analysis of many tendencies to variation affecting the undersides, and calling attention to various points somewhat overlooked by our usual authorities on this subject, such as that the portion of the under surface of the upperwing hidden during rest and sleep, being less restrained by the necessities for a protective facies, is much more variable than the rest of the wing.

Dr. Hodgson will be remembered at the City of London and South London Societies for his exhibits of blues, of bred *M. aurinia* from many localities, and of black forms of *Anthrocera trifolii*. We learn that his collection of "blues" illustrating parallel variation in allied species may be placed in the British Museum (Nat. Hist.). He was not an entomologist only, but devoted a great deal of attention, amongst other things, to the bionomics of our native orchids, especially in their seedling conditions. His coloured drawings, both of butterflies and flowers, beyond scientific accuracy and technical proficiency, showed that he possessed much artistic feeling, as displayed in the composition and balance of his pictures.—T. A. C.

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Papers, etc., from Messrs. G. T. Bethune-Baker, G. Wheeler, J. E. R. Allen, T. A. Chapman, the late J. W. Tutt, and Dr. Burr, with several short notes, and Society reports are unavoidably held over.

The April number will probably contain a plate of structural details of *L. gueneei*, etc.

It has been decided to make the May number a special "Tutt" number, containing portraits, an obituary, contributions from various well-known entomologists "As I knew him," criticisms of his work from Continental as well as British writers, items of interest, excerpts from various magazine and newspaper notices, etc., and a complete bibliography of his writings.

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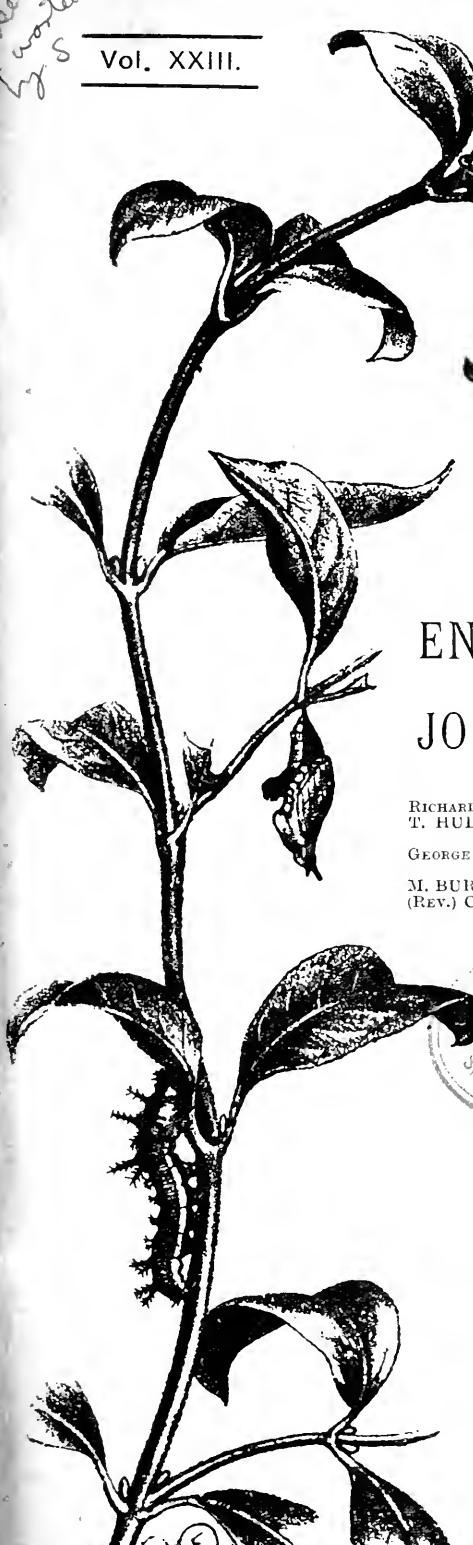
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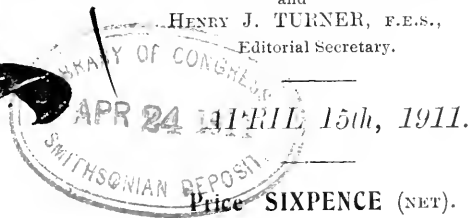
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As I stated in my notes on the Hospenthal district (*antea*, p. 10), it was with the object of seeing *Erebia christi* in its special haunts that I went on from the Rhone Glacier down to Brigue, and took train through the tunnel to Iselle. Here I detrained, and walked up the wonderful Gondo Ravine. I should have been glad to have been able to spend the day in the Iselle portion of the valley, or, at least, between there and Gondo, but inasmuch as *E. christi* was my object, a few hours only were devoted to the insects and lovely wildnesses of this fascinating spot. I had not got out of range of the fortifications before a pair of bright and strongly marked *Melitaea didyma* came one after the other within range of my net, and were taken prisoners, then another, a male, came along and shared the same fate. In a minute or two I was glad to again make the acquaintance of *Syntomis phegea*, of which I took two or three fine large specimens, these were followed by a Skipper, that turned out to be *Erymnis laracerae*, whilst a second, which at first I took for the same species, proved to be *E. althaeae*. *Parnassius apollo* was soon seen coming towards me, and I took some half-dozen specimens as they were large, had very large black spots in the forewings, and were generally perhaps less pale than the ordinary run of Swiss specimens. By this time I had got beyond the jurisdiction of the Italian sentinels, who had a strong objection to my standing still, and who in the politest way indirectly asked me to keep moving, so that for the moment I might have imagined myself in a London or Birmingham crowd after a political disturbance, but so long as I did move, however slightly and slowly, my Italian friends were content. Now, however, I came within sight of the poor little village of Iselle, and as I turned the corner, a big *Argynnis* dashed past, but I was just in time, for a rapid stroke secured a quite fresh male *A. paphia*, this was followed by a worn large specimen of *Melitaea phoebe*: but as I approached the first cottage I was suddenly conscious of a dung heap on my right, at first somewhat out of sight by reason of some herbaceous flowering plants that I did not know, over which a male *Heodes virgaureae* flew lazily and was caught. Immediately, ere this was boxed, I recognised a lovely *Chrysophaeus alciphron* var. *gordius* attracted by the manure, but so alert and rapid in movement that the first one escaped me, but celerity and patience were in the end rewarded with half-a-dozen beautiful specimens, which, however, proved to be of the form *meliboeus* with just a lovely trace of purple gloss on the upper and lower radial areas. *Anthrocera carniolica* var. *hedysari* was then taken on the other side of the village, and close by a darkish *Coenonympha arcania* with rather broader margins than usual. I took also a couple of *Agriades coridon*, for the locality's sake, and a single *P. hylas* further up in the valley shared a like fate, whilst of other species of the group, I only saw *Pliebius argus* (*aegou*) quite typical, and a single worn *P. argyrognomon*, together with one very black *Cupido minima*: I forgot, however, to mention that I took a fine large *Leptosia suavis* var. *diniensis* at Iselle. I call it *diniensis*, for though the underside of the hindwings may not be absolutely white, there is only the faintest trace here and

APRIL 15TH, 1911.

there of sparse grey scales. *Pararge maera* soon put in an appearance, and as I ascended, the valley narrowed yet more, and the mountain sides are so rocky and precipitous that one wonders how the fir trees that clothe their sides keep their foothold and maintain their luxuriance. But ere long, Gondo comes in sight and Switzerland is entered again, the douâne officers do not trouble this wandering enthusiast with only a satchel on his back, and I was glad to enter the hotel, if such we may call it, and do justice to a substantial tea, for it was nearly four o'clock and I had had no food since six a.m., when I left the "Gletsch" hotel for Brigue. I had intended lunching at Iselle, but the inn looked so very uninviting* and the air and scene was so lovely that I preferred to wait, and therefore turned to more ethereal things. Having "refreshed and paid and travelled on," *Aricia astrarche* soon made itself evident, all with only a trace of marginal red spots on the hindwing alone. Here a little *Melitaea* flies across the path and was netted, it turned out to be *M. parthenie* var. *varia*, then the dark velvety *Erebia goante* ventured within reach and was captured, as were others of the same species, these were soon followed by *E. ligea* var. *adyte*, and, with the exception of a single specimen of that interesting black Tineid, *Melasina lugubris*, this completed the afternoon's list of captures, the last of which was taken just by the Gallery of Gondo, through which the road is cut by a long tunnel. So ended my first walk through this romantic valley with its waterfalls, and slaty rocks often overhanging the footpaths, giving the narrow defile wild and entrancing scenes. After a comfortable and well-earned night's rest, the next day was spent in the Laquinthal looking for *Erebia christi*, but alas, the first day without success, for the day was dull at first, though it brightened up later on, and, therefore, in spite of the thundery look, I urged my way on. *Anthrocera purpuralis* var. *nubigena* was the commonest *Anthrocera* in the valley, though I also took *A. jilipentulae* and a single *A. transalpina*. *Brenthis amathusia* then crossed my path and found her way into one of my boxes, and shortly after a male followed her example. The only *Erebia* that put in an appearance was *E. ligea* var. *adyte*, and it was common, as it was nearly everywhere. But ominous rumblings of thunder made me wonder whether it was wise to continue. Once started, however, an Englishman does not turn back easily, and so I went on, taking a fine ♀ *P. macra* and a very dark *Lycæna arion*. Then *Coenonymphe arcania* var. *darwiniana* in both sexes was captured, shortly followed by a quite pale form of the female. At this a brilliant flash and a mighty roar of thunder stopped the excelsior pathway for a moment, and then the heavens opened, and collecting seemed ended for the day. The shelter of a vast overhanging rock was a welcome haven until the fury of the storm was over, when for a while it brightened, and later, terminated in sunshine. As I stood enraptured at the clouds with all their strange forms along the mountain sides, my eyes bent earthwards, and I saw *Cupido minimus* creeping up a grass stem. Then *E. ligea* var. *adyte* after *adyte* did likewise, and opened their wings to the welcome rays; but alas, too soon, for the clouds soon filled the valley again, and the thunder echoed and

* The "Hotel du Tunnel" really is (or was a short time ago) a very good place for a meal, and quite possible for a sojourn.—G.W.

re-echoed among the hills, and the forked lightning ran like a line of liquid fire here and there, whilst the rain again descended. I did likewise, and arrived at the "Weissmies" Inn fairly well wet through, but having enjoyed my first experience of the Laquintal thoroughly. The following day was fine but cooler, and I was up betimes and ready for a good long day and for an intended exploration of the top end of the valley. *Plebeius argyrognomon* soon greeted me, as also did *P. argus* (*aegou*), then a single very dark *C. minimus*, with scarcely any spots at all on the underside of the hindwings; then another as large as any *C. sebrus* I have seen. *Cyaniris semiargus* also soon turned up, whilst *Erebia ceto* and *E. tyndarus* also put in a not infrequent appearance. A curious incident occurred with the former, one of which I swept off a flowerhead, and when some hours later (wanting a large box, into which I remembered I had put the *E. ceto*) I looked it up among the others in my satchel, to my surprise I found it had no head at all, nevertheless, at the unwelcome interruption it flapped so vigorously that I returned it to the darkness of a remote corner of my satchel again, and when I turned it out into my cyanide bottle some eight hours later, it was still able to fly, and moved about with some power. As I came towards the end of the valley, *Oreana alpestrals*, the liveliest and the prettiest of the genus we used to call *Hercynia*, gave me a chance, which I was glad to secure, then *Crambus conchellus* and *C. dunnettus* were netted, soon to be followed by *C. radiellus*. After these *Fidonia atomaria* in both sexes insisted on being caught, and at the very end of the valley I was glad to obtain a dark female *Crambus zermattensis*. *Erebia ceto* and *E. tyndarus* were both fairly common, and *Oeneis allo* also turned up in a very battered condition; but where was *E. christi*? In despair I began to climb along by the waterfall, and before I had gone far an *Erebia*, with a somewhat different flight, scarcely gave me a chance, but ere long a second turned up, and this time I was on the alert, and secured my first specimen of the coveted insect. I did not rest until I had secured more, but they were few and far between, and I was evidently not in their most favoured locality. I was fortunate in meeting at the "Weissmies" Mons. L. Rehfoos, who, finding we were colleagues in the Geneva Entomological Society, was most kind in giving me information about the district, which he has worked with so much success for many years. The following day I walked over the Simplon to Bérisal for a more lengthened stay, as there was much I wanted to do in that favoured and lovely place. I believe I omitted to say that *Pieris napi* var. *bryoniae* occurred sparingly, as also did *Colias phicomone*, but this was the only *Colias* I saw here.

The Specific Distinctness of *Oporabia christyi*.

By J. E. R. ALLEN, M.A.

In a paper in the *Entomologist's Record* for April, 1906, I gave reasons for regarding *Oporabia christyi*, Prout, as a species distinct from *O. dilutata*. Recently a distinction has been discovered by Mr. F. N. Pierce, which appears to separate the two species in the male sex with mathematical certainty. I propose to describe Mr. Pierce's distinction and the experiments by which I have tested it.

On the underside of the 8th abdominal segment, on the posterior margin of the segment, are two points or projections. The distinction between the species lies in the distance between these points. In *O. christyi* the distance varies from (approximately) .12mm. to .30mm.; in *O. dilutata* it varies from (approximately) .35mm. to .51mm. Perhaps the examination of a large number of specimens would somewhat extend these limits. At any rate it seems safe to say that any specimen in which the distance is less than .33mm. will be *O. christyi*, and any in which it is greater will be *O. dilutata*.

The material for my first experiment to test this distinction consisted of a number of specimens of both species, captured near Enniskillen last autumn. I first assigned the specimens to their respective species by the wing-markings, which are in themselves a satisfactory criterion to anyone properly acquainted with the two species. I then detached the abdomen from each specimen and mounted it on a double slip of white paper, writing on the inside of each slip a number to correspond to the number on a ticket attached to the pin of the specimen. The number on the mount was thus invisible to me when I was examining the abdomen. I then mixed up the different abdomens, and wrote on the outside of each slip a number independent of the one written on the inside. My object was to try whether I could determine the species of each abdomen without reference to the wings. I next examined each abdomen under the microscope, and recorded the distance between the points. In this work I had the assistance of my colleague Mr. W. N. Tetley. We each independently examined each abdomen, and in the few cases where we disagreed we split the difference. A few specimens were rejected because we could not make out the points to our satisfaction, owing probably to damage in mounting. I may mention that Mr. Tetley is an experienced microscopist, but not an entomologist, and is quite unable to distinguish *O. dilutata* and *O. christyi* by ordinary means. It was evident to both of us that the measurements fell into two groups separated by a decided interval. In one group, consisting of eighteen specimens, the distance ranged from .12mm. to .30mm., and in the other, consisting of eleven specimens, from .36mm. to .51mm. After recording the measurements I looked at the original numbers inside the doubled slips, and found that every specimen in the former group was *O. christyi*, and every one in the latter group *O. dilutata*. The measurements may be tabulated thus—

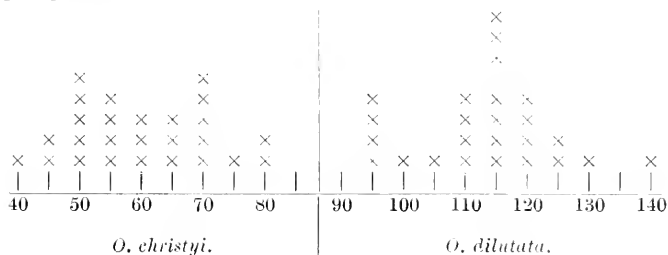
<i>O. christyi.</i>			<i>O. dilutata.</i>		
NO. OF SPECIMENS.		DISTANCE OF POINTS.	NO. OF SPECIMENS.		DISTANCE OF POINTS.
1	..	.12mm.	2	..	.36mm.
1	..	.16mm.	1	..	.39mm.
1	..	.18mm.	1	..	.40mm.
3	..	.20mm.	1	..	.43mm.
2	..	.21mm.	2	..	.44mm.
1	..	.22mm.	2	..	.46mm.
3	..	.23mm.	1	..	.47mm.
1	..	.25mm.	1	..	.51mm.
2	..	.26mm.			
1	..	.29mm.			
2	..	.30mm.			

The average distance in *O. christyi* is between .22mm. and .23mm., in *O. dilutata* about .43mm.

The same measurements are shown in the following diagram, in which each × represents one specimen, and each division in the scale .01 of a millimetre:—



In further experiments I did not think it necessary to conceal from myself the species of each specimen examined. I examined 8 more specimens of *O. christyi* and 15 more of *O. dilatata*, bringing the total number of each species up to 26. Among the *O. dilatata* were some from the south of England. Further, as *O. christyi* is a somewhat smaller insect than *O. dilatata*, I thought it necessary to denote the measurement in each case by its ratio to some other measurement of the specimen. For this purpose I selected wing-expanse, and for convenience in handling the numbers, I multiplied the ratio in each case by 10,000. Thus in a specimen having the distance between the points .39mm. and wing-expanse 41mm., the ratio would be $\frac{39}{41}$ or .0095, but would be represented by 95, which I will call the index of the specimen. In *O. christyi* the index varied from 40 to 81, and in *O. dilatata* from 95 to 141. In the following diagram each division in the scale represents a difference of 5 in the index, smaller differences being neglected.



An examination of some hybrid *dilatata* × *christyi* gave further confirmation of the distinction. Twelve specimens were examined, all bred from pairings obtained in captivity by myself. In eleven specimens the distance between the points varied between .30mm. and .35mm., thus bridging the gap between the two species. One specimen gave a measurement of .26mm.

The distinction may be observed without removing the abdomen, and in favourable cases an ordinary pocket lens is sufficient, but a higher magnifying power is desirable, as the points cannot always easily be distinguished. The observer should hold the specimen in a good light, underside upwards, tail pointing away from him. He should then take a small camel-hair brush, and brush downwards, *i.e.*, towards himself, the hairs on the margin of the 8th segment. The points will thus be exposed, and may be examined under a pocket lens, or the specimen may be laid on the stage of a microscope. For determining the species, accurate measurement is not necessary. With the points properly exposed one can tell at a glance whether they are near or far

apart. Roughly speaking, it may be said that if the distance between the points is more than one third of the width of the abdomen, the specimen is *O. dilutata*: if less than one third, *O. christyi*. In the sketch below, fig. 1 shows the terminal segments with hairs undisturbed; figs. 2 and 3 show the terminal segments with hairs brushed back exposing the points, far asunder in fig. 2, *O. dilutata*, near together in fig. 3, *O. christyi*.



Fig. 1.



Fig. 2.



Fig. 3

Some further Notes on the Life-History of *Lycæna arion*.

By The HON. N. CHARLES ROTHSCHILD, M.A., F.L.S., F.E.S.

Since the appearance of our first note on this species in this year's *Entomologist's Record*, Mr. Herbert Ashby has forwarded some remarks which seem to demand further investigation on the lines he indicates. Mr. Herbert Ashby has pointed out that it is possible that the young larvæ of *L. arion*, after their third moult, feed on the nodules which are formed on the roots of furze, and other *Leguminosae*. If this be so, the absence of furze in many localities where this insect occurs would be immaterial, as other leguminous plants grow there. The idea would naturally suggest itself to investigators, that the young larvæ might possibly burrow in the dehisced seeds of furze or some other leguminous plant, but this is apparently not the case, as minute search has so far failed to detect them, it is, however, just possible that they may have been overlooked.

Lepidopterology.*

We have in English no single word to express the study of the Lepidoptera, and the sooner we adopt the word "Lepidopterology" the better. The word is as good English as French, and since its adoption some years ago by M. Oberthür, it must have become quite an ordinary French word. We place it, therefore, at the head of this communication.

The *Entomologist's Record* assumes as an alternative title, the "Journal of Variation," but an examination of its contents hardly justifies its claim to do so.† If we turn, however, to M. Oberthür's *Etudes de Lépidoptérologie Comparée*, we find a magnificent work,

* *Etudes de Lépidoptérologie Comparée*, par Charles Oberthür, Fasc. iv., p. 691, pl. 30, and Fasc. iv. bis, p. 47.

† We most strongly dissent from the statement made by our worthy colleague. Even a casual investigation of the contents of the previous twenty-two volumes of the *Record* will prove the contrary.—H.J.T. and G.W.

incomparably executed, that is a real Journal of Variation, a work whose object is the discussion of "Hybridisations, geographical variations, and the laws that govern the production of aberrations."*

Not the least claim to our admiration is the obedience of the author to a proposition which he reiterates in the preface of the third fascicule, "Unless the description is supported by a good figure, a name shall not be valid." We would enlarge this so far as to ask for figures of structural details, in all difficult and critical cases.

M. Oberthür says that the greater his experience the more does he regard it as indispensable to accompany a description by a good figure, in order to render it intelligible. Those, he says, who, considering the cost and delay attending the production of plates, persist in piling up in the Magazines a heap of crude descriptions, illustrated by no figure, are not merely doing a barren work, but they are creating difficulties and obscurities which seriously obstruct the progress of our cherished studies. He fortifies this position by many facts and considerations that we have no room to reproduce. He quotes the case of Guenée, who most honestly confessed, that having mislaid the type of a species described by himself, he could not tell whether further specimens belonged to it or not. How abundantly we find cases where a monographer experiences insuperable difficulties when he cannot see or find the "type," and how constantly he insists on seeing it if possible. In every instance this is an assertion of the futility of descriptions, and not seldom of the inaccuracy of figures. M. Oberthür is to be congratulated on having obtained the assistance of M. J. Culot, in the production of the plates of Fasc. iii. and Fasc. iv. M. Culot's work both here, in the *Iconography of the Moths and Geometers of Europe*, and in the *Bulletin* of the Geneva Society, are quite the acme of lithographic illustrations, and so uniformly good are they that we cannot select one for greater admiration than the others.

The dedication of *Fasc. iv.* to his dear grandson is very touching, and must appeal to many another reader. The delicate picture he draws of the search for *L. aegon* by himself and his grandson in the previous summer, and of their enjoyment of the picturesque scenery they explored, have a charm that could only be achieved by that subtle genius for expressing delicate phases of artistic feeling that is a rare endowment on this side of the Channel. His pious reference to the way in which his grandfather, half a century ago, made him an Entomologist, and his hope that his grandson will pass on to his unborn descendants the family tradition, are of great interest biographically, and show us our great French Lepidopterist not as a mere sporadic phenomenon, but as a normal, if highly developed, example of a race devoted to the study and admiration of nature, and possessed of a devout veneration for all that it implies.

He quotes from Linnaeus "Finis Creationis Telluris est Gloria Dei," as embodying his own views, as well as those of his forbears. With him will agree all students and lovers of nature, and few will think it necessary to interpret it in any narrow sense.

Fasc. iv. continues the notes on the French and Algerian fauna with the species of *Coenonympha* not included in *fasc. iii.*, and goes on

* Preface to *Fasc. i.*

through the Lycænids and Hesperids. Then he passes on to the Zygenas, and has some further addenda on species already treated.

The British and other forms of *C. pamphilus* and *tiphon* are fully discussed, and references made to various British authorities.

In regard to *Hamearis (Nemeobius) lucina*, Dr. Reverdin is quoted as observing it in August, and M. Oberthür raises no doubt as to this fact implying that the specimens so observed were a second brood; in upland districts we have seen *lucina* very late in the season, just as in similar localities *Callophrys rubi* may be seen in August, but until in such a locality an earlier brood with a definite absence in the interval is observed, we feel obliged to regard all such observations as merely showing how late the species may be under some conditions.*

Under *Thecla pruni* we find an appreciation of the work of Roesel von Rosenhof, which others have attempted before, and which will probably be repeated not seldom in the future. He cites Guenée's remark in the *Noctulites* that it is the first work containing plates of real value, and his figures are still, notwithstanding their early date (1746-1761), unrivalled. To this Oberthür adds: "If we compare Lang's figures (1884), or even Barrett's, in lithography published since 1893, or again those of Seitz of the present day, with the figures engraved by Roesel in the middle of the eighteenth century at Nuremberg, or by Sepp at Amsterdam, how vast appears the superiority of the old masters." He then rejoices most deservedly in the talent for entomological portraiture that M. Culot, his collaborator, possesses. M. Oberthür tells us, as a matter of sympathy with Roesel, that his own grandfather was, like Roesel, a portrait-painter.

Under *Callophrys rubi* he expresses his regret that some butterfly-lovers have the commercial instincts so strongly developed that their satisfaction in their captures varies according to their market value, and who therefore despise *C. rubi*. There are, however, others, he says, "grâce à Dieu," whose aim is the patient and careful study of nature. These pay more attention to the commoner species, which afford more abundant material for research. Sometimes this meets with an unexpected reward, as when such a really sensational discovery as that of *C. aris* occurs, or when a species like *Pieris manni*, heretofore neglected as a form of *P. rapae*, is found to be a quite distinct and definite entity.

Under the name of *hippotoë*, Linné, there is a very full account given of the species we know as *C. dispar*. A form as large and fine as *C. dispar* used to be found near Saint Quentin, in the department of the Aisne, and details are given of exhaustive searches recently made by Mr. H. Powell and others to re-discover it, but with the result that it must be admitted that, like *C. dispar*, it is now extinct. Many pages are devoted to the records of *C. dispar*, taken from Barrett and other English authors. An interesting observation is made *à-propos* of the

* It is beyond the possibility of question that *H. lucina* is partially double-brooded in the South. Even if Mr. Tutt's record from Grésy-sur-Aix at the end of July is possibly a late emergence in an "upland" locality, Dr. Christ's in August at Lecco, and Miss Fountaine's at Olgiate in September cannot possibly be regarded as such. How late and how high does *H. lucina* occur? In many years hunting in Switzerland I have never found it later than June, nor seen or heard of it much over 3000ft. Where again may *C. rubi* be seen in August? I have taken it abundantly on June 4th at nearly 7000ft.—G.W.

figures of *dispar* made by Dumesnil, which were coloured on one half only, with the intention that the engraver and colourist should produce both sides by duplicating the one given, and the same device had been used with other species. This is based on the idea that both sides are absolutely identical. This is true in certain cases, but in others it is far from being so, and he has observed in his previous works that not a single example of *Cydimon*, *Urania*, *Chrysidia*, etc., has both sides alike. Boisduval, in the *Faune Entomologique de Madagascar*, figures *Urania ripheus* as perfectly symmetrical, his artist having drawn only one side, and Guenée, in his *Uranides et Phalénites*, makes no note of this lapse, although usually so careful and so attentive an observer of minute facts.

Under *Lycaena tiresias*, Esper, is a full discussion of *L. argiades*. The names *argiades* and *amyntas* are sunk as belonging to descriptions that may denote anything, and are therefore void, whilst Esper figures *tiresias* so that it can be recognised with confidence.

This is a vigorous application of the author's opinion already quoted; whether the recognition of *argiades* from the description is so hopeless we are not prepared to decide.

With regard to *L. aegon*, he gives this name to the *argus* of Staudinger's *Catalogue*, and *argus* to Staudinger's *argyrognomon*. The confusion between these names (not between the insects themselves) is thus left for further fighting out. It seems to be a case in which all rules as to priority or anything else should be defied if necessary in favour of certainty. Call our British species *aegon* (as Oberthür does), as that name has never been given to *argyrognomon*. Call the other *argyrognomon*, a name that has never been given to *aegon*, and abandon *argus* as having been for long, and likely to be for much longer, unless it is dropped, a source of endless confusion. Let the rules be placated by saying, what is the fact, that any certainty as to what *argus* really is, is impossible. The discussion of these two species runs through forty pages, and covers bibliography, variation, and many other points, and includes a full report of Mr. Tutt's exposition before the Entomological Society, on March 17th, 1909.

The varieties that are described of *Lycaena agestis* (*Aricia astrarche*) should afford useful material for Tutt's *British Lepidoptera*, as it falls to be next considered. *L. arion* is also treated with some fullness.

The interesting discussions of the Skippers and Burnets do not contain much matter of interest to the purely British Entomologist, unless fourteen pages on *Z. achilleae* discussing its variations should do so, though its distribution with us is too restricted for it to present such wide variation as it exhibits elsewhere. The accounts of *Z. trifolii* and *Z. lonicerae* are also of some English interest, and the account of J. C. Schaeffer, born in 1718, and of his *leones* deserves mention. *Z. filipendulae* occupies another fourteen pages, and a space is accorded in the addenda to a translation from Tutt's *British Lepidoptera* concerning *Polyommatus dispar*.

We cannot reproduce any of the thirty magnificent plates in this volume, and yet any account of the book without some such indication of its richness in this direction is manifestly defective. Probably those most attractive to the British collector would be those of the varieties of *L. aegon*, of *argus*, *icarus*, and other *Lycanids*. Much of the pleasure of looking at these plates, is in realising that the figures

are so perfect, that having seen them one hardly requires to see the insects themselves, but human nature is so contradictory, that the desire to see the actual specimens is really much increased.

The *Fascicule* iv. *bis* is of larger size (4to), to accommodate many excellent text figures of the African Saturniids of the *Bunaca* and *Nudaurelia* groups, in order to bring together figures of species that at present are often rather inaccessible.

It also contains a further portion of the "Notes" on the French and Algerian Fauna, and deals with *Anthocaris falloui*, giving photographs of the larvæ on the foodplant (*Capparis droserifolia*), of the foodplant as it grows, and of the country in which the insect flies. M. Oberthür says, "English Lepidopterists have already published various photographic views of their hunting grounds. Further, they have reproduced, by photography, the scenes of butterfly life. I find it an excellent idea, and will endeavour to follow the good example given by our brethren across the Channel."—T.A.C.

What is *Polyommatus ariana*, Moore?

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

[Note:—The following paper was originally written for Tutt's *British Lepidoptera*, but Mr. Tutt finally decided that, in a case where there was such disagreement between the original description, the original figure, and the type-specimen, the original description must hold good, on the ground that this could not have been altered, while the label on the type specimen might possibly have been changed, and the figure might have been a bad reproduction; consequently, since the original description applied in his opinion more closely to what I have called the *eros*-form, *ariana* was not fully dealt with under *icarus* in the *British Lepidoptera*. Mr. Tutt was, however, very unwilling that the paper should not appear, and wrote to ask for it for the *Ent. Record*, to which of course I readily agreed; but as this account of *ariana* will now be published entirely on my own responsibility, I feel justified in adding the final paragraph, which would not have been written for the *British Lepidoptera*, which rightly and naturally reflected the author's judgment, when he differed from those who supplied facts rather than inferences.]

There is great difficulty in treating *ariana*, Moore, in consequence of the fact, that at least two species have been labelled by him with this name. Six specimens, (three ♂s, three ♀s), from the Moore coll. bearing this name are in the British Museum, the rest are in the possession of Dr. Chapman, who, by examination of the genitalia, has pronounced the one form to be *icarus* and the other *eros*. Even without granting that identity of genitalia (especially in a group in which so much resemblance exists) necessarily involves identity of species, it is at least clear that Moore has called two species by this name, one of which belongs to the *icarus* group (and is probably, from other considerations, to be regarded as a form of *icarus*), and the other belongs to the *eros* group, though its actual identity with *eros* appears to me more doubtful.

Moore's original description (*Pro. Zool. Soc. Lond.*, 1865, p. 504) runs as follows: "*Polyommatus ariana*, n. sp. (pl. xxxi., fig. 2). MALE.—Upperside brilliant blue; anterior margin of hindwing black, inner

margin whitish; cilia broad, white. Underside purple-grey, suffused with metallic greenish-grey at base of hindwing; forewing with a small spot within discoidal cell, another closing the cell, a submarginal discal series of six spots (the posterior, sixth, geminated), black, each encircled with white; a marginal series of ill-defined double whitish spots, the posterior having slight dark centres; hindwing with two basal and a submarginal discal series of seven black spots encircled with white; a marginal row of whitish spots, each centred exteriorly with a dark and interiorly with a reddish spot; a triangular spot in centre of wing, and a streak from middle of exterior margin, whitish. Body white. FEMALE.—Duller lilac-blue, with the exterior margin of both wings brownish. Underside as in male. Expanse of ♂ $1\frac{3}{8}$ in., ♀ $1\frac{1}{2}$ in. Hab. Kunawur.

An abundant species, frequenting pasture- and meadow-land in the summer months, at altitudes of 8,000ft.-10,000ft., alighting on the gentians which stud the green turf."

In the British Museum collection is the type ♂ *ariana*, Moore, labelled "Kunawur, Lang," and bearing a second label in Moore's writing, "*Ariana*, Moore, ♂ type," but the connection with the original figure (*Proc. Zool. Soc.*, 1865, pl. xxxi., fig. 2) is not obvious. It is considerably smaller than the figure, of a less purple-blue, with a far less conspicuous black outer marginal line, and distinct indications of black interneural marginal spots on the hindwing, of which the figure shows no trace; the underside is far lighter, being of a pale brown-grey, whilst that of the figure is dark grey without a touch of brown, and with far less metallic suffusion at the base of the hindwing than the specimen exhibits. The spotting of the two has a widely different appearance, and neither corresponds with the original description. Each has a series of six submarginal spots on the forewing, the last being double, and of seven on the hindwing, those on the forewing agreeing fairly in figure and specimen, except that the dark ground colour of the former makes the encircling white much more conspicuous, whilst those on the hindwing are large and very conspicuous in the figure, smallish and far less conspicuous in the specimen; the marginal spotting of the figure consists of a single (not double) row of conspicuous white blotches, the three lowest, however, having a very narrow white line cut off from the spot by a narrow line of the ground colour, the lowest of these dark lines being nearly straight, the next more arched, and the third V-shaped; the margin of the hindwing is spotted as in the description, except that the spots in the figure are conspicuously white and have not the faintest indication of reddish. The marginal spots of the specimen are obsolescent, and consist on the forewing of a faint single row of pale spots with centres slightly darker than the ground colour, and on the hindwing of an equally obsolescent border of pale spots with darker centres, the four lowest of which show pale yellowish chevrons above the dark dots. The figure shows nothing of the "small spot within discoidal cell," and has no basal spots on the forewing and two (as in the description) on the hindwing; the type-specimen has two basal spots on each forewing, three on the right and four on the left hindwing. The white triangle (*i.e.*, discoidal spot) and streak are, of course, much more conspicuous in the figure than in the specimen. The shape of the two is also different, the figure showing a much squarer insect

than the specimen, the wings of which are longer and narrower, inclining more to the shape of *P. eros*.

With this specimen are placed two other ♂s from the Moore coll., one labelled "Masuri," the other "Ladak, Leb, 6, ix. 73." These are obviously of the same form though a little smaller, and slightly darker on the underside. With them are associated three ♀s from the Moore coll., one of which, labelled "Simla, Lang," has a trace of blue, the second, labelled "Kunawur, Lang," has a few bright blue scales on the forewings, and the third, labelled "Murree, 10, viii. 85," has more blue on the forewings, reaching as high up on the wing as the discoidal spot, and spreading out on each side below it, but not reaching either the base or the orange marginal spots. The nervures, which are of the ground colour, break this up into small patches. The orange spots in all come two-thirds of the way up the hindwing and half way up the forewing, on the former dark spots are enclosed between the orange and the edge of the wing. All come from the Moore coll., and the last is evidently one of those described by Butler, (*Proc. Zool. Soc.* 1886, p. 368), which shows that Moore regarded Butler's view of *ariana* as corresponding with his own. None of these ♀s correspond at all with the original description. All six specimens belong to the *eros* form, and had it not been for the original figure and most of the specimens in Dr. Chapman's possession, I should unhesitatingly have regarded it as belonging to the *eros* group. The figure, however, may well have been taken from one of Chapman's specimens and is of the *icarus* form, and the original description also fits in much more closely with these specimens than with Moore's "type," and corresponds well with most of the Goorais Valley specimens from the Leech coll. in the British Museum. Of these there are seven ♂s and eight ♀s of the *icarus* form; the latter, however, do not at all correspond with the original description of the ♀, and the only specimen which does so is one from Chitral from the Leslie and Evans coll.

Leech (*Butts. China, etc.*, ii., p. 307) remarks: "With regard to *ariana*, Moore, I think there is little doubt that it is the Himalayan representative of *L. icarus*." This is borne out by the Goorais Valley examples, but there is another series of Leech's specimens (seven ♂, three ♀) also labelled "*ariana*, Moore," which on the upperside appear to be *eros*, and one of which is on this side indistinguishable from *eros* of the Simplon Pass, but which on the underside tend strongly on the hindwing in the direction of the absence of black centres to the white spots, which is, on both wings, characteristic of *stoliczkana*, Felder. It may in fact be said that these so-called *ariana* and *stoliczkana* bear in appearance the same relation to *eros* that the vars. *salmacis* and *artareres* do to *Aricia medon* (*astrarche*); and it is undoubtedly from specimens such as these that Staudinger's application of the name *ariana* to a form of *stoliczkana* has arisen. It would seem from this at least possible that we have here to deal with yet a third species under this name. The specimens from the Elwes coll. associated with these latter undoubtedly belong to the same form, to whatever species it may be referred.

(To be continued.)

Luperina (?) (Apamea) gueneei, Doubleday, as a species, and as a British species (with plates).

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

(Continued from page 26.)

It was noticed among the specimens taken in 1909 that most were slightly lighter in appearance than the ordinary forms previously obtained, and to these examples having somewhat less intensified markings the name *baxteri* was given by Mr. R. South (*Ent.*, xlii., 290), in honour of Mr. Baxter, of St. Anne's-on-Sea, the rediscoverer of *L. gueneei* in this country, and a most enthusiastic collector and observer for many years past. The difference of the type from this form, however, is small, and has been recently expressed as "merely due to the pale gray ground colour (of very fresh examples) having in course of time assumed a somewhat ochreous tinge." From the examination of worn and quite fresh examples, I do not think that this remark holds good, although as it has been freely stated at meetings, where the species has been shown, that the difference is not very marked. Still var. *baxteri* is an appreciable form and needs noting (pl. iii., fig. 7).

The first of the new forms of the 1910 season, to which my attention has been called by Mr. A. Murray, of St. Anne's-on-Sea, is an aberration, which I am calling ab. *murrayi* from its captor (pl. iii., figs. 5, and 6 worn). In texture, general depth of colour, and in markings, it is quite of the typical form, except that the submarginal area, between the dark marginal lunules and the submarginal line, is much paler than any other part of the wing, by contrast throwing out these dark lunules very conspicuously. In a worn example of the same form this feature is even more apparent than in the perfectly fresh specimen.* In the *baxteri* form this area is uniform with the rest of the coloration, but in the type form (pl. iii., figs. 3 and 4) it is perhaps a shade darker than the general wing coloration.

The second of the new forms has all the markings exactly as in *L. gueneei* of the type, except that it is a melanic form. Less than a dozen of this have so far, I believe, been taken. All the markings are much intensified, and even the ground colour is darker. The increased sharpness of the darker markings, in contrast with the ground colour, emphasises this contrast, and tends to make the specimens appear darker when looked at with the naked eye, than when the contrast is registered by means of the photographic lens. This melanic form I have called var. *fusca* (pl. iii., figs. 1 and 2). In a worn example the contrast is equally well shown. The general colour is a very dark grey, with, in good light (day), faint flushes of a ferruginous tint in the discal area. In this var. *fusca* there is no trace of the ochreous tinge apparent in many of the typical forms, nor does the pale grey ground colour appear.

At the same time I ought to record a much smaller form which has occurred, particularly, I believe, at Lytham, but not confined to that place. It is quite typical in coloration so far as I have seen, and the one I have before me measures 29mm., while the ordinary examples measure 37mm. Presumably we must call this ab. *minor* (pl. iii., fig. 8).

* The plate does not sufficiently show the contrast between the ground and the submarginal area, which latter does not appear white enough.

Mr. Murray tells me that the imagines are found on the coast sand hills near St. Anne's-on-Sea. They seem attached to the star grass (*Psamma arenaria*!) on which they are found, at rest or *in cop.*, between seven and ten o'clock. If the night be fine and there is no wind, flight takes place about half-past seven. Numbers have been obtained on the grass drying their wings, hence their time of emergence from the pupa must be evening. Females taken *in cop.* readily deposit their eggs in the boxes, and the young larvæ hatch out in about 21 days. All kinds of food-plant growing on the sand hills have been supplied to the young larvæ, but they have up to now refused to feed, and succumbed. Mr. Murray suggests that possibly the larva may be a root feeder. About the first week in September has been the best time to obtain the species, although specimens have been obtained as late as September 28th.

The original description of *L. gueneei* was made by Doubleday in *Stainton's Entomologist's Annual* for 1864, pp. 123-4, from two of the three original specimens captured in the year 1862 (1860?). Doubleday forwarded one of the two specimens to M. Guenée, who returned it with the information that it was identical with a specimen in his cabinet, which was described in his work *Spécies Général des Lépidoptères, Noctuelles*, vol. i., p. 182 (1852), as *Luperina testacea* var. *A.*, and with the remark that it would probably prove a distinct species as suggested in his description and note which is given herewith.

"*Luperina testacea* var. *A.* Ailes supér. d'un gris-blanc à peine jaunâtre, avec tous les dessins un peu harmonieux et généralement mieux écrits. Ligne subterminale un peu moins coudée et plus parallèle au bord. Lunules terminales noires, bien distinctes. Ailes infér. d'un blanc très-pur.

"Cette jolie variété, qui pourrait bien constituer une espèce, se trouve aux environs de Gien, où elle a été découverte par M. Abicot." (The italics are mine.)

It will readily strike one that M. Guenée has, in a short, pithy description, given exactly the characters of the insect now known as *L. gueneei*, in comparison with the typical *L. testacea*.

Newman, in 1871, copied Doubleday's description and remarks verbatim into his *Nat. Hist. of British Moths*, without giving any additional remarks, and without figuring the species.

In the *Entomologist*, vol. xviii., p. 54 (1885), occurs the next reference to the species. Mr. G. B. Hodgkinson criticised the omission of the name from the *Ent. List of Brit. Lepidoptera*, and gave more precise details as to the capture of the only three specimens then known.

In vol. xxii., p. 206 (1889), of the same magazine, Mr. Tutt, in his *Contribution towards a List of the Varieties of Noctuae occurring in the British Islands*, and subsequently reprinted in his work, *Brit. Noctuae and their Varieties*, vol. i., pp. 188-140, expresses the opinion "that there does not seem to be the slightest doubt that this is anything but a variety of *testacea* of an extremely pale ground colour." All we can say is that the writer had not seen the actual specimens, although he might possibly have seen continental forms of *L. testacea* sent to him under the name *L. testacea* var. *gueneei*, and so was misled in spite of his usually clear intuition.

In the same volume, at p. 271, Mr. R. South has recorded the

reappearance of *L. gueneei*, a specimen having been sent him by Mr. Baxter from St. Anne's-on-Sea, Lancashire. In the short article, Mr. South comes to the conclusion that Mr. Baxter's specimen is a connecting link between *L. testacea* and *L. nickerlii* (or as it was called by some, *L. testacea* var. *nickerlii*). Possibly we may here again assume the faulty continental identification of the forms sent over as *L. nickerlii*. At all events, the conclusion come to by Mr. South only increased the confusion.

Mr. Tutt again took up the subject at the meeting of the City of London Entomological Society on March 19th, 1891 (reported by himself in the *Ent. Record*, vol. 2, pp. 20-21), when he exhibited the specimen taken by Mr. Baxter, combated in detail the view of Mr. R. South, that *gueneei* was a form of *nickerlii*, and showed that the description of the latter species given on p. 271 of the *Ent. Record*, vol. xxii., did not agree in detail with the original description of *nickerlii* by its describer, Freyer. But his remark that Mr. South's "connection of Mr. Baxter's specimen with *gueneei* was unwarranted," clearly proved that, although he had the true *gueneei* before him, his conception of *gueneei* was based, not on the actual specimens previously captured, but on the false assumption that *gueneei* was a variety of *testacea*, and closely resembled it, in spite of the clear judgment of both Guenée and Doubleday as to its specific distinction from both species.

Subsequently, in the same year, Mr. Tutt described this form as *L. testacea* var. *incerta* (*Brit. Noctuae*, vol. i., p. 140), which name, however, cannot stand, as that specimen, as well as another taken at the same place in 1891, are both typical specimens of the forms actually described by Doubleday, of which one is at present in the British Museum collection at South Kensington.

Mr. C. G. Barrett in his *Brit. Lep.*, vol. iv., p. 335, etc., 1897, carries us no further, merely making a resumé of the generally received opinion.

In *Staudinger's Catalogue*, p. 168 (1901), *gueneei* is still treated as a var. of *L. testacea*, allowing one to assume that the species is unknown on the continent of Europe, otherwise it would undoubtedly have been given specific rank.

It was not until the autumn of the year 1909, that the question was again re-opened by the capture by Mr. Baxter of numerous specimens of a *Luperina* quite referable to Doubleday's *L. gueneei*, although not absolutely identical with the previously recorded specimens. Examples of these were submitted to Mr. R. South, and he still maintained that *testacea*, *gueneei*, and *nickerlii* were forms of one and the same species.* Subsequently, at his own suggestion, the genitalia were examined and compared with those of *L. nickerlii* and *L. testacea*. In the *Entomologist*, vol. xlii., p. 289-292 (1909), Mr. South, having been fully convinced by the results of the examination of the genitalia, at once adopted the specific stability of *L. gueneei*, and gave the history of the species in short, and diagnosed the forms sent him by Mr. Baxter under the name var. *baxteri*, at the same time giving the results of the examination and comparison of the genitalia by Mr. F. N. Pierce, and illustrating his contribution by photographs of the

* *Ent.*, xlii., p. 26 (1909).

bacteri form, of *L. nickertii*, and of the genitalia of both *L. gueneei* and *L. testacea*. Unfortunately, the legend on the plate is inadequate and misleading, and the undoubted difference of the imagines figured is minimised by the dominance of the deep black background.

In the March number of the succeeding volume of the *Entomologist*, vol. xliii., pp. 75-78 (1910), Mr. E. R. Banks, traces the history of the three original specimens of *L. gueneei* since their capture in 1862 (?), gives the results of his careful comparison of the type specimens with the two species *L. testacea* and *L. nickertii*, in favour of absolute distinction, discusses the idea of time changing the colour suffusion of var. *bacteri* to the "pale testaceous" of the type, and withholds his judgment as to the specific distinction of *L. nickertii*, until more definite knowledge is forthcoming. At the same time he utters a word of warning against the modern tendency, to consider the distinctness of the form of the genitalia as the final and predominant test in the differentiation of species.

(To be continued.)

Orthoptera in the Canary Islands.

By MALCOLM BURR, D.Sc., F.E.S., F.L.S., F.Z.S.

For many years I had been looking forward to an opportunity of collecting in the Canary Islands. The Fauna is so interesting, and contains so large a proportion of peculiar forms that, although species are not numerous, the islands are well worth systematic collecting.

The first and most important modern contribution to our knowledge of their Orthoptera is a paper by Krauss, entitled *Systematisches Verzeichniss der Canarischen Dermapteren und Orthopteren mit Diagnosen der neuen Gattungen und Arten*, published in the *Zoologischer Anzeiger*, no. 390, 1892. Including records from all sources, Krauss enumerated sixty-four species, including Dermaptera; of these he describes thirteen as new, and erects six new genera, for one of which he requires a new sub-family. Most of the material was collected on an expedition to the islands in May and June, 1889, by Brunner von Wattenwyl, Krauss, and A. Pictet. A disadvantage of a visit so early in the season is, that some of the new forms are only found in an immature condition. For instance, the remarkable creature *Orophila nubigena*, Kr., which has features recalling both the *Meconeminae* and *Pseudophyllinae*, and yet requires a new tribal name, *Orophilinae*, is only known from an immature male.

In the following year, 1893, Bolivar published (*Act. Soc. Españ.* H.N. (2), ii., 1893, p. 35) an account of the Orthoptera of the Canaries based on material collected there by M. Charles Alluand. Bolivar added one or two novelties, and gives a catalogue of Canarian species from all sources, enumerating 75; this number is approximately correct, since one or two of the doubtful ones must probably be suppressed, and a few new ones have been described since.

We landed at Las Palmas, capital of the Grand Canary, early in the morning of Friday, September 9th, and at once drove up to the village of Santa Brigida, near which there is a comfortable hotel, which we made our headquarters for about a week.

The scenery is quite meridional: the red volcanic earth all burnt

brown, the monotony relieved by some graceful palms, and clumps of agave and cactus; in the lower levels the deep green patches of the banana plantations stand out prominently. On the higher ground some scrubby trees are bent double with the force of the prevailing wind from the west. The neighbourhood of Santa Brígida is too cultivated to afford good collecting: the ground consists of a mass of round black gravel, worn lava, out of which the vines grow in profusion, divided into fields separated by hedges of cactus and agave mingled with brambles, enlivened by brilliant red clumps of woody geraniums. I spent many hours wandering about and turning over countless stones in the hopes of coming across some of the peculiar earwigs, but it was rare to find a living insect. On one hilltop, free from cultivation, I found a fair number of *Caloptenus vulcanius*, Kr., a well-marked local representative of the Mediterranean *C. italicus*, with a banded variety *bifasciata*, Kr., corresponding to the variety *marginellus*, Serv., of the Mediterranean form. It is quite a good species, and very distinct. It seems to be the common grasshopper of the islands, being found in numbers nearly everywhere. In addition to the intensity of cultivation, collecting was rendered difficult by stormy weather; gusts of violent wind sprang up frequently and dropped again with startling suddenness, and we rarely saw the sun during our stay in the Grand Canary, weather which I was informed, as usual, was unknown to the oldest inhabitant at this season.

We made an excursion to the Gran Caldera, an extinct crater of perfect form where it appears that the lava never actually overflowed, but sank back into the crater; it is almost perfectly circular, about a mile in diameter, and nearly a thousand feet deep from rim to the base, which is, of course, cultivated; the walls are vertical, except where covered by the slope of the talus; agave, cactus, and the local *Euphorbia*, like fat podgy fingers, grow round the rim.

Caloptenus vulcanius was very abundant; in the lower levels, *Platypleis grisea*, Fabr., is common; there were a few specimens of *Oedipoda canariensis*, Kr., a local form of the common *O. caerulea*, L., differing in the narrower vertex, more rugose head and pronotum, feebler band and paler colour of the wings; it hardly deserves specific rank. Looking under stones produced nothing but a nymph of *Liogryllus bimaculatus*, De Geer, the common cricket of the islands; this is interesting, for it is the African representative of *L. campestris*, L., which does not apparently occur in the islands. Crawling in some burnt up grass, I found a buff female of *Parameles limbata*, Brullé, a purely local species, which represents the various species of *Ameles* occurring in the Iberian Peninsula.

Below the village of Santa Brígida, a grand and deep ravine, the Barranco de Tirajana, runs down to the coast; a rivulet in the dry season, it is a good torrent in the spring, and here collecting was more profitable.

A clump of stones near a farm house produced the ubiquitous *Anisolabis annulipes*, Luc., in numbers, and also *A. maxima*, Brullé. This is one of the finest of the genus, well-developed specimens rivaling in size even the gigantic Australian *A. colosseus*, Dohrn; the specific characters are well marked, but adult specimens were rare. *Mantis religiosa*, L., was fairly common, and where grass was growing, *Epacromia thalassina*, Fabr., and *E. strepens* were abundant; *Pachytylus*

danicus, L., too, was common, and also *Caloptenus vulcanius*. Sweeping among shrubs produced an occasional specimen of *Arminda brunneri*, Kr., a monotypic genus confined to the islands. Krauss records it from Tenerife, but I only found it in the Grand Canary, in various parts of the Barranco de Tirajana, never common. It is related to *Platyphyma*, Fisch., which is abundantly represented in the south of Europe by the stumpy little frog-like *P. giornae*, Rossi, but can never be mistaken for it; apart from the structural differences in the head and elsewhere, it is a much more slender insect; the male, in fact, is quite an elegant creature. *Trigonidium cicindeloides*, Serv., was fairly numerous in some moist grass at one spot; it is a very curious creature, and hardly looks like a cricket; the long yellow hind legs make a great contrast with the shining dark blue beetle-like elytra. It is a highly specialised creature, is incapable of flight, and yet has a very wide distribution.

Platycleis grisea, Fabr., and *P. tessellata*, Charp., were also quite common in the same locality. In the nearly dry bed of the river itself, at the bottom of the gorge, *Liogryllus bimaculatus*, De G., was very numerous under stones, usually in pairs. *Conocephalus mandibularis*, Charp., was fairly common among grass; the only other species that we observed in the island was *Acrotylus patruelis*, Sturm., which is abundant in the beautiful gardens of the Hotel Catalina, near the port, and probably everywhere else in suitable situations.

On September 15th, we landed at Santa Cruz, the port of Tenerife, after a sleepless night on an abominable Spanish mail of 634 tons, the "Leon y Castillo" advertised as a "magnificent new screw Steamer." The island of Tenerife is really a cordillera of volcanic ridges culminating in the famous Rico de Teyde, towering up to an altitude of over 12,000ft. in the south; the flanks are consequently very steep, and on the sheltered side, protected from the Atlantic by the hills, everything is burnt and brown, with not so much as a palm-tree to relieve the desiccated monotony; there was no temptation to stop and collect here. About 2,000 feet, we reached the old town of La Laguna, in the midst of a fertile plateau, that witnessed the final stand of the aboriginal Guanches against the invading Spaniard; the contrast between La Laguna and Santa Cruz is very striking; the latter is a typical southern port, with white houses and green Persian blinds, all glittering in the sun; the former is a grim, rather gloomy, Spanish provincial town; the grey houses, old doorways with time-worn armorial bearings, and lofty towers, make the traveller think that he is among the hills of northern Aragon, or in the sunburnt valley of the Ebro.

We arrived on the morning after a "fiesta," when there was no accommodation available, so we were obliged to push on to the next village, but before leaving, I called on Don Anat el Cabrera, a surgeon in practice in the town, and a well-known entomologist. I was fortunate enough to find him at home, and was at once overwhelmed with information as to collecting grounds and the kindly gift of a boxful of specimens; Don Anat el's generosity was almost embarrassing, for he pressed upon me specimens that are rare and difficult to find, saying he would be able to obtain more. My gratitude at the time was even increased when we left the island some ten days later, for I was not destined to find many of the rare and peculiar species, which he begged

me to accept. Among these were a pair of *Hypsicorypha julias*, Kr., a remarkable cone-headed mantis, representing the Mediterranean *Empusa*, and Ethiopian *Idolomorpha*. It is apparently confined to Tenerife but is not common, and I was not fortunate enough to come across one. In addition, the genial doctor gave me a series of *Anataelia canariensis*, Bol., one of the most interesting earwigs known. It was discovered many years ago by Don Anatæl, under stones, near the village of Bajamar, on the western coast of the island, and sent for determination to Bolivar, who found it necessary to erect for it a new genus, which he named *Anataelia* after its discoverer. It has the antennæ and sternum of the *Labiduridae*, and the legs of the *Pygidicranidae*; it is totally apterous and has a peculiar formation of thoracic plates. The only other known species which resembles it at all is *Challia fletcheri*, Burr, a native of Korea, these two monotypic genera requiring a subfamily to themselves, the *Anataelinae*. Dr. Cabrera has looked carefully for it in many parts of the island, and has always kept his eye open for it when collecting beetles, but he has never found it except in a certain portion of a plot of stony ground, a few hundred yards long and about fifty broad, near the village of Bajamar. This is surely one of the most remarkable recorded instances of restricted distribution.

Don Anatæl also gave me specimens of *F'orjicula cabreræ*, Bol., and *F. guancharia*, Heller, which I failed to find during all my excursions, in spite of diligent search. I was equally unsuccessful in my hunt for *F. canariensis*, Burr, and *F. uxoris*, Heller. These four species of *F'orjicula* are restricted to the Canaries, perhaps even to the island of Tenerife, and all appear to be rare; in all, the wings are aborted and the abbreviation has attacked the elytra. It may be necessary to form a special genus for their reception, and even eventually be proved that they are all variants of a single species.

(To be continued.)

Stenus formicetorum, Mannerheim, a beetle new to Britain.

By HERWARD C. DOLLMAN, F.E.S.

I have much pleasure in introducing this *Stenus* to the British list. Mannerheim's original description (published *Bull. Mosc.*, 1843, p. 83) is:—

Stenus formicetorum, Mann.: plumbeo-niger, capite, thorace, elytrisq; profunde foveolato-punctatus, parce cinereo-pubescent, abdomine fortiter minus dense punctato, immarginato. Longit. $\frac{3}{4}$ -1 lin. Bis captus. *S. nigritulo*, Gyllen., Erichs. vicinus, sed multo minor, brevior, et punctis multo majoribus in thorace et elytris impressus, totus plumbeo-niger parce cinereo-pubescent. Antennæ breviusculæ, articulo tertio quarto parum longiore, totæ nigræ. Palpi etiam nigri. Caput cum oculis thorace fere sesqui latius, fortiter profundeque punctatum, fronte obsolete late bisulcata, interstitio leviter elevato, oculis maximis globosis prominulis. Thorax coleopteris dimidio angustior, lateribus rotundatus, basi apiceque latitudine fere æqualis vel ibi coleopteris dimidio angustior, latitudine summa paullo longior, æqualis, undique punctis majusculis fortiter impressus, interstitiis planis. Elytra thoracis longitudine, eodem modo punctata, æqualia. Abdomen breviusculum, apicem versus sensim leviterque angustatum, parcius et subtilius quam thorax et elytra punctatum, immarginatum. Pedes toti nigri. Femina abdominis segmento inferiore sexto apice rotundato. Mas latet.

With the aid of Ganglbauer's table Mr. Donisthorpe and I ran the species down as *S. formicetorum*, Mannh.; his description of the species

is not very detailed however. With the exception of the colour of the legs (which he refers to as red-brown), as far as it went, this description tallied with my specimen. Not then having seen the original description, the beetle was submitted to Captain Deville for verification; he returns it as *S. formicetorum*. It will be noticed that in Mannerheim's original description, he says "pedes toti nigri," this being quite in agreement with my insect and not so with Ganglbauer's reference to red-brown legs. Of our British species it is most nearly allied to *S. crassus*, Steph., and is a member of that section, having the penultimate joints of the tarsi simple, and the hind-body not margined. From *S. crassus* it may easily be differentiated as follows:—
 (a) Considerably smaller size; from a long series of *crassus* I cannot select one that is not considerably larger than *formicetorum*. (b) The difference in sculpture, giving the insect a much more dull appearance. (c) By the shorter and more cordate thorax. (d) By the fovea near the base of the thorax. (e) By the narrower elytra, the shoulders being much less pronounced.

My specimen was taken at Ditchling, Sussex, on August 2nd, 1910, by sifting a faggot stack. Ganglbauer records the species as being found with *Formica rufa*: rare; North and Middle Europe.

Formica fusca, L., var. glebaria, Nyl., a form new to Britain.

By CECIL CRAWLEY, B.A., F.E.S.

On April 18th, 1909, near Brockenhurst, New Forest, I found a grass-covered mound occupied by a colony of what I took to be a race of *F. fusca*. The nest was entirely different from the ordinary *fusca* nest, and the ants were walking about and working on the surface of the mound, showing none of the characteristic timidity of *fusca*. They were very unlike *fusca* in general appearance, being duller and more uniform in size. I could find no ♀s or brood in the nest. Last winter I sent some of these ants to Mr. H. Donisthorpe, who found them to correspond exactly with the specimens of *glebaria* sent him by Dr. A. Forel. I have since compared the specimens in company with Mr. Donisthorpe, and am satisfied that they are alike in every particular.

Nylander's description is as follows:—

Operaria: nigra nitida valde cinereo-micans; mandibulis antennarum scapis flagellorumque basibus et pedibus vel totis vel tibiis tarsisque piceis seu piceo-rufescentibus; ocellis parvis: squama sursum late subtriangulariter subrotundata. Long. circ. 2. lin. (*Acta Soc. Sc. Fennic.*, ii., 3., 1846, p. 917, Plt. 18., fig. 23). Per totam patriam valde frequens, sub lapidibus præsertim habitans, cuniculos vastos in terra fodiens. Helsingfors.

Wheeler points out (*Ants.*, 1910, p. 456) that in the valleys of Switzerland, *F. cinerea* and the varieties of *F. fusca*, *glebaria* and *rubescens*, are the commonest slaves of *F. sanguinea*. Mr. Donisthorpe has recently added *rubescens* (*Ent. Rec.*, 1909, p. 258) to our list.

SCIENTIFIC NOTES AND OBSERVATIONS.

VAR. HUTCHINSONI IN SECOND BROOD OF POLYGONIA C-ALBUM.—On September 24th, 1910, I received from Mr. L. W. Newman, F.E.S., two dozen larvæ of *Polygonia c-album* from the Wye valley, some still

very small. These fed up well on nettle, and twenty duly pupated between October 1st and 10th, eleven of them attaching themselves to the roof of their cage, and the other nine to leaf-stalks of the nettle. Emergence commenced on October 16th, and the last butterfly appeared on October 26th. Of the two which emerged on October 16th, one was var. *hutchinsoni*, and this form continued to appear, as well as the normal forms, with both the variegated and plain undersides. Altogether I obtained nine var. *hutchinsoni* from my twenty pupæ.—(REV.) ALFRED T. STIFF, Grantham, Victor Drive, Leigh-on-Sea.

XYLINA ORNITOPUS, ROTT., VAR. *LACTIPENNIS*, NOV. SUBSP.—While working through my collections I was surprised to find that the very striking race of *Xylina ornitopus*, which occurs in England, is still unnamed. In his *Brit. Noctuae*, vol. iii., p. 99, Mr. Tutt states: "Continental specimens which I have seen of this species appear to be slightly greyer than our British specimens, which are of a somewhat purer white ground colour." It is fairly evident from this that Mr. Tutt had not a great deal of continental material before him, otherwise he would hardly have passed over our British race so lightly. Fortunately, I possess a fairly long series of this species from the New Forest, and have taken it in large numbers in various localities in Germany in such distant places as Luxemburg, Berlin, Saxony, and Osterode Ost Preussen. The English series show up very prominently on account of their conspicuous whiteness, and one would have no difficulty in picking them out at a considerable distance. As the whole of my English specimens are of this form, and, speaking from memory, they do not differ from other English specimens, it seems to me that this is a well pronounced local race, and deserving of a special name, I therefore propose to christen it *X. ornitopus* var. *lactipennis*. All my continental specimens are remarkably uniform in colour, all on pale blueish grey with smoky brown markings and black dashes and red-brown orbicular. The ground-colour of var. *lactipennis* is much whiter, the smoky markings are much less distinct, the black markings much reduced in size, and the colour of the orbicular inclines more to yellow than red-brown, thus the whole facies of the insect becomes much paler.—E. M. DADD, F.E.S., Annastrasse, 6, Zehlendorf, near Berlin.

HABITS OF YOUNG LARVÆ OF MAMESTRA BRASSICÆ.—In the summer of 1908, I noticed that the flowers of several bushes of aconite in my garden were being eaten, and I therefore searched, and soon found the trespasser. It was a young Noctuid larva of a pale green colour, lying curved along the mid-rib of the hood of the flower. The egg had been laid on the blossom, and the young larva had evidently at once eaten its way into the flower, a small hole being visible in each case beside the remains of the egg. I found quite a number of very small caterpillars, and so was able to verify my first observation. Feeling uncertain as to what the Noctuid was, I reared a fair number, but it was not until the last two instars that I surmised what they might turn out to be. The young larvæ continued to occupy and to eat the flowers so long as they could get inside, and all this time they remained green. When, however, they became too large, they would lie along the mid-rib of a leaf on the underside, or sometimes along the stem itself, but they then assumed their ordinary brown hue. The darkening of the green colour soon became quite perceptible,

when they were compelled to rest outside the flower. In the following year many *Mamestra brassicae* emerged from the pupæ. I do not remember to have seen this habit recorded, so it may be as well to make a note of it.—G. T. BETHUNE-BAKER, F.E.S., 19, Clarendon Road, Edgbaston.

ANTS APPROPRIATING OLD BURROWS OF CLEARWINGS.—On the 28th June, 1911, while collecting the burrows of the "clearwing," *Sesia andrenaeformis*, in the twigs of *Viburnum lantana*, near Cookham, in Bucks, I happened out of curiosity, to split open an old disused burrow, and found it tenanted by some small "ants." Mr. H. Donisthorpe has kindly indentified these as being *Leptothorax nylanderii*, Först.—E. S. A. BAYNES, 120, Warwick Street.

NOTES ON COLLECTING, Etc.

CHEIMATOBIA BOREATA IN WARWICKSHIRE.—On November 13th last, I went out to Earlswood to see what I could get, but on arrival there it was raining; nothing deterred, however, I started searching, and at first found only a single ♀ *Hybernia defoliaria*, but on my old sugar patches were slugs and centipedes in plenty. Many wings of *Geometridae* were spread out on the trees adhering to the old sugar, and in some cases the four wings spread, but the bodies gone. I had the opportunity of watching the performance, and saw the moth remain quite motionless, whilst a slug eat its body leaving the wings alone, and this I noticed in more than one case. The rain, however, was increasing, and just as I thought I had had enough, I caught sight of the tip of a wing projecting from under a leaf, and on turning it over, I was delighted to take my first *C. boreata*. Spurred on by this find I continued searching, and ended with a bag of six *C. boreata*, six *H. aurantiaria*, one *O. vaccinii*, and one *Orthosia circellaris*. On the 20th I had another chance, and arrived to find all the pools and ditches frozen over, and the frost did not give all day. I had never before taken anything in a sharp frost, but I searched about, thinking I would take the next train back. Having noted that their foodplant was birch, I paid special attention to those trees, searching all round the trunks, and finally disturbed the fallen leaves with my stick, which produced good results. At mid-day one of my sons and a friend of his bicycled over, and thus reinforced and with the sun shining brightly also, *H. aurantiaria* began to show on the bottoms of the trunks, never, however, leaving altogether the shelter of the herbage. *C. boreata* also appeared, and we took a good series of it, as well as of *H. aurantiaria* and *H. defoliaria*. It was a pleasant surprise that Nature should unlock the door of her storehouse during so sharp a frost.—J. T. FOUNTAIN, Darwin Street, Birmingham.

EARLY MOTHS.—During the last weeks of February I made a start collecting, and at present have a nicely varied lot of *Hybernia leucophearia* on the boards, with a few *H. marginaria* and *Phigalia pedia*, obtained during several visits to Richmond Park and Wimbledon Common. On March 6th I was lucky enough to take a ♀ *Nyssia hispidaria* at the former place, and hope to get ova.—J. ALDERSON, 14, Dafforne Road, Upper Tooting, S.W. [It would be interesting to know whether the uniformly dark form of *H. leucophearia* still occurs at Richmond, and if so, what is the percentage compared with the

other forms. It used to occur there very sparingly, but was most difficult to find and extremely local, being only taken in one portion of one belt of trees.—H. J. T.]

CURRENT NOTES.

Dr. David Sharp has announced (*Ent. Mo. Mag.*) a species of *Quedius* new to science. He has named it *Q. hammeanus*, in honour of his friend, Mr. A. H. Hamm, of the Oxford University Museum. It is closely allied to *Q. molochinus*, and is probably a coast insect, as it has only been found sparingly at Deal, Strood, Lymington, and Hayling Island.

Dr. Norman H. Joy re-establishes (*loc. cit.*) *Colon microps* as a British species, on the strength of a specimen sent to him by Mr. Champion to examine. It was captured many years ago at Cobham, Kent.

The well-known collection of Mr. S. J. Capper, F.L.S., F.E.S., of Liverpool, has passed into the hands of Mr. L. W. Newman, of Bexley. We understand that it will be broken up and sold in the autumn of the present year. This is one of the best of the older well-known collections, and contains a large number of varieties and forms, especially of species occurring in the counties of the north of England, the north Midlands, and the mountain and coast areas of North Wales. Many of the varieties this collection contains have been figured by Mr. S. L. Mosley in *Illustrations of Varieties of British Lepidoptera*, and in the *Naturalist's Journal*. We gather that the series of varieties of British Arctiids are all very fine, and many of the aberrations are unique. If we remember rightly, the collection contains the magnificent *Arctia caja* with almost wholly white forewings, and several with forewings uniformly brown, without any lighter markings. Perhaps the most extraordinary item in this collection is the teratological specimen of *Anthrocerus filipendulae*, which has the forewings duplicated.

We have just received particulars of the Annual Conversazione of the Natural History Society of Northumberland, Durham, and Newcastle-upon-Tyne, held on February 16th, at the Hancock Museum, Newcastle-upon-Tyne. Though it was not specially an entomological occasion, there were several exhibits that were of considerable interest to entomologists. Perhaps Mr. Bagnall's exhibit was the most important of these. It was largely composed of type specimens of *Thysanoptera*, and as many of these will shortly have to be returned to foreign and colonial museums, it is very unlikely that such a collection of types of Thrips will ever be brought together again. Among the British Thrips, Mr. Bagnall showed examples of his gigantic form, *Megathrips nobilis*, Bagn., the pear Thrips, *Euthrips pyri*, Dan., and the rediscovered juniper Thrips, *Thrips juniperina*, L. His types of foreign *Thysanoptera* included species from South America, Australia, the Sandwich Islands, and other remote Pacific Islands, the Malay Archipelago, India, Ceylon, and the Seychelle Islands, the Mediterranean, North and South Africa, the Madeiras, and various countries in Europe. Of the other exhibits, one of the most interesting to entomologists was a set of sample drawers from a large reference collection of British beetles, which is at present being prepared for the museum with Mr. Bagnall's help. It is a combined collection

formed out of three previously existing and well-known collections. These are (1) the collection left to the museum many years ago by the late T. J. Bold; (2) the fine collection made by Mr. John Gardner, of Hartlepool; and (3) Mr. Bagnall's own collection. It will be some time before the combined collection is completely installed, but from what has been done already, it is evident that when finished, it will be one of the finest reference collections of its kind in the country. One other section of the exhibits is perhaps worth remarking upon. The Historical Exhibit included objects representing W. C. Hewitson, and among them were some representative examples of the books from his library. In addition to good examples of his own works, his library includes many scarce and valuable monographs on the results of naturalist travel, and some of these were shown. But the most remarkable thing exhibited in the section devoted to Hewitson, was a MS. book done throughout by his own hand, which contains exquisite coloured figures of most of the butterflies in his collection.

Some forty pages of the January number of the *Naturalist* are taken up with the *Report of the Year's Work of the Yorkshire Naturalists' Union*, which forms a record of the very admirable and useful co-operation of its members in the observation and study of nature under a well-arranged scheme of section organisation. In that part of the report dealing with the entomological section, the unfavourable climatic conditions of the year of course are noted, and we read that there has been an unusual abundance of *Boarmia repandata* larvæ, and the resultant imagines have been very dark, *Thera variata* has shown a fine black race, *Apamea basilinea* has produced a strikingly melanic example, of *Phigalia pedaria* ♀s there have been exceptional numbers, and very dark representatives of *B. gemmaria* have been obtained. The soul of this section is, of course, the veteran in Entomology, Mr. G. T. Porritt, who not only devotes his attention to Lepidoptera, but has for years past taken much interest in *Neuroptera* and *Trichoptera*, in which orders some of his records this year are very interesting. He reports *Tinodes dives* as abundant at Malham, *Stenophylax alpestris* and *Hemerobius quadrifasciatus* as occurring near Sheffield, and a fine melanic example of *Glyptothelium pellucidus* near Wakefield. Last year, for the first time, there was a section for the record and study of the *Arachnida*, and several members have worked with sufficient assiduity to find five species new to Yorkshire, in addition to the 209 species known up to the end of 1909. Several local lists of spiders are included in the Report.

We were much interested in the account given in the December number of the *Entomological News* by Dr. John B. Smith of Washington, concerning his investigations as to the efficacy of the *Azolla*, a water plant, to allay the troubles caused by mosquitos by preventing their breeding. Under favourable conditions it was conclusively proved that the *Azolla* would form a perfect surface covering on water areas, that would absolutely prevent the mosquito from breeding, while at the same time fish and other aquatic animals would not be adversely affected. This fact, however, is somewhat limited in its application, as the plant will only flourish in stagnant water in peat or turf areas. Where the bottom is sandy, or in any way influenced by the proximity of the sea, and where ground ice is likely to form, the plant is unable to maintain itself. The presence of this plant renders some

considerable portions of Holland quite immune from the attacks of the mosquito.

We have just received the *Entomologisk Tidskrift* for 1910. This is the official organ of the Entomological Society of Stockholm. Although written in Swedish, a language which is unfortunately forbidden to most of us, this journal of some 300 pages appears to be one of the best of its kind for the style in which it presents its matter to its readers. We notice that economic entomology is a strong feature among its contents. There is a well-illustrated article on the spraying of fruit trees, and a subsequent series of articles, admirably illustrated, give accounts both from a natural history and an economic point of view of *Cheimatobia brumata*, *Coleophora laricella*, *Lyonetia clerckella*, *Lophyrus sertifer* (one of the pine-tree sawflies), *Eriophyes pyri* (a mite which disfigures pear buds and leaves), and detailed notes on various species of saw-fly inimical to the welfare of common fruit trees.

Recent numbers of the *International Entomologische Zeitschrift* contain several very interesting articles: (1) The figures of a fine radiated and suffused aberration of *Melitæa athalia* taken at Boppard on the Rhine; (2) an experiment in the breeding of *Parnassius apollo*; (3) an account of the species of lepidoptera exhibiting melanism in the manufacturing districts of Upper Silesia; (4) an account of the breeding and life-history of a new Noctuid, *Polia philippsi*, from S. Persia; (5) a consideration of the varieties of *Chrysophanus virgaureæ*, especially as to the form ab. *albopunctata*, by Herr M. Gillmer; and (6) an attempt to show correspondence between the occurrence of variation among the Lepidoptera, and the periods of the prevalence of sunspots.

A meeting of the Entomological Club took place on March 21st, at Wellfield, Lewisham, the residence of Mr. R. Adkin, F.E.S., who was the host. The Council of the Entomological Society were the guests of the evening. A very pleasant hour or two was spent looking through the rich collections and well-furnished library in Mr. Adkin's study, and at 8.30 some fifteen sat down to supper.

The conversazione of the Entomological Society of London has been fixed for the evening of Wednesday, May 17th. The President and Council of the Linnæan Society have kindly placed their rooms, at Burlington House, at the disposal of the Society for that occasion, and are most generously lending their well-equipped lantern for the two lectures, which will be given during the evening by Professor E. B. Poulton, F.R.S., and Mr. F. Enoch, F.L.S. As the arrangements with the Linnæan Society preclude the sale of tickets, it will be necessary to ask all those who apply for them, to give a subscription towards the expenses (for refreshments, printing, postage, etc.). We hope that this will be as successful an event on this occasion as it was some two years ago, when the first of these meetings was arranged.

At the Special Meeting of the Entomological Society of London, held on March 15th, the Rev. F. D. Morice, M.A., was elected as President. He subsequently announced that he had appointed Dr. F. A. Dixey, M.A., M.D., F.R.S., and Messrs. G. T. Bethune-Baker, F.L.S., F.Z.S., and H. St. J. K. Donisthorpe, F.Z.S., to act as Vice-Presidents for the current year.

We must congratulate the Entomological Society upon its highly

satisfactory membership, which now stands at five hundred and fifty four Fellows. The number of elections into the Society during the past year has been the highest on record, and so far as the current year has gone the long list of candidates for election is very gratifying. In the words of the Annual Report just issued this "highly satisfactory state of things" is due "to the wide range of research adopted by our Fellows, and the more general recognition, by the public, as a consequence, of Entomology as a practical science."

The *Zeitschrift für wissenschaftliche Insectenbiologie* for December last, contains an article on *Anaitis columbata*, by M. Al. K. Drenowsky, of Sophia, from which we learn that the genus *Anaitis*, of which we in this country possess only one species, *A. plagiata*, is spread throughout the whole Palearctic area, and contains at least seventeen species. Of these we are told only six occur in the European area proper, and outside Bulgaria only two species, *A. plagiata* and *A. praeformata*, are met with. The paper is illustrated by a plate of twenty-four ♂ and ♀ forms, and two diagrams. In the same number we have a continuation of an article on the Galls and Gallflies of Germany, well illustrated by capital enlargements of the terminal portions of the ovipositors, critical segments of the antennæ, and figures of the imagines. This article is continued in the January number, and we have the commencement of an important paper by M. H. Stichel on the Lepidoptera of Persia, based mainly on the results of a journey made by the brothers Rangnow to that country.

SOCIETIES.

THE SOUTH LONDON ENTOMOLOGICAL AND NATURAL HISTORY SOCIETY.—*February 9th*, 1911.—Mr. Wakeley, of Wimbledon Common, was elected a member. *ÆGERIA CULICIFORMIS*.—Mr. Newman exhibited shoots of birch, taken from the base of stumps of cut trees, from which the larvæ of *Aegeria culiciformis* had been extracted by birds. It was stated that at times the larvæ bore into the twigs instead of into the stump. GALLS MADE BY *SAPERDA POPULNEA*.—Mr. Hugh Main, twigs of aspen swollen with galls caused by the larvæ of the Longicorn beetle *Saperda populnea*. VARIETIES OF LEPIDOPTERA.—Mr. W. J. Kaye, on behalf of Mr. Jupp, varieties of *Ennomos angularia* with the two transverse lines filled in with a dark fascia, *Boarmia repandata* var. *conversaria* with an unusually heavy black central fascia, and *Triphaena fibriata* with very strongly contrasted black and white markings on the forewings. MOTHS ATTRACTED BY LIGHT.—Capt Cardew, a number of species which had flown in to light in a house on the Island of Dominica, W. Indies, including four species of Sphingids, *Pachylia ficus*, *Pholus vitis*, *P. labruscae*, *Herse cingulata*, with *Deiopeia ornatrix*, *Epantheria icasia*, and the Syntomids *Argadea apta*, *Cosmosoma demantria*, etc. *February 23rd*, 1911.—Mr. J. H. Leslie, F.E.S., of Tooting, was elected a member. ABERRANT NOCTUIDS.—Mr. Turner exhibited three Noctuids sent to him by Mr. Murray, of St. Anne's-on-Sea, two of the specimens were very dark melanic forms of Agrotids, superficially very similar, but which, on close examination, he considered to belong to two species, *Agrotis tritici* of the var. *nigra* form, and *A. nigricans* of the var. *fumosa*, Fab. (nec God.). The third specimen was a worn *Luperina*, possibly referable to *L. cespitis*, the small, gray, rough surfaced form sometimes met with on the coasts of Lancashire and

Sussex. INDIAN LEAF-MOTH.—Mr. Moore, the very beautiful Leaf-moth of India, *Gloriana (Phyllode) ornata*. STEM-BURROWING LARVÆ AND FORCING OF LARVÆ.—Mr. Newman (1) sticks, both living and dead, of sallow containing larvæ of *Trochilium bembeciforme*, and also some containing the similarly feeding larvæ of the Musk-beetle, *Aromia moschata*; (2) a living specimen of *Egeria culiciformis*, bred after sixteen days forcing; and (3) full-fed larvæ of *Arctia caia* and *Callimorpha dominula*, which had been forced on, and stated that some of the former had made no response to the treatment.

CITY OF LONDON ENTOMOLOGICAL SOCIETY.—*February 7th*.—Mr. Chas. H. Williams was elected to membership.—EXHIBITS.—Mr. S. J. Bell, a series of *Anticlea rubidata*, all of bright red form, bred from Isle of Wight ova. Mr. G. Brooks, a very dark brown *Smerinthus populi*, Barnet, 1910. Mr. H. M. Edelsten, a series of *Bombyx castrensis* from the Essex coast, including several unicolorous specimens. Mr. V. E. Shaw, *Noctua augur* var. *omega*, Finchley, June 28th, 1910, mentioned in Tutt's *British Noctuae* as a very rare form.—COMMUNICATION.—Mr. L. W. Newman stated that osier stumps collected for *Trochilium bembeciforme* (*crabroniformis*), were found to contain both full-fed and young larvæ. The stumps were kept on the concrete floor of a hot-house during the winter, and the young larvæ migrated from the small to the large stems, fed up, and pupated. Mr. Newman also drew attention to the fact that while larvæ of *Æ. culiciformis* pupate head upwards, when feeding in the stems of birch, they pupate head downwards above the emergence cap when in year-old stems. *March 7th*.—THE GENUS COSMIA.—The *Cosmiae* were the subject of the special exhibit and discussion for the evening, and series were shown by Messrs. Edelsten, Mera, and P. H. Tautz; the latter member was the opener of the discussion, and exhibited particularly fine series, mostly collected in the neighbourhood of Pinner. Mr. B. S. Williams showed an interesting example of *C. trapezina* var. *nigra* (Tutt) taken at East Finchley, July, 1910. Mr. J. Riches exhibited a number of *Gonepteryx libatrix* in very fair condition found in a coal cellar in Norfolk, February, 1911. *March 21st*.—THE DREPANULIDS.—The "Hook-tips" were the subject of a special exhibit and discussion. The opener, Mr. A. J. Willsdon, showed fine series of *Drepana lacertinaria*, *D. falcataria*, *D. binaria*, *D. cultraria*, nearly all taken in the vicinity of London; other members also exhibited their series of this group. BIRDS EXTRACTING SESUID LARVÆ.—Mr. L. W. Newman showed two stems of young birch, which had originally contained larvæ of *T. bembeciforme*. The stems had been attacked by some bird (?nut-hatch), which had pecked a hole about three-quarters of an inch deep to get at the larval burrow; in the one case two and in the other case three, such holes had been made before the larva was located. The exhibitor stated that a large number of stems were found to have been thus rifled, although no signs of such attacks were seen on the occasion of a visit to the same spot a week earlier. ZONARIA HYBRID.—Mr. Newman also exhibited a freshly-killed specimen of hybrid *Nyssia zonaria-hispidaria*.

LANCASHIRE AND CHESHIRE ENTOMOLOGICAL SOCIETY.—*February 20th*, 1911.—Mr. Geo. Arnold, M.Sc., F.E.S., Vice-President, in the chair.—The Vice-President delivered a lecture on "Ants," in which he dealt chiefly with the recent discoveries connected with the habits of the subterranean fungus-eating species and the curious procedure

of the females when founding a new colony. The ants which infest trees, constructing their nests in hollow parts of the branches, were also specially dealt with, and the economic effect of their presence described. The lecture was illustrated by a large number of specimens, and also by means of drawings on the blackboard.

ENTOMOLOGICAL SOCIETY OF LONDON.—*March 1st, 1911.*—Mr. G. T. Bethune-Baker in the Chair.—A BEETLE NEW TO BRITAIN.—Dr. Nicholson showed six specimens of *Choleva fuliginosa*, Er., an addition to the list of British beetles, from Alphington, Devon. This species closely resembles *C. nigrita*, Er., with which it has been mixed in several collections, and is probably widely distributed in this country.

LARVÆ OF SESIAS.—Mr. L. W. Newman exhibited some sticks (the off-shoots of birch-stumps) containing larvæ of *Æ. culiciformis*; also sticks of *Salix caprea* containing larvæ of *T. bembeciforme*, one of these showing the cap formed over the hole prepared for emergence. This species is not usually supposed to form a cap. The larvæ were not, as is generally thought, confined to living wood, some of those exhibited being in dead twigs. Also a living specimen of *Æ. culiciformis*, a species which the exhibitor remarked was easily forced.

TERATOLOGICAL SPECIMENS.—Mr. G. T. Bethune-Baker showed a specimen of *Erebia ceto* which had been swept from the herbage without its head, which was probably held fast by a spider; nine hours after capture this insect had still been capable of fluttering strongly. He also exhibited a specimen of *Erebia euryale* var. *adyte*, with a half-developed right hindwing; a specimen of *E. eriphyle* with no left hindwing, and a *Melitaea varia* with no right hindwing; in the two latter there was no trace of the wing ever having been developed.

FLEA EGGS.—Mr. A. Bacot communicated a note confirming the distinction made by the Hon. N. C. Rothschild between *Ctenocephalus canis* and *C. felis*, both of which he had bred from the egg. He gave measurements showing the difference in size and shape between the ova of the two species, comparing them also with those of *C. fasciatus* and *Pulex irritans*. Mr. A. Bacot also read a paper entitled: *On the Persistence of Bacilli in the Gut of an Insect during Metamorphosis*. Commenting on this paper Dr. Chapman observed that in moulting (referring chiefly to Lepidoptera) provision for increase of size is not the only object in view, but also the removal of various possible microbial enemies. In "laying up" for a moult, a larva almost invariably first empties the alimentary canal; at the actual moult, not only the skin, but the lining membranes of the tracheæ and of much of the alimentary canal are cast also. The threads drawn from the mouth and anus, consisting of the linings of the *primæ viæ*, often seem long enough to represent the whole tube; if this be so, then bacillary inhabitants would be got rid of, and in any case must be so to a great extent. It would be interesting to know what is the precise hiatus between the oral and anal portions, and what provision there is for establishing an aseptic condition of this portion of the tube.

PARASITES.—MESSRS. Ernest A. Elliott and Claude Morley communicated *A first supplementary paper on the Hymenopterous Parasites of Coleoptera*.

LETTER OF CONDOLENCE.—The Rev. G. Wheeler, one of the Secretaries, read a letter of condolence received by Dr. Chapman from M. Charles Oberthür, one of the Honorary Fellows, containing an appreciation of the late Mr. J. W. Tutt.

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The May number will be double and wholly devoted to Memoirs of the Life and Work of the late Mr. J. W. Tutt, by many well known entomologists and friends. There will also be a complete Bibliography of his contributions to the various magazines, transactions, etc.

The June number will probably contain, in addition to the completion of several articles of the present number, contributions by Dr. Chapman, G. Wheeler, the late J. W. Tutt, Rosa E. Page, H. Powell, F. W. Colthrup, Mr. Donisthorpe, etc. Reports of several societies also remain over.

We should like to have reports of collecting at sallows this year, from all districts around London, and also from southern, western, midland, and northern localities (including Scotland). Have the sallows been productive in Ireland?

Three plates at least will be given in an early number to illustrate various articles.

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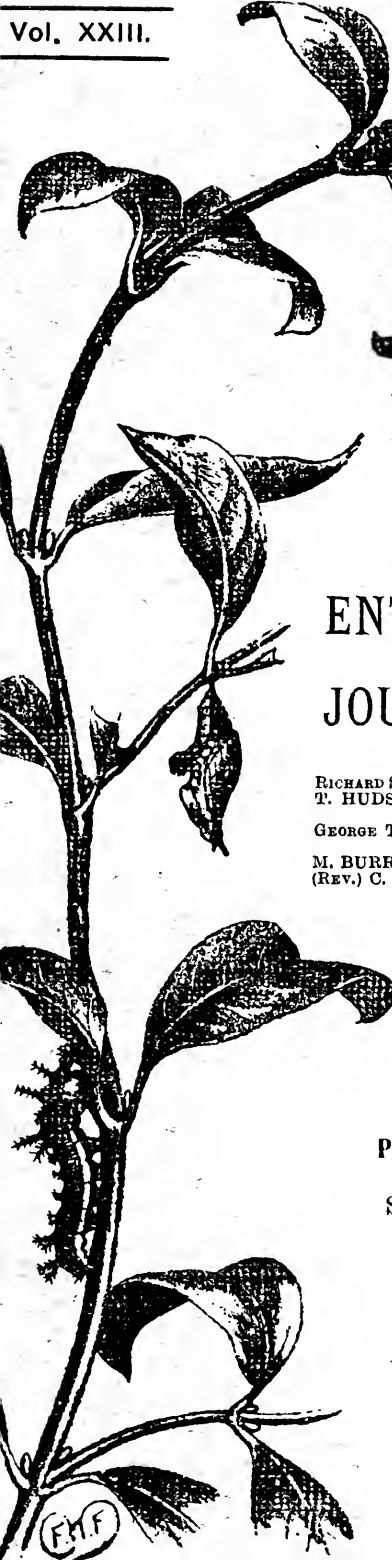
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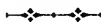
A SNAPSHOT OF MR. TUTT AT VERSOIX, GENEVA.

(By kind permission of Prof. C. Blachier.)



Geo. W. Lutz

FOREWORD.



By **Hy. J. Turner, F.E.S. (Editorial Secretary).**

THE inception of the project here carried out, of devoting the major portion of a number of this magazine to the memory of its devoted Editor, James William Tutt, is due to the suggestion of Dr. Burr, made to me at the Annual Supper of the Entomological Club, on the evening of January 17th, just a week after Mr. Tutt's decease. A scheme was drawn up and submitted to several of the associated editors, and readily secured their active support. The various contributions below all testify to the worth of the "truly great man" we have lost; they estimate his work, his ability, his character, and his life, at their true high value, and their testimony abundantly proves that he did not live and work in vain, but that he had achieved the desire he often expressed to me—he left the study of entomology at a higher grade than when he began it. Nearly every writer has omitted, possibly from ignorance, one of the main features of his success, and that was to mention his intuitive recognition and encouragement of the earnest young worker. He often expressed to me, in his forcible way, that the future depended upon the youth of to-day. Many a young worker has been led on and encouraged to do work of surpassing merit under his fostering aid. Only a few of us know the delight it was to spend our afternoons and evenings "at his feet" as it were, when his younger friends met around the marvellously perfect collections which he had so assiduously gathered for the purposes of his study. The standard he set was a high one, and he expected all to follow. No one who was privileged to be his friend, but will feel his loss most keenly.

IN MEMORIAM.—J. W. T.

By **Prof. Selwyn Image, M.A., F.E.S. (Slade Professor of Fine Art in the University of Oxford.)**

Dear Spring returns, ah! April's here,
The gay magician of the year;
With flickering smile and dewy kiss,
Eager from out rough Winter's thrall
Expectant Nature to release.

The woods awaken to the notes
Commingle of mellifluous throats;
Where many a primrose-blossom, wet
With quivering dew, salutes the morn,
Nestled by fragrant violet.

In orchards sheltered 'neath the down
The trees assume their snowy crown
Once more, once more the may-bush dons
A sunlit robe of tender green;
On the blue water sail the swans.

MAY 15TH, 1911.

And in yon clearing of the wood,
 Seeking their loves and honied food,
 Between the birchen-stems there float
 Soft, saffron, psyche-wingéd sprites
 To music of the first bee's note.

Nature awakes, the old earth stirs
 To youth renewed : the golden furze
 Laughs on the hill-side to repeat
 The young sun's golden smile : alert
 Up leaps the world on airy feet.

But One, but One, who loved so well
 Nature's enflancements, and to tell
 Her strange, mysterious beauty's tale,
 From morn to dusk, from dusk to morn
 Studious her secrets to unveil ;

Alas ! for him, our Friend, in vain
 All things their loveliness regain ;
 But he no more shall feel nor see,
 Eager with us as heretofore,
 Our spring-tide's rare felicity.

We laid him in the earth to sleep
 Through the long night that dead men keep,
 Silent and senseless : still we stood
 That winter's morn, and bade Farewell !
 There was no more that mortal could,

But leave him, dust to dust . . . Ah ! no ;
 The spring-tide's here ! Can it be so ?
 The keen brain and the generous heart
 Passed into idle nothingness,
 Of us and ours no more a part ?

He reads awry this April morn
 The message that from earth is borne,
 If from the glad renewal there springs
 No fair horizon into ken,
 Beyond all doom of mortal things.

Dear Friend, gone hence ! we sighed Farewell !
 As tears about your grave-side fell.
 'Tis passed : this April morn prevail
 Faith's finer promptings, and we cry,
 O Spirit, in radiant freedom, Hail !

“TUTT AS I KNEW HIM.”

By **Malcolm Burr, D.Sc., F.E.S., F.L.S., F.Z.S.**

For robust common-sense, eager devotion to his profession and his Science, cheery optimism, sturdy self-reliance, vigorous individuality and a prodigious capacity for work, Tutt stood without a rival.

I had known him by name for some six or eight years before we first met at the rooms of the Entomological Society in 1896, and I was immediately won by his downright sincerity, outspoken candour, and strongly sympathetic nature.

That amazing energy, which enabled him to crowd so much work into a busy life all too short, the very energy which brought him prematurely to the grave, was a striking example to those who claim to “have no time” for Entomology.

While rising always in his profession, he found leisure and strength to create and bring to success his *Entomologist's Record*, to gain a profound and intimate knowledge of the Lepidoptera, not only of Great Britain, but also of a greater part of the Continent, to give the world the benefit of his experience in a prolific series of papers, and at frequent intervals to throw off a book overflowing with matter, information, and facts.

His absence is deeply felt at the meetings of the Societies which he frequented, above all, at the Entomological Society of London, where we still look instinctively for his cheery greeting, and listen in vain for his characteristic and breezy intervention in debate, which he always illuminated by his sound common sense.

The very prominence of his character offended some: long years devoted to the teaching profession made him didactic, even authoritative and dogmatic, and he made no claim to polished courtliness nor superficial grace.

To-day, the memory of the man is still so fresh that it is bound to affect our judgment of his work: we who knew him so well are not the best critics of his scientific output; our foreign confrères, who knew him rather through his writings, can form a more impartial verdict, and this will be confirmed by posterity.

To his literary and scientific achievements, full justice will be done in these pages by more competent pens than mine: his great services to the Entomological Society that he loved and served so well, will be recorded by one who best knew their extent and their value.

As years go by, the memory of the Man will fade, though the memory of the Entomologist will always be bright, so long as Entomology is a Science.

It is my mournful privilege to place here on record my last tribute to the memory of the man, for whom I held so high esteem and genuine affection.—Castle Hill House, Dover. *March, 1911.*

By **G. T. Bethune-Baker, F.L.S., F.E.S.**

Some of us mourn over the loss of the Editor-in-chief of this magazine, all workers in Entomology will more or less deeply regret his untimely death, just when in ordinary circumstances he would have

been in the full zenith of his mental powers. He was a man who could not brook inaccuracy of observation and had no sympathy with the mere collector. Well do I remember his first entry into the Entomological Society in the latter half of the eighties. In 1885 the Royal Charter of Incorporation was received and read at the first meeting I attended, and after the reading of it I well remember signing my name in the obligation book, and being welcomed by the usual "hand shake" as the first Fellow to be received into the Society. Mr. Tutt followed the next year, and he very soon made his presence known; the meetings were then very sedate and it took the older Fellows some time to accommodate themselves to the keen remarks of the new comer, even though the remarks were always the outcome of his own personal observations. At that time he confined himself to British Entomology, but his power of deduction and analogy very soon made itself felt, even though his experience was then limited to the British Isles. His observations at the Society's meetings were always to the point, though sometimes resented and sharply debated, yet I believe it was more the direct incisive manner in which he presented his arguments and statements, that created a feeling of opposition in those early days, than the facts and statements themselves, but even then it was only the character of the man showing itself. He was essentially a lover of truth, a lie or a mis-statement were to him really abhorrent, and as he had no sympathy with an inaccurate observation, it followed, therefore, that he had no hesitation in condemning such inaccuracies in the severest terms, perhaps at times with a severity that was really unnecessary, but we must always remember that at the back of it all lay an inherent desire for truth, and an inherent desire for the real advancement of science in general, and of entomological knowledge in particular. At that time I came but little into personal contact with him, it being only within the last four or five years that I have been in close touch with him, but during these latter years I learned to appreciate and esteem him as a friend. Time mellows and softens; suffering and illness do so likewise even to a greater extent, and our friend had his share, if not more than his share of the latter, which, without doubt, had a marked effect on him during recent years. Over and over again have I seen him gentle as a child dealing with an adverse opinion, in a manner wholly different from the way he would have handled it ten or fifteen years ago. It was quite refreshing after I had been criticising some of his work (for instance I strongly criticised his raising so many new genera for our common Plebeiidæ) it was refreshing to hear him say "I want to get a sound basis from which we may start afresh. Staudinger has made so many errors in the the determination of species and varieties that we must refer back to original descriptions and types, to try and rectify them, and in doing this I may probably raise genera for species where something strikes me as peculiar to that species, then when you are revising the whole group you will naturally go more into detail than I want to do, you will re-sort many species, sink my proposed genera where necessary, but I shall have given you a basis to start from, that was not in existence previous to our collaboration in these last volumes."

His one idea was to help to focus our present information up to a point, where our vision would be quite clear, where, in the landscape before us, all our known facts would stand out in clear and due

proportion; not that he was desirous of doing away with theorising, far from it, but in the landscape before him, theories must fill in the picture as the clouds, adding much beauty but not occupying the place of the solid ground of ascertained facts, for a wind may come and entirely alter their shape, nay, may dissipate them altogether into thin air. As I take up volume after volume of his books, the thought that comes is, how did he get them written, his professional life was exacting, for he never allowed his love for entomology to over-ride the foremost place which he gave to the school of which he had charge, it is enough to see the reports to realise that, to say nothing of the number of his boys who have come on under his guidance, and who are now holding positions of importance and responsibility. How, therefore, did he get his work done? His rapidity in dealing with things was quite unusual, his rapidity of thought, rapidity in summing up the position and summarising his conclusions were equally unusual, especially when the correctness of his summaries is remembered. He was up at 5 a.m. as a rule, he told me, and I suppose rarely if ever in bed before 12, and often later, so that the wonder is how he held out as long as he did. We do not forget his many friends who helped him in his work, but he himself arranged it all, transcribed the major portion of it, and composed a very large amount. His consideration of the old literature, so often neglected by present writers, is of inestimable service to systematists; his clear method of condensing it, and the use made of it, cannot be too highly commended. Of course there are conclusions where we disagree with him, but they are not of frequent occurrence, and his fixing of the old types of the genera dealt with or referred to, will be of real service to the future monographer; the amount of labour bestowed on this must have been enormous. We will refer to special cases. His reasoning on the type of the genus *Sphinx*, and fixing it as *ligustri*, appears to us as entirely correct and reasonable, and the same applies to *Sesia*. When we remember that both of these were fixed for all practical purposes before the year 1800 had even dawned, one cannot but regret that some more eminent lepidopterists do not accept them, and still apparently decline to accept the International Code of Rules. But on the contrary, turning to the volume dealing with the Anthrocerids, we can see no valid reason for the separation of the genera *Adscita* and *Ithagates*: to us, the distinctions enumerated, of which there are but two, are purely specific. Again the author was well aware that his creation of several new genera in the *Ruralidae*, as also in the *Plebeïidae*, was inadvisable in the present writer's opinion, for no real structural difference could be pointed out, whilst the excessive naming of mere aberrations or sports was in my view much to be regretted, and a reference to his list of Palearctic *Urbicolides* will show to how large an extent he carried out this practice, though when I remonstrated with him about it, he replied that he did not desire or imagine anyone would really catalogue them, and that he did it to try and counteract the reprehensible practice of many dealers in inserting in their lists their own named aberrations merely for the purpose of sale. These points, however, really do not detract from his work at all, and one only mentions them to show the mind of the man and how he weighed things up before acting. One of the most valuable portions of his work, however, we have not referred to, viz., his histories of the habits of insects both generally and particu-

larly, whilst the exact and detailed accounts of the early stages of the ova, the larvæ, and the pupæ, so much of which was the work of his friend Dr. Chapman, are in all cases a most valuable addition to every student. The amount of deeply interesting information gathered in these chapters is very great, and of permanent value to all lovers of the science. In closing we would especially refer to the infinite pains and trouble he took in unravelling the tangled knot into which *Polyommatus coridon* and its varieties had been tied up, the reference to the original descriptions, types, and figures, meant an enormous amount of time, but the result proved worth it all, for now we may consider that species and its forms settled for good, and we should remember that this is only one of a vast number of other similar instances.

Deeply do we, his brother Editors, mourn his loss; he was one whom we could ill spare, and he is one who will be missed by our fellow workers on the Continent almost as much as by us at home.—19, Clarendon Road, Edgbaston. *April*, 1911.

By the Rev. George Wheeler, M.A., F.Z.S., F.E.S. (Hon. Secretary of the Entomological Society of London.)

I first met Mr. Tutt near the summit of the Simplon Pass on August 2nd, 1899, and had consequently known him for nearly twelve years, yet I find it most difficult to write of him in any way which does not savour of autobiography which no one wants, and if I seem to err in this direction, my excuse must be that it is the only way in which I can in any degree bring out those characteristics in him which particularly struck me. First I will mention, because it was the first of his wonderful gifts with which I came in contact, his power of quietly making one ashamed of preventible ignorance or want of thoroughness. In the light of later experience I am aware that his own vast knowledge and thorough-going pursuit of facts, whether in the field or the library, were at the root of this, and I have often wondered how many other entomologists were indebted to him for their first shunt off the lines of the amateur collecting of the middle nineteenth century, in which so many of us had been brought up. On the evening of the day when I first met him and Dr. Chapman they asked me to come and see them at the Fletschhorn Hotel, (it was my first visit to Simplon, and I was actually staying at the Poste!), and in the course of conversation mention was made of *Erebia jarofasciata*. "What's that?" I asked, "I have never heard of it." Mr. Tutt slightly raised his eyebrows and did *not* explain. The action was not very noticeable, the silence perhaps even less so, for Dr. Chapman enlightened my ignorance, but it was enough; and any knowledge I may have acquired beyond that of the most ignorant of "mere collectors," and any little position I may have achieved in the entomological world, are due, wholly and solely, to the expression on Mr. Tutt's face on that never-forgotten occasion.

I had a good deal of correspondence with him during the next two or three years, after I had become a regular contributor to the *Ent. Record*, but the first literary affair in which I was in close touch with him was the bringing out of my own book on the Alpine Butterflies, and it was then that I became aware of two other of his characteristics. The first was the ungrudging readiness with which he gave his time

and help to one who had at that time no sort of claim on either; the other was the strength of his fighting instinct. In the introduction to my book I have upheld several unpopular positions, and he sent me a letter he had received from another well-known entomologist, to show me the sort of treatment I might expect in consequence. I wrote asking his advice as to whether it would be better to suppress reference to these views in the introduction, at the same time asserting my determination to continue working on the same lines in the body of the book; "No, no," he replied, "stick to it and fight it out." Several were points he had at one time fought for himself, but had given them up because they took time from more valuable work, but the sight of them again was as the trumpet to the war-horse, and I fear he has encouraged me more than once to break out again.

Balancing his readiness to help others was his unrivalled power of making others help him. I must tell the story of how I found this out, for it is so delightfully characteristic of his methods. He had come upon me one day in the Museum at South Kensington, when I was hard at work on the *Melitæas*, in preparation for the paper (not then begun, and still, after three years, unfinished) which I was proposing to write for the *Entomologist*, and he observed: "I wish I could induce you to work at the *Lycænids* a bit." I rather hesitated, not because I was unwilling to help him, for I had then already written the index and synopses of the first four volumes of his *British Lepidoptera*, but because my thoughts were at that time entirely occupied with another group, but at last said: "Well, when I have got some of this off my mind I will see what I can do." Two or three days, I think, elapsed, and then I received a colossal package, partly of proofs that required correcting, partly of detailed points which required checking, and partly of more definite research work which he wanted done first hand. I don't know whether I was more amused or appalled, but it was impossible to refuse, and from that day till the time of his last illness I was kept pretty steadily at work! I understood a good deal after that day, which had been somewhat of a mystery to me before. The extraordinary rapidity with which he could work himself, sometimes, perhaps, made him fail to realise the strain which was occasionally put on his very willing helpers, and if one may venture a criticism, he was not always as careful as he might have been to avoid unnecessary overlapping in their work, which indeed was also the principal fault in his own writings.

It has been said of him that he was apt to show impatience with those whose views he held to be wrong, but nothing could be more opposed to my experience of him. Nothing for instance could have exceeded the patience he displayed in trying (quite unsuccessfully) to bring me round to his views on varietal nomenclature, even though he was fully aware that all work done for him would conform strictly to his own lines, so that it was solely for my own intellectual welfare and with no ulterior object of his own to gain.

No one, again, could, if they knew him, regard him as a man with one interest; it was as great a treat to have a talk with him (or perhaps more strictly to hear him talk) on educational as on entomological matters. In whatever line he had taken up he would have been great. An indefatigable worker, a keen observer, closely attentive to detail, with a deep vein of poetry in his nature, a powerful

but disciplined and scientific imagination, a strong sense of duty, a far deeper religious sense than perhaps he generally got credit for, and an unfailing readiness to help others in any way in his power, with his amazing aptitude for getting others to work under his guidance and direction, his wonderful elasticity and power of rebound, and his utter incapacity for knowing when he was beaten, he would, under other circumstances, have made a great general, or a great missionary, as readily as he made a great entomologist, a great teacher, and a great man. We are sadly the poorer for his death, but how vastly the richer for his life.—37, Gloucester Place, W. *March, 1911.*

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

I first met Tutt some 20 years ago, when I became a Fellow of the Entomological Society of London in 1891. In spite of the fact that he was a Lepidopterist, and I, at the time, purely a Coleopterist, I was attracted by his strength of character and wide outlook on science in general, and very soon got to know him better. Undoubtedly, Tutt's influence and assistance has done as much as anyone's to encourage the more scientific study of Entomology, especially among the younger men, both in London and the provinces. I shall always remember with pleasure the earlier Leicester Entomological Society dinners and conversazione, when Tutt was the principal guest, for his speeches calculated to stir up the enthusiasm of the beginners, and for the pleasant excursions we made on the following days, when he always accompanied us. In 1897 he honoured me by asking me to become the editor for Coleoptera to the *Entomologist's Record*. I can say that to the day of his much lamented death, we never had a quarrel or misunderstanding over anything, and I always found him fair and just on any subject. I have twice served with him on the Council of the Entomological Society of London, and it was always evident his chief object was to benefit the Society in all he did. We shall always owe him a very great debt, both for the number of Fellows he induced to join us, and latterly for the very large part he played in helping to place the Society on a much sounder financial basis. It is the greatest satisfaction to know that he was aware, before he died, that he had been selected as our President. One has only to read the obituary notices of our old friend, both at home and abroad, to realise how much he was appreciated in the Entomological world, and how great were his achievements. Besides this, I think the part of his character which appealed to me most, was his strength. In these days when we possess so few great or strong men, and a dull mediocrity appears to be the aim and end of all things, it is very refreshing to find a really strong character, one who will fight on to a finish, overcome all obstacles and difficulties in his path, and influence others, even in spite of themselves at times, to help to fight his battles.—58, Kensington Mansions, S.W. *March, 1911.*

By the Rev. C. R. N. Burrows, M.A., F.E.S.

It was as far back as the beginning of the "eighties" that I first came to know Mr. Tutt. He was then busy with his *British Noctuae and their Varieties*, gathering his information, which he began to

contribute to the *Entomologist*—but afterwards issued in book form. To me he was rather a personal friend than an Entomological acquaintance. By those who knew him thus, the kindness of his heart and the geniality of his disposition were best understood. He was emphatically a “working-man.” Speaking personally, I may say that I have repeatedly begged him to work less, and rest more. That he was attempting too much, he was well aware, but he always said, that rest meant death. I have often run over to see him when laid up, and found the same restless spirit worrying to be at work again. This was the characteristic of the man. I was inexpressibly touched when in November last, lying upon my sick bed, and barely able to dictate messages of encouragement and hope; he, from what proved to be his death-bed, wrote in as firm a hand as ever, his messages of encouragement to me. Others, better qualified than I, will put on record the keenness of his eye, the decision of his judgment, and those other points which mark him out as a leader amongst Entomologists.—Mucking, Stanford-le-Hope, Essex. *March, 1911.*

**By the Right Hon. Lord Walsingham, M.A., LL.D., F.R.S.,
F.L.S., F.Z.S., F.E.S.**

If on first acquaintance my impression of the late Mr. Tutt was less favourable than subsequently, this was certainly due to that irrepressible enthusiasm and eagerness which dominated his character and rapidly inspired admiration and respect in kindred spirits. He was in every way too genuine and keen to waste any time in preliminary approaches to confidence, but his true devotion to scientific research, accompanied as it was by an earnest sympathy with the efforts of other workers, could not fail to command the regard and respect of his fellows, and to kindle in them a generous reciprocity. His industry and perseverance seemed to me almost phenomenal. He certainly turned to good account such opportunities of collecting as he was able to snatch from other work, and I was indebted to him for many interesting European Micro-lepidoptera, now in the British Museum, notably the second known specimen of *Tischeria aurifrontella*, Rgt., and a new species of *Megacraspedus* (*tutti*, Wlsm.).

His lamented death deprives us of an earnest, careful, and ardent colleague, whom I was always glad to meet, and with whom I greatly enjoyed the friendly discussion of any questions that arose incidentally out of our mutual interest in the study to which he had so conspicuously and successfully devoted his time and energies.—Villa Sans Souci, Monte Carlo. *February 26th, 1911.*

**By W. J. Kaye, F.E.S. (President of the South London
Entomological Society.)**

Tutt dead and gone! It hardly seems true to us who have known him alike in our work and our play through fourteen years. It was at a Leicester (where I was stationed) entomological meeting, that I first met Tutt personally in 1897. I had corresponded previously, but had not met the man face to face till the autumn of the year mentioned. They say that first impressions are very often misleading, but my first impression of the late Mr. Tutt was the one that I retained till

his death, *viz.*, that he was a deep and earnest thinker. The pages of the early years of the *Record* gave one a very fair idea of the character of the man, who was the moving spirit and editor of the periodical that was then in its infancy, but, however much one may read about and be told about a person, it is never the same thing as meeting him. I found in Tutt a man of rather reserved conversation and everything that he did say was well considered. In conversation he was vastly different to what he was when he was speaking publicly at a meeting. He then unbridled himself, and if the subject was entomology (which it was pretty certain to be) he would talk at considerable length and attack the subject, if it was one of his own, with complete confidence, having all his facts ready and at his finger tips. It was always a pleasure to see him at the meetings and to hear what he had to say, for he was a most ready speaker. If a discussion was raised, he usually listened attentively till near the end, when he would summarise the facts already brought forward, and then not infrequently add his own fresh quota with a general review of the whole matter raised. In latter years, if the subject was European Butterflies, Tutt's opinion was more or less accepted as final.

It is rather curious that as long ago as 1898 Tutt had evidently lost his keenness for British field work. On January 14th of that year, he joined a small party of us to Buddon Wood, in the north-western part of the county of Leicestershire. Although most of us were keen on obtaining something in the way of specimens, Tutt only looked on, and admitted that he was afraid he was rapidly becoming a bookworm. How true this was we have all seen in the years that have followed. It is as a writer of books and a speaker at entomological meetings that he has been known to us chiefly in the past fourteen years. It was not my fortune to ever collect with Tutt on the continent, where what little collecting he did in his summer vacation was indulged in. But from conversation on several occasions, he appeared to be quite enthusiastic over the more enchanting scenery of the Alps, and its accompanying abundance of insect life, than is to be found in our own country. He was doubtless proud of the knowledge he had gained of the European butterflies, and not less so of having visited very many of their haunts. It seems rather strange that he should have persevered with his tremendous undertaking, the *British Lepidoptera*, when his collecting haunts of late years, and the insects he loved best of all, were not of these Islands. It shows the strength of mind of the man to have continued what he evidently considered was a duty. He had begun the work, and as long as he lived he intended to carry it through. As was to be expected of such a man for thoroughness, he could not stand the dilettante ones, and was never at his ease unless he could converse with spirits more in keeping with his own. It was rather remarkable in a man of Tutt's capacity, that he never properly appreciated the entomological work done by others unless it was of his own kind, which was essentially biological. The classification of the lepidoptera by imaginal characters, such as by the neuration, he was entirely out of sympathy with, and it is scarcely too much to say that he never grasped the subject in the way one would have expected him to. Similarly with the study of "Mimicry," he was out of sympathy with the greater part of the work done and the theories advanced. In this subject, however,

latterly he appeared to have had his interest thoroughly aroused. At a recent meeting of the Entomological Society, when I was showing some of the wonderful Syntomid moths of the genus *Pseudospheca*, which I had taken in Brazil with their models, the wasps, he became quite enthusiastic upon these striking instances of mimicry, and what was most rare for Tutt to do, he spoke at some length *not against* the theories of mimicry, but *for* them. I believe I am right in saying that this was the last entomological meeting that poor Tutt ever attended. None of us could ever have dreamed that that was to be the last occasion when we should hear the great entomologist speak.—Caracas, Ditton Hill, Surbiton. *April 10th, 1911.*

By Robert Adkin, F.E.S.

It must have been in the late "Seventies." I had spent the latter half of a glorious summer day in Chattenden Roughs, had filled perhaps some three score boxes, no doubt was feeling some pride at my success and was preparing to make my way home as the shades of night were falling, when I met a youth, a stranger. He was in the act of transferring pill-boxes from his pockets to a good sized portmanteau, which was then practically full of them, and which he assured me represented only his day's captures. It was, I suppose, some disparaging remark of mine that drew the reply, "It's no use taking one or two specimens of a species, if you want to know anything about it, and why as to that, I shall be up early to-morrow morning and have them all set before night." That was Tutt in his early entomological days, that was but a sample of the energy that characterized his doings throughout his all too brief life. It was not until some years later, in fact in 1886, when he joined the South London Society, that I saw much of him and then perhaps, our views were hardly in accord, a certain crude assertiveness in his manner was hardly conducive to close friendship. Yet, as time wore on and we became better acquainted, one could not resist his strong personality, his ready grasp of that which mattered; thus appreciation led to friendship, and as I look back over the years that have passed, many and pleasant are the recollections of him that come to my mind. We all have faults but few of us are as conscious of our own as he was of his. Well do I remember a conversation I had with him not very long ago, it seems but yesterday. We were returning from some function, I believe it was from a meeting of the Entomological Club, where our conversation turned to a topic in which we were mutually interested, and as to which his views were without doubt right, but where he had met rather strong opposition, as I thought, from the way he had put them, and I ventured to say so. "Yes," he said, "I know I am often brutal in the way I put things but I can't help it, and you know I am right." Needless to say he carried his way in the end to the satisfaction of all concerned, for they also saw that he was right. Thus did I know Tutt in his later years; and how I miss him!—Lewisham. *March, 1911.*

By F. Merrifield, F.E.S.

I have been asked to write a few words with reference to the late Mr. J. W. Tutt. Others, better qualified, will bear testimony to his

worth, and the value of his services to Entomology in many of its most important aspects. As regards experimental work, which is the only department on which I have any special knowledge, I do not think he did much of it himself. But at an early period he fully recognised its value, gave it much encouragement, assisted very efficiently in providing material for it, and he entirely appreciated its results.

The wide range of his study, of the biological as well as the systematic side of Entomology, and the comprehensive thoroughness and minuteness of his observation, were extraordinary; it would have been a marvel past belief if the detail of experimental work could have been added. But the results of his field studies and researches afforded a continual stimulus to experiment, and, it may be said, a useful corrective also. One looked forward to the monthly appearance of the *Entomologist's Record and Journal of Variation*, with the certainty of finding in it something that was new in the way of knowledge. And in this magazine, and perhaps still more in some of his other works, such as the chapters of a general character in his elaborate, and, alas! unfinished work on the *British Lepidoptera*, one never failed to find much that threw light on questions interesting to all entomologists. He was pre-eminently a lepidopterist, but one who was an authority on those of all Europe, and who was highly appreciated as such throughout the world.

Mr. Tutt was tenacious of his opinions, but usually with very sufficient grounds for being so, and he always fairly appreciated adverse argument. The personal element was a strong one with him, and this had its disadvantages, though it lent an interest to his writings, to his descriptive narratives, as well as to his controversies, which certainly absolved them from dullness.

It is sad that in the plenitude of his powers, and at the very moment of their full recognition, he should have been struck down by fatal illness. At the age of 52, one might have hoped for him many years more, during which Science could not have failed to benefit in a great and increasing degree from his labours. The amount of work he got through in his, comparatively speaking, brief life, while all the time carrying on with efficiency the exacting duties of the headmastership of one of the largest of the London County Council Schools, is amazing, and cut short as it has been, it will stand as an impressive monument to his abilities.—14, Clifton Terrace, Brighton. *March, 1911.*

By H. Rowland-Brown, M.A., F.E.S.

If ever a man lived the strenuous life, that man was James William Tutt. I first made his acquaintance in the early days of the *Entomologist's Record*, and a common interest in the study of the western palæartic butterflies, which he was also commencing in earnest about then, helped to cement our entomological friendship, which lasted unbroken to the day of his death.

Knowing the nature of his professional work, the keen enthusiasm displayed for it, and the way in which he threw himself heart and soul into the exacting duties of a schoolmaster, I never ceased to marvel at the unflinching energy of mind, as well as body, which left

him fresh after a full day with his boys, to take up and devote his entire thoughts and attention to the entomological problem of the moment. Gifted with a splendid memory, and with the critical faculty developed in a high degree, no task seemed too arduous for him; indeed, the more difficult, the more controversial, the more tangled the skein he set himself to unravel, the happier he seemed to be. Yet the naturalist was never subservient to the pedagogue; and through all his work, as I saw it developed during eighteen years, he maintained a freshness and directness of approach almost as inspiring as the courage which carried him successfully through his literary work, the scientific quality of which was equal to its quantity.

During the last two years of his life, which were also to be the last two years of my service as a Secretary of the Entomological Society of London, another side of his character was revealed to me in the course of reorganising our finances. In the publication of his many books, Tutt had achieved a thorough knowledge of printing, and when we were asked to make certain changes in our methods with a view to economy, I found him an invaluable colleague; full of resource, and fertile of suggestion, the outcome of that experience which is as essential to success from the commercial point of view as an ability to express ideas in plain English. He literally revelled in the details of the composing room; and the items of "estimates" and "accounts rendered," presented no such labyrinthine obscurities but he invariably found the right way out.

I have heard Tutt described as a combative man. I have no doubt that he was; a rapid thinker is not always tolerant of the slower kind. But personally, while I was brought much into contact with him in his entomological capacity, and knew him also as a friend, and the friend of many, I feel sure that his indiscretions were never "stretched," and that personal antipathies were foreign to his nature. Brought up in a school where most of the fighting is done with the gloves off, he hardly realised the effect of his dialectic blows upon persons accustomed to less trenchant attack. When he met his match, he would be the first to acknowledge the skill of antagonists, however distasteful their cause or their methods; and I never knew him harbour the least feeling against any such, when the fight was done.—Harrow Weald, *March, 1911.*

By G. T. Porritt, F.L.S., F.E.S.

I gladly respond to the Editorial Secretary's invitation to write a few lines on the late Mr. J. W. Tutt, because probably very few of the present day lepidopterists knew him for so long a time as I did. It is now well on to forty years since I first casually met him in Chattenden Woods, near his home at Strood, when he was a mere boy, and although I lost sight of him for some time afterwards, he repeatedly reminded me in after years of that meeting, and told me how valuable had been to him some of the hints I then gave him. Since that little talk in the wood, we have done considerable outdoor work together at Wicken, Deal, etc., and a few years ago, as my guest for a few days, we went over, to his great delight, some of our Yorkshire collecting grounds.

As we all know, whether in the field or in the study, Tutt was

a prodigious worker, and in his literary work, the marvel to everyone was, as to how he found time to get through it, indeed there are probably few other men who could do half the work in twice the time! Undoubtedly what most brought him thoroughly into touch with the entomological world was his editorship of the *Entomologist's Record*. In its early years especially, Tutt's forcible personality showed out strongly, and the drastic way in which he characterised the writings of some of his fellow workers no doubt caused him to be intensely disliked by several of the older entomologists, who could not understand that his scorn was vented on their theories only and not on themselves. Probably indeed no one has more severely criticised some of his methods and work, in conversation, correspondence, and print than myself, but Tutt always took it in good part, and we remained throughout the best of friends. That by his sterling value and high scientific work he had lived down all opposition among those who knew him, is shown by the fact that, at the time of his death, he was President-elect of the Entomological Society of London, and had he lived eight days longer would have had that high honour conferred upon him. His loss as an entomologist, both to Britain and the Continent, will be great indeed.

Besides his wonderful talent for writing, perhaps his capacity for *talking* was equally noteworthy. To talk and argue seemed as natural to him as to breathe, and he could go on for hours bringing forcible argument after argument to prove his assertions and deductions, thereby impressing everyone who heard him with the evident grasp he had of the bearings of the various sides of entomological controversy. Many of these discussions have we heard at the social meetings of the Entomological Club, which gatherings were never considered complete without his presence.—Huddersfield. *March 6th, 1911.*

Louis B. Prout, F.E.S.

In an obituary standing over the familiar and honoured initials "T.A.C.", I read that "We certainly owe it to Mr. Tutt more than to anyone else that British entomologists are more numerous and take a more scientific view of their studies than was the case twenty years ago." As one of the many whose entomological studies have for nearly the entire twenty years moved almost exclusively in channels which were dug for them by his inspiration and advice, I feel it is a duty and a privilege to add my tribute to his memory.

Mr. Tutt "as I knew him" was emphatically *the man who never did anything by halves*. My very first letter from him, when he was but a name to me and I was a tyro, was a closely-written four-page epistle full of suggestion and encouragement. And when I made his personal acquaintance, at the meetings of the "City of London Entomological Society," I can safely say, that it was his philosophical view of things which first made me take entomology at all seriously. He it was, too, who first sent me to the literature, and infused into me something of his own love of thoroughness in bibliographical research. A casual interest which I had manifested in the poor little twin "Coremias" was made the occasion; I was told, in Mr. Tutt's own dogmatic but highly effective style, that I could do

nothing with the question until I had learned all that Linné said and meant about it, and all that Borkhausen said, and Haworth, and Lederer, and in fact every lepidopterist who ever put pen to paper. And what Mr. Tutt preached, he conscientiously practised. I was brought, a little later, into very close contact with him and his methods in the bibliographical side of the preparation of his *Heterocera* volumes of *The British Lepidoptera*: nothing could exceed the solicitude with which he would seek, and the zeal with which he would assimilate, absolutely every scrap of information on each point as it engaged his attention.

I believe I am right in saying that this thoroughness was sometimes manifested almost in spite of himself. Critics told him that *British Lepidoptera* contained too much detail, some said there were too many recorded localities, some too many dates, some too much synonymy or too much bibliography, and so on. He did not deny the force of the criticisms so much as his own power to act upon them. I am still preserving, and sometimes smile over, a very characteristic letter written not long before the commencement of his *magnum opus*, in which—referring to the *bête noire* of nomenclature—he calls down anathemas on the man who does any more “wholesale resurrecting.” One wonders what he would have said had he been confronted with this letter when he was in the thick of *Funera casta*, *Talacporia tubulosa*, *Narycia monilifera*, and the rest of them; probably he would have owned—what in his behalf we write as an encomium—that he found he *could* not be otherwise than “wholesale.”

No-one has written or spoken of Mr. Tutt without marvelling at the extent of his activities, and I do not propose to enlarge upon his almost phenomenal success in making big “bags” in the field, or upon his voluminous contributions to almost every description of entomological literature, or upon his educational work outside the province of entomology. But I desire before closing to mention one other phase of the subject, which was perhaps *the* standing marvel to me, and yet is less likely to have received so much attention from other contributors. I refer to his intense interest and temporary absorption in not only the great concerns of his own work, but in all manner of passing questions, such as those of the administration of the Societies, the idiosyncrasies of a particular entomologist, or the like. Not once only, but repeatedly, I have met him at the Natural History Museum, confessing he has more work before him than he can possibly get through, yet devoting a quarter of an hour or more to an eloquent tirade on some such topic as these. It is, perhaps, not ungracious to own that—being somewhat of a plodder, and having probably too few general interests—I have sometimes chafed under these interruptions; but on looking back I can see that they, too, are a part of the man, and that he could scarcely have been what he was apart from this intensity of conviction, and wideness of interest, and, in fine, exemplification of the scriptural maxim, “Whatsoever thy hand findeth to do, do it with thy might.”—62, Graham Road, Dalston, N.E. *April 10th, 1911.*

By P. A. H. Muschamp, F.E.S.

I cannot call myself an old friend of J. W. Tutt's for our acquaintance only dates back to 1902, but friendship cannot be measured by hours, and the place that he has filled in my life since 1903 is so large, that I may safely number myself amongst those whom his death hurts the most cruelly.

"Tutt as I knew him" is not perhaps the same man as the Tutt of most of his friends. Since I first met him, we have spent a certain part of all our summer holidays together here in Switzerland, and I have only once had the pleasure of spending a few hours with him in London. My friend was the never tiring wielder of the green bag, the accurate observer, the painstaking field naturalist; the man who after spending several days with me on the Stäfa marshes gathering in and taking notes about *C. typhon*, decided that he must give up accompanying me to spend twenty-four hours in the next canton on his way to the Engadine, because he had not been able to grasp properly, exactly what were the first movements made by the butterfly when starting off on its flight, and had to satisfy himself as to how the curious initial jerk was managed; the man who started off with me for a few hours work with the Burnets and suddenly found out, when the sun had set, that he had taken no refreshments since early breakfast.

Tutt was a man who took so much interest in his subject, put so much of his own vitality into it when he talked about it, that he charmed all who had the privilege of conversing with him. I remember one day that we were talking about *C. rutilus* with one of my pupils, who cared nothing about butterflies, but on whose father's property *rutilus* was to be found. Tutt explained the why and the wherefore of this sister of *dispar*'s so clearly and so simply, that my young friend became quite enthusiastic and told me afterwards that he quite understood why people devote their lives to natural history, a thing that he, a future engineer, had always laughed at till then. Tutt's contagious enthusiasm put everyone with whom he came in touch on the "qui vive." He first awakened us to the fact that there was plenty of useful work to be done, and then made us feel that we were capable of doing a part of that work ourselves. He was ready to give all the help he could to any beginner, and found time to keep up a voluminous correspondence with all those whom he had inspired with a love for work. He ultimately gave all the credit for the work which he himself had inspired to the man who had simply caught a little of his own genial enthusiasm. The Geneva lepidopterists have always had in him, their honorary member, a firm friend, and his appreciation of the work they are doing has been for each and all of them a great incentive to honest labour. We Swiss naturalists fully appreciate what a gap has been made in the ranks of British entomologists. Tutt and Oberthür have long been, in our opinion, the two great authorities on Lepidoptera. It will be hard indeed to find any one man like our dear friend Tutt, who will combine the genius for hard work with the ability of extracting work from others. His influence for good has been great. What better epitaph can any man hope for?—Institute Stäfa, Switzerland. *February 23rd, 1911.*

By Rev. R. Ashington Bullen, F.L.S., F.G.S. (Ex Hon. Sec. of the South-Eastern Union of Scientific Societies.)

In sending a few words of friendly and appreciative recollection of our departed friend J. W. Tutt, I must mention that I have known little of him apart from the work of the South-Eastern Union, where my duties as General Secretary for the last six years prior to 1910, brought me necessarily into contact with him. I do know that he has been a busy worker in his professional work, and the wonder to me has been that he has found time to undertake the colossal task of writing the exhaustive volumes of *The British Lepidoptera*, as well as editing *The Entomologist's Record*, and in addition the seeing our own *South Eastern Naturalist* through the press. He could have had no spare time for rest, and must have been a continuous worker at his subject. I fear that his strenuous life has shortened his days, while it has at the same time been an example and an inspiration to other workers in the same and other fields. My relations with him have been of the most cordial nature, and I have learned to appreciate his unflinching desire to get the best results for the South-Eastern Union in every way he could. He has made the *South Eastern Naturalist* a worthy exponent of the aims and objects of our Union, and it will be very difficult to find a successor who will combine in exactly the same way the qualities which he possessed. I feel that we have lost one who never spared himself in the pursuit of a worthy object, who was always generous in his appreciation of others, and who was a good comrade, having as his only aim the desire that whatever he put his hand to he should do with all his might, for the best result arrived at in the best way. Our aim must be to carry worthily forward the work which he has so worthily inaugurated and done.—Hilden Manor, Tonbridge. *April 13th, 1911.*

By Harold Powell, F.E.S.

I looked upon Mr. Tutt as one of my best friends, and I feel his loss, as all who knew him well, must do. He had a strong character, and what I specially admired was his absolute frankness. He never beat about the bush, but went straight to the point. His judgment was sound, and he had a wonderful grasp of matters, entomological and other. I was always glad to have his advice, and I felt I could depend upon it. A more energetic man I never met. It was a pleasure to work up a subject for him, for he had the power of stirring up in others an interest in any work he happened to be engaged upon. I often regret that stress of business many times prevented me from giving him the help in certain matters that he asked from me. He caused in me an interest in entomological problems which I had not to the same degree before I met him, and much of the work I have done since is due to his stimulating influence. On different occasions we passed some pleasant days together in the field in the Hÿères district. I well remember the pleasure he showed when he saw *Melanargia syllius* on the wing for the first time. It was on the slope of Coudon above La Farlède, some years ago, at the end of April. The date was early for *M. syllius* and the day was not too fine. His youngest daughter was with him, and we were eating our lunch on one of the abundant terraces overgrown with thyme, *Centranthus* and

Brachypodium, having almost given up hope of seeing it, when on a terrace beneath us came an unmistakable *M. syllius*. Dropping our food, we stalked it, and I was lucky enough after a while to catch it. We took three more after that, and he came back to Hyères content. His holiday was then nearly over or he would have been able to take many more. On that same day we got larvæ of *Procris ampelophaga*.

When last I saw him, he was so greatly changed in appearance, his hair was quite white, that I did not know him at first, but when he spoke I knew him in an instant, and he seemed much amused at this. We spent the evening together, and he strongly urged me to send a detailed account of the life history of *Hesperia silae*, of which I had the larvæ, to the Entomological Society of London. No opportunity did he ever lose for the increase and advancement of Entomological knowledge. Little did I think it was the last time that I should see him.—7, Rue Mireille, Hyères, Var, France.

HIS WORK AND INFLUENCE.

By Prof. E. B. Poulton, D.Sc., M.A., F.R.S., F.L.S., F.Z.S., F.E.S.,
 Hope Professor of Zoology in the University of Oxford.

It has been said, I believe, that genius consists in an infinite capacity for taking pains, and all will agree that power of work is a most important element in the composition of genius. But in science, at any rate, the power of work is itself the outward expression of an inward intellectual state; a burning desire to find out, curiosity carried to its highest point. This alone is the motive for beginning, and the inspiration for continuing, all the best and the hardest work that has ever been done, or will be done, in science. Darwin, before he was 40, taught his old teacher, Henslow, that this divine curiosity is the true motive-cause of investigation.

“I believe there exists, and I feel within me, an instinct for truth, or knowledge or discovery, of something of the same nature as the instinct of virtue, and that our having such an instinct is reason enough for scientific researches without any practical results ever ensuing from them.”*

How far J. W. Tutt analysed his own motives—whether, indeed, he did so at all—I do not know; but few men have shown by their fruits that they possessed in larger measure that “instinct for truth” of which Darwin wrote.

In spite of the widespread popular conception of the scientific man as a solitary recluse, it is the fact that scientific work, at least in large part, is, and must be, gregarious and co-operative, and, under strong leadership, I believe that it is always better for being so. Hence it follows that the power of inspiring work in others is as important as, or even more important than, the power of doing work; but the two forces cannot be compared as if they were independent. Only those who can work are able to inspire work, and when the first power is permitted to fall into disuse, the second is almost always enfeebled.

* From a letter dated April 1st, 1848. *More Letters*, I., 61.

Here, too, few men have shown by their fruits that they were possessed of a larger store of contagious enthusiasm than James William Tutt.

Many years ago an eminent entomologist remarked to me that in an intelligently directed country the man whose loss we now deplore would have been placed in a position where his gifts could have been exercised continuously and to the greatest advantage. Elsewhere in these pages appears an account of Tutt as a teacher; and assuredly the uttermost need of the great profession of teaching is that of men who feel that their work is the one thing they love, the one thing they are fitted for. But he who inspires scientific interest and investigation is also a teacher, and the possessor of powers that are even rarer than those qualities—of inestimable value and far too rare—that are required for the education of the young. I cannot but think that the speaker was right and that the whole of Tutt's time and energy ought to have been made available for the exercise of his greatest gifts.

To understand the full height of Tutt's achievement it is necessary to remember that the road leading to the Kingdom of Science was not made smooth and easy for him. Success was only possible because he had the qualities of one

“Who makes by force his merit known,”

of one who

“———grasps the skirts of happy chance,
And breasts the blows of circumstance.”

Much might be written upon the strength, the will, and the other qualities by which such results under such conditions were rendered possible; but in the tragic circumstances of his death, I prefer, in closing, to dwell upon Tutt's two supreme gifts—the power of work, the power of inspiring work in others.—Wykeham House, Oxford. April 30th, 1911.

By Prof. W. Bateson, M.A., F.R.S., F.E.S.

I value very much the invitation to write a few words in appreciation of the work of that remarkable man whom the entomological world has just lost. Mr. Tutt's name should long be remembered with gratitude by workers in various fields of biological activity. Of other aspects of his work his own colleagues can speak, but to me he was known as the man who first attempted an accurate codification of knowledge regarding the variation of lepidoptera. To those who are engaged in trying to trace the principles of organic variation, some codification of the facts is the very first necessity, and though such a task could manifestly not be completed in the intervals of leisure which could be spared from one busy life, Tutt began it well and showed to others how it could be done. I made his acquaintance about seventeen years ago, at a time when I was myself meditating a somewhat similar enterprise. For obvious reasons the lepidoptera are exceptionally good material for the study of variation, local and individual, and it seemed to me that a plain collection of the facts would be a good beginning. Knowing him only as editor of the *Entomologist's Record and Journal of Variation*, I went to talk the matter over with him, and with perfect generosity he offered me all the assistance he could give. I found at once that he was already far on the way with

a similar scheme, and that the collection of material was then well begun. It was clear also, that the work could not be done with advantage by anyone but a professional entomologist, so my project went no further. The eight fine volumes published of the *Natural History of the British Lepidoptera*, show the result of his collecting. For the first time we see how such a natural history should be done. Of these books much represents actual new research into points of life-history and anatomy, emanating, as Mr. Tutt tells us, chiefly from the masterly hands of Dr. T. A. Chapman and from other collaborators. But as collections illustrating the phenomena of variation, this *Natural History* is a very important contribution to original research. Botanists have of late years compiled a few such monographs, but I know no zoological subject which has been treated on such an adequate scale. Too often the systematist, when he has described a species and named its varieties, is content to pass to the next. He fails to catch the point of view of the student of variation, who wants to know every particular as to each form, the range of its fluctuations, the statistics of its occurrence, and its geographical limitations, and it is no use pressing him for such details. It was Tutt's singular merit that he appreciated the value of this minute treatment, and he thus compiled a veritable *corpus* of knowledge which will certainly become hereafter the foundation of a study of the genetics of lepidoptera. Like most men of original mind he had his idiosyncrasies, which to some extent interfered with the utility of his work. Having set out to collect the details he collected them all without distinction, and it is not always easy in the enormous mass which he accumulated to find the special information for which one is in search, but it is all there, and with patience can be found. The collection is made and need never be made again. When the circumstances in which this extraordinary quantity of work was done are remembered, the achievement becomes in truth amazing. While these books were in progress he was pursuing his ordinary avocations. He edited and contributed largely to a monthly journal. He did no mean amount of field work himself, and perhaps best of all, he found time to make acquaintance with the young men who were beginning to show interest in entomology, and personally to inspire them with that spirit of accurate research of which he was so full. Those who came into the circle of his friends will be well aware, that he was one of the most remarkable personalities of their time. His reward is still to come; but that it will come I think, and hope that he had prescience enough to know. —The Manor House, Merton, Surrey. March, 1911.

By Dr. T. A. Chapman, F.Z.S., F.E.S.

His influence was great and in various directions. It was not confined entirely to the Lepidoptera, for he handled various matters of general scientific interest outside his special studies. Always keen in the field, always observing insect life, making large collections, in his earlier days rearing many species, he recorded more facts at first hand than the average Lepidopterist does, but not so much beyond a fair average as at all to account for the extent of his knowledge and the commanding position he attained. This was due much more to his

activity in finding in all the authorities, what was known of the subjects that for the moment interested him, and in securing the services of workers, who would elaborate for him various points that these authorities were silent about. As time went on he did less original work himself, more of collecting and collating material from books, magazines, and the numerous friends whose collaboration he had secured. On one matter, and that perhaps the most important in dealing with the Lepidoptera, he always possessed, and in his earliest and latest works used, a marvellous intuition in discriminating species, and as to the relations of forms to each other, whether they were species or varieties, whether they were nearly or distantly related. It seemed as if this were done on quite superficial characters, observed either in the field or in the cabinet, but there can be little doubt that it was strengthened and supplemented in many other ways.

Amongst earlier examples of this faculty were his strongly formed opinions on the *Tephrosia* question, and his discrimination from *Hydrocya nictitans*, of *H. lucens* and *H. paludis*. He would probably have separated *H. crinitensis* also had he had specimens before him. Later, his separation of the Plebeiid Blues into several genera, though carried further perhaps than was quite necessary, nevertheless recognised distinct natural groups, not obvious to the ordinary collector, and illustrated the same wonderful instinct. His anxiety to perfect his knowledge was always governed by the desire to impart it to others, in papers, lectures, addresses, and latterly, of course, in the *British Lepidoptera*. Space will not permit of considering other sides of his character and work that had some importance, but those above alluded to give some clue to his influence in British Entomology. Largely, of course, it had to do with the Lepidoptera, but his abounding energy and vitality not only communicated itself to Lepidopterists by stimulating their activity, but reacted strongly into further fields. There can be little doubt that the younger race of British Lepidopterists are more numerous than they would have been without his influence, that they progress more rapidly, join our junior and premier societies more readily, and have an intelligent outlook over a much wider field than was available thirty years ago. No doubt a larger proportion will press forward and help the advance of Entomology in the future.

It may be said, all this is part of the advance we see in all directions and had little to do with Tutt. This may be true in some degree, but Tutt was in fact the chief agent by which all forward movements in Entomological Science were made available to the neophyte, and secured for him a sound footing.

He certainly advanced Entomology also though the mass of work he got done by various collaborators, as especially evidenced in the *British Lepidoptera*. Much of this would certainly never have been done, none probably recorded, apart from his influence.

He secured this collaboration by the magnetism of his energetic vitality, and more perhaps by making it evident, that all assistance would be effective, whether as obvious communications or as elements in Tuttian disquisitions, and that nothing would be lost, thrown aside, or forgotten.

Entomology, therefore, owes to Tutt not only Tutt's own work on the British Lepidoptera (and elsewhere) but also that of his

collaborators, which would otherwise not have been done. As one of these, I have sometimes felt a grievance that I elaborated material for Tutt, when I would have preferred to have worked on lines of my own selection, but I have little doubt that Tutt's continual demands for facts, opinions, and what not, supplied a whip that would have been wanting in other directions. He concentrated himself very much on the point in hand, and he often asked for material (facts, or discussions, etc.), at quite too short notice to work it out properly. In systematic discussions crude and imperfect replies had often to be given and were liable to be quoted as my opinions, whilst more fully thought out results took their place in the general conclusions arrived at.

The *British Lepidoptera*, quite apart from its greater fulness, sets a much higher standard in the treatment of the subject than any previous English work, a comparison with Barrett's large work, perhaps the most ambitious work we have, makes this evident. Uncompleted as it is, it gives a standpoint from which future treatises must start. Its influence is therefore to be observed in the future, but hardly to be measured in the present.

It is possibly outside my brief, but perhaps the greatest effect in British Entomology has been to convince our continental confrères that it is by no means such a negligible quantity as to a great extent they had held it to be.

The study of the British micro-lepidoptera has fallen largely into abeyance, gradually more and more as the influence of Stainton has become less felt as years go on. Tutt had a very good knowledge of the British micros, and two volumes of the *British Lepidoptera* are devoted to them (*Micropteryx*, *Nepticula*, Plumes), yet it is not clear that the decadence of the cult of micros was not assisted by him rather than otherwise.

His immediate, as distinguished from his permanent influence, was largely the effect of his great popularity in the Societies, especially the "South London." This popularity on its scientific side was founded on the readiness and clearness with which he could set forth any subject that interested the Society, explain its details, and show the direction of scientific advance, to which the latest available facts pointed. These subjects very rarely had reference to the micro-lepidoptera, and the attention and enthusiasm of members were thus led largely into the macro section.

Though he did not originate, he added an impetus to the very detailed recognition of varieties and aberrations, bestowing names on all specimens that can be differentiated from their fellows. This is an evil from some points of view, but it is a very desirable and necessary refinement in the opinion of the only person perhaps who ought to count, *viz.*, the man who is closely and intensively studying the group of forms involved. It ought, however, to be left to him to define what forms are worth naming, and the hurrying forward with a view to priority, by any one who meets with an aberration, but about which he knows nothing further, is much to be deprecated.—Betula, Reigate. *March, 1911.*

By A. Dampf, Ph.D. (A German Admirer.)

The Editor of the *Entomologist's Record*, the present number of which is devoted to the imperishable memory of the great savant and man, J. W. Tutt, has paid me the compliment of inviting me to contribute a few words of appreciation, from the Continental point of view. I gladly avail myself of the opportunity of discharging a debt of gratitude to an investigator, from whose works I have gained so much stimulus and instruction.

So true and profound a tribute has been paid to his memory by the friends and colleagues who worked with him, and were in constant touch with him, and the scientific results at which he aimed, the part he played in his own branch of study, and the influence which he exercised over others, all have been treated so thoroughly, and from such varied points of view by other pens, that there remains nothing original for me to add.

I never had the good fortune to make the personal acquaintance of the author of the *Natural History of the British Lepidoptera*, and never corresponded with him, so it is only through his work and publications that I can form a picture of his individuality, but what I can express, is the feeling of a Continental Lepidopterist, who has followed with attention and interest the development of his Science in England, who has much to thank English workers for, and who shares to-day the deep grief of Englishmen.

It is a mournful duty to express one's thanks to the dead, and the sadder when inexorable fate has severed the thread of life at the height of its activity, when so much valuable work must remain unachieved; but there still remains so much that is imperishable and permanent, that our gratitude cannot be too warmly expressed. We must all thank the departed, and above all, the land in which he lived, and whose Lepidoptera-Fauna he made the first object of his research. But as nothing is isolated, either in the material or spiritual world, but all things are connected and linked together, so the significance of Tutt's work is not confined to his native country, but extends far beyond the frontiers of his homeland.

For he most clearly grasped the problem of Variation; he understood the importance in the investigation of the Laws of Nature, of the registration of those divergences which appear as the result of the conflict between the inherited trend of development of the organism and the disturbing effect of exterior influences, which are written for us most clearly upon the wing of a butterfly or moth. A thousand questions arise here according to the nature of the influence: does it proceed directly or indirectly? Have the innumerable climatic factors various effects upon the organism? Do we find, too, variations of biological peculiarities? And what value have they, and what correlation with morphological characters? These, and many other questions, by Tutt's special study of variation, were brought into the foreground, and their solution attempted. When we can follow a species throughout its area of distribution, when we can trace out the steps by which the pattern of the species has been modified by the various local influences of its environment, when we recognise how far the plasticity of a form goes, then for the first time shall we have completed the foundation of the work that Tutt began, and to the

growth of which this Journal, which is devoted to the study of variation, has contributed in no small degree.

With these famous works which Tutt produced in England, the lepidopterous fauna of which he at once attacked from the point of view of local variation, it cannot be difficult for Continental Lepidopterists to begin, with a similar thorough investigation on the lines laid down by Tutt, the working out of their local faunas. But we have yet very few works on these lines, and we must wait many years yet before the influence of the point of view here outlined, and inaugurated by Tutt, affects our continental collectors.

Any impartial observer, who compares the activity of different nations, is bound to admit that the study of Lepidoptera has a greater number of first class workers in England than in any other country, men, too, who have taken up Entomology not for mere amusement, but for the real advancement of science; it is therefore regrettable, but not surprising, that Herr Gillmer's translation of Tutt's chief work has not received the necessary support from the German public.

However, every serious Lepidopterist, who wishes to master his subject, is bound to turn to Tutt's works, which are such a stimulant to further study, owing to their thoroughness and the many aspects from which they throw light upon their subject. And so his influence will gradually increase beyond the confines of England, and surely the incentive to further research is the finest legacy that a teacher can leave to his disciples. I well remember the day when, as a student, despite my limited means, I kept buying those comprehensive red-covered parts of Tutt's *Natural History of British Lepidoptera* and read with wonder the immense amount of data and observation of his own and of others, ranged to form a single picture. It was the encyclopædic scope of the work that attracted me, and this encyclopædic talent, applied to a special branch of science, was Tutt's distinguishing feature; no side of his subject appeared to him too insignificant for treatment; an absolutely exhaustive study was his ideal.

Biology, Morphology, Variation, Systematics, and Nomenclature, all were the same to him, and in all he betrayed an extraordinary and profound thoroughness. The subject which occupied the last decades of his life seems, to the ordinary mortal, not to be unattainably vast; but he, who is familiar with the inexhaustible variety of nature, knows that it requires superhuman strength to achieve the ambition of bringing together all possible knowledge of the upwards of two thousand species of British Lepidoptera. Then, too, every species, that fills its place in Nature, has a long and complicated history, even more complex than that of man, and the impression of the specific character extends even into the cells of the body, and is impressed upon the life and habits of the creature. What a colossal task to undertake, demanding an heroic courage, and what an Ideal, to make so great progress with it, before Death overtook him, and left us all in mourning.

But we hope that this example of unremitting labour and the highest devotion to the Ideal that he afforded us, in all lands where the name of Tutt was known, will arouse an array of successors, who will attack with equal spirit that object which we have all at heart,—the progress of Entomology.—Königsberg, Zoologisches Museum, March 9th, 1911.

Par L. J. L. Lambillion.

Tutt, son Oeuvre, son Influence sur l'Entomologie Mondiale.

Il est des corps célestes qui se manifestent dans l'espace, brillant d'un vif éclat pendant un temps très court et disparaissent en laissant après eux une longue traînée lumineuse qui persiste longtemps, longtemps ! Ainsi en est-il de certains hommes privilégiés, dans le cours des siècles : ils se montrent parmi nous pendant quelques années, nous émerveillent par leur savoir, dans les diverses connaissances humaines, et nous quittent, fauchés par l'inexorable destin, en pleine maturité de leur force intellectuelle.

C'est ainsi que Tutt a paru dans le monde entomologique, nous étonnant par son savoir, par la grandeur de ses conceptions scientifiques, la sûreté de son jugement, l'activité prodigieuse de son intelligence. Aujourd'hui l'illustre savant est disparu de la scène du monde, envolé dans les régions du mystère et de l'inconnu.

En présence de la perte d'un tel homme, on se sent envahi par des sentiments de tristesse et de profond découragement. On voudrait courir vers cette tombe à peine fermée, parler encore à celui qu'elle renferme, lui crier avec désolation : " Cher Ami ! pourquoi nous as-tu quittés ? Pourquoi es-tu parti, toi qui nous enseignais, qui nous conduisais sûrement dans les sentiers ardens de la Science ? Nous avons encore tant besoin de tes conseils et de tes encouragements . . . "

Mais les lamentations sont inutiles devant les lois immuables de la Nature. Tutt parti, son oeuvre nous reste. Si nous voulons garder son souvenir, suivons ses enseignements. Il nous a laissé le meilleur de son être : ses travaux scientifiques. Il a jeté des jalons sur la route que nous devons parcourir : continuons son oeuvre ! Ce n'est pas pour lui qu'il a travaillé, c'est pour la science universelle.

Tutt s'est révélé tout-à-coup dans l'entomologie, il y a une vingtaine d'années, par ses premiers travaux ; par la nouveauté de ses conceptions en histoire naturelle, la hardiesse de son jugement. Souvent ses notes arrivaient comme une pierre jetée au milieu d'un essaim d'abeilles, troublant dans leur quiétude les vieux routiniers de l'entomologie. Il changeait la nomenclature des Lépidoptères, leur restituant les noms primitifs, donnant dans ses écrits la description originelle des espèces, dans toutes les langues européennes ; il débrouillait avec art la synonymie.

Cela n'allait pas toujours sans encombres : quelques rares naturalistes, que le génie offusque, que la lumière aveugle plutôt qu'elle n'éclaire, lancaient, en sourdine, de misérables critiques, vite étouffées par la renommée universelle du célèbre auteur anglais. C'est que la vérité scientifique est maîtresse du monde : elle domine, elle s'impose, et ses adversaires sont, tôt ou tard, ralliés ou réduits au silence.

Ici, à Namur, nous avons été parmi les premiers du continent à reconnaître le grand mérite scientifique du fameux lépidoptériste anglais. Dans la séance du 13 janvier 1901, l'assemblée a ratifié, par acclamation, la nomination de Tutt au titre de membre honoraire de la Société Entomologique de Namur.

Comment analyser en quelques lignes l'oeuvre immense de Tutt ! Un volume suffirait à peine. En peu d'années il a produit une somme de travail qui demanderait à d'autres toute une vie de labeur. C'est d'abord l'apparition de son journal, dont il était l'âme, *The Entomologist's Record*, une des plus belles publications entomologiques du

monde, conçue sur un plan nouveau, unique en son genre, toujours remplie de choses nouvelles et d'instructions, où l'esprit du maître se manifestait dans chaque numéro. C'est la publication coup sur coup de ses quatre volumes sur les Noctuelles Britanniques (*The British Noctuae and their Varieties*), qui font autorité dans le monde et dont aucun naturaliste ne peut plus se passer. C'est la publication de ses Rhopalocères anglais (*British Butterflies*) parus en 1896 : livre précieux, le plus complet, à cette époque, par ses renseignements biologiques. Ces ouvrages ont été suivis de beaucoup d'autres, très importants, qu'il serait trop long d'énumérer, et qui, d'ailleurs, sont bien connus de nombreux savants.

Mais son oeuvre par excellence, son oeuvre sublime, impérissable, dans laquelle se révèle le talent, l'érudition, le génie du maître en entomologie, ce sont ses volumes sur l'histoire naturelle des Lépidoptères Britanniques (*A Natural History of the British Lepidoptera* et *A Natural History of the British Butterflies*).

Quelle somme de travail il a fallu pour écrire une série d'ouvrages semblables ! Que de recherches, que d'études, que de correspondances, que de voyages !—Tutt connaissait mieux les papillons du midi de la France, de la Suisse, et du nord de l'Italie que les naturalistes de ces pays eux-mêmes.

Tutt excellait aussi dans l'art de la parole : il savait captiver son auditoire. C'était un événement chaque année aux assemblées générales des diverses Sociétés scientifiques anglaises quand il prononçait un discours. Il savait montrer combien l'étude de l'entomologie est bonne, récréative et hygiénique, particulièrement pour les personnes que les affaires retiennent dans les villes. Il faisait ressortir le bien-être que procure la chasse aux insectes, dans les bois et les champs, où l'exercice de la promenade procure aux membres une gymnastique bienfaisante, aussi nécessaire que la nourriture.

Dans l'intimité, Tutt n'était pas moins éminent. C'était un grand coeur, un ami sincère, toujours prêt à obliger, n'épargnant ni son temps ni ses conseils, se multipliant pour rendre service : lui, cependant, si absorbé par les charges du professorat. Ses nombreux amis et compatriotes, qui étaient journallement en rapport avec lui, sauront lui rendre un éclatant hommage dans cette direction. Quant à moi, jamais je ne pourrais oublier ces quatorze dernières années où j'ai été en correspondance suivie avec lui. Sa mort m'est particulièrement douloureuse.

Telle a été la vie de Tutt, courte, mais admirablement remplie. La Nation anglaise peut être fière d'un tel fils : elle peut le regarder à juste titre comme un de ses plus nobles enfants. Mais Tutt, à l'égal des Linné, des Newton et de tant d'autres, n'appartient pas seulement à son pays : il est universel. Le monde entier le réclame. —Namur, Belgique. *March*, 1911.

By the Rev. Stewart Headlam, B.A., L.C.C.

Of Mr. Tutt's work as an entomologist I have no right to speak ; but I gladly avail myself of the opportunity offered me for saying a few words in appreciation of his character generally and in gratitude, as an old worker for London Education, for what he has done as a Schoolmaster.

Bermondsey and Bethnal Green both owe much to him; but it was as the head of Portman Place School, in the south-east corner of Bethnal Green, that I knew him best, and there I think his best school work was done.

In the old days of the School Board, when greater freedom was allowed in these matters and the individuality of teachers and Board Members had a freer scope, Mr. Tutt was able from time to time to use his influence, which his position as an entomologist gave him with distinguished persons, for the good of his School, by getting to his prize-giving men of influence and distinction. For he was always on the look out to do the very best for his School. Everything at Portman Place was subordinate to his School work, and few knew how great in another department of life the Head was. And so it came about that when only the other day he was called up to be interviewed by the Committee with reference to his appointment to a new Central School, built adjacent to his own, he came before people to whom his scientific career was almost unknown, and who, when it was made known to them, seemed almost to think that it was not altogether in his favour, some despising entomology as compared with pedagogy, others thinking that a man's heart and strength could not be in two such important works.

I, however, and all who knew him intimately as a schoolmaster, know how keen he was in his professional work. The organisation of this new Central School had occupied him incessantly, and since it was first proposed he was full of plans and schemes with reference to it. It was his constant care right up to his death, and it was one of his deep regrets that he did not live to work in it. It would be a graceful recognition if the authorities would honour him—and themselves—by naming it, after him, the "James Tutt" school.

One fact stands out prominently in Mr. Tutt's management of his schools. He was always himself impressed by the fact, and was always bringing it home to those under him, that in a boy's elementary school life, you had a unique, but very brief opportunity; that therefore, the very most must be made of it; he therefore insisted on everyone taking pains. And to insist on this in modern school life is no mere truism; for some are so anxious to make everything pleasant, that it requires some courage to insist on taking pains. It was with the shortness of the boys' school life in view, that Mr. Tutt was one of the first head masters in our Elementary System to arrange for his assistants, with a view to doing the very best for the boys, to specialise in all classes in the subject which suited each of them best; he felt that by this means you got the most out of your best men; a strong man from time to time left his own class to take the subject in which he was strong; and even in the case, now and again, of a man who was not so strong, he felt that it was all to the good for the boys to have a change.

But Mr. Tutt's personality had the advantage of drawing to his school some of the best teachers, and it also gave the school a fine name with the parents in the days when there was not a geographical line drawn round each school, and the parents were wisely allowed a free choice.

Further, with a view of doing the most in a short time, he encouraged rapid promotion wherever it was educationally possible,

though he strongly opposed the new plan of forcing children up or down from class to class in a school, or from school to school in a neighbourhood, for other than educational grounds—for the sake of filling up every available few feet of accommodation.

Two other details occur to me; in order that the Assistant Masters might, in an emergency, be able to take charge of a school, or be fitted for their post when their time came for a Headship, Mr. Tutt arranged a plan of "rota duties" for his assistants, so as to make them familiar with the routine work of administration—of which routine "returns," etc., there is more than an abundance in our schools.

The elder boys also, from time to time, had the great advantage of having little informal lectures from the Head himself on Natural History.

It is not to be wondered at that under these circumstances the Portman Place boys did very well on leaving school, and that Mr. Tutt was able to make it his boast, that they could quite hold their own with the boys from the Secondary Schools.

But though by these means, and, above all, by insisting on hard work, Mr. Tutt was able to score many successes for his boys, he was no grinder with merely material objects in view: he knew the importance of his school as a preparation for life, as well as a preparation for a living. A friend who was most intimate with him tells me that Wordsworth's "The world is too much with us" were words constantly on his lips, and indeed they express his aims.

I am glad to have been allowed to contribute this note, and so to help to bring home to those who knew Mr. Tutt in other capacities, the fact that he was a strenuous and successful worker for the education of the boys of Bethnal Green.

May the "idea of his life" be a continual source of strength and encouragement to all who knew him.—St. Margaret's-on-Thames. *March, 1911.*

By M. Charles Oberthur, Hon. F.E.S.

(A letter sent to Dr. Chapman and read at the Meeting of the Entomological Society of London on March 1st.)

Rennes, le 11 *fevrier*, 1911.

MON CHER COLLÈGUE,—

J'ai été très affecté en apprenant le mort de Monsieur Tutt.

C'est une perte immense pour l'Entomologie!

La capacité de travail dont était doué Monsieur Tutt, faisait mon admiration.

Les ouvrages qu'il a laissés sont des monuments impérissables, dans lesquels le savant Auteur a poussé l'analyse jusqu'aux limites les plus voisines de la perfection.

Monsieur Tutt se documentait avec un soin extrême; il ne consentait à aucune ignorance; il voulait tout connaître exactement. Je considérais sa bonne foi et sa sincérité comme absolues. Monsieur Tutt emporte dans la tombe toute mon estime et tous mes regrets.

Je vous prie, mon cher collègue de faire part de mes sentiments à nos honorables collègues de la Société entomologique de Londres, de leur dire combien sympathiquement je m'associe au deuil de l'Entomologie anglaise.

Veillez agréer l'expression bien cordiel de tout mon affectueux dévouement.

CHARLES OBERTHÜR.


BITUARY.

By HERBERT E. PAGE, F.E.S.

“Whose life was work, whose language rife,
With rugged maxims hewn from life;
Who never spoke against a foe.”—(TENNYSON.)

By the death of our late Editor, the scientific world has lost one of its most brilliant students, a most strenuous worker, and the writer, his dearest friend.

James William Tutt was born at Rochester in Kent, on April 26th, 1858, and was the son of James Tutt, of Strood, and Sarah Selvage, of Bexley, both of whom could trace their ancestry a long way back from Kentish forbears.

He became a pupil teacher at St. Nicholas' Church School, Rochester, and afterwards proceeded to St. Mark's College, Chelsea, whence, after a brilliant career, he entered the service of the London Educational Authority. Shortly after, he was offered a Government post as Principal of the College at Calcutta, but considerations of health led him to refuse this opening and continue his work in London. Consequent on several promotions, he was at the time of his death Head Master of Morpeth Street London County Council Central School.

He married Frances Marsh Collins, also of Rochester, Kent, and has left two sons and three daughters.

Not finding sufficient scope for his superabundant energies in an ordinary professional day's work, he commenced teaching science every evening in the week at Greenwich and Woolwich, under the auspices of the Board of Education at South Kensington. These winter courses terminated each May after the usual examinations. This left him free to give rein to his passion for the study of Nature and natural objects in the field. Every favourable evening from June to September, found him out with net and treacle pot, and afterwards with dozens of boards filled with hundreds of specimens of his beloved lepidoptera. It is no exaggeration to say he was one of the shrewdest of observers in the field, and one of the most rapid manipulators of the net and setting needle. Consequently he rapidly formed an extensive collection of the British Lepidoptera, from the Diurni to the Tineids, and further, could name any species on the list from sight, and tell what was known of its life-history at a moment's notice.

He was not in London very long before he became a member of the South London Entomological Society, joining in 1886. Afterwards he attached himself to the City of London Entomological Society, and filled the office of President from 1896-99. He also became a Fellow of the Entomological Society of London at Chandos Street, W., being elected in 1885, and in due course was offered, and accepted a seat on the Council. To show what an active and personal interest he took in these Societies, it is only necessary to mention that he also sat in the Presidential chair of the South London Society. The honour he most coveted was to succeed such brilliant men as Lord Avebury, Lord Walsingham and Professor Poulton in the Presidential Chair of the London Entomological Society, and had he been spared he would have attained his heart's desire, as he was President-elect at the time of his death. But it was not to be. He

served on the Councils of both the London and South London Societies for many terms since 1890, and held the Vice-Presidency of the City of London Society continuously from 1894-1902.

Having amassed a large collection, he began to study the material acquired with a view to further increasing our knowledge. Then he frequently contributed articles to the *Entomologist* and the *Entomologist's Monthly Magazine*. In 1890 he joined with Mr. Albert Hodges in offering to the Entomological public a new periodical—to wit *The Entomologist's Record and Journal of Variation*. This entailed a tremendous amount of work, was purely a labour of love, and was continued right down to the end. In 1895 he took over the sole control of this magazine. Were this the sum total of his energies, it would indeed be a monumental work, as ranged on the shelves in front of the writer are no less than 22 complete volumes of closely printed matter, each volume averaging 375 pages. But it is far otherwise. In 1891 he published *British Noctuae and their Varieties* in four demy octavo volumes.

The work in which he took the greatest pride however was that which resulted in his volumes on *British Lepidoptera*. These first saw the light in January, 1899, and sections were issued as completed until eight volumes were finished and the ninth begun. This will (as far as it has gone) probably be the standard work for many years to come.

In addition he issued a *Monograph of the Pterophorina* in 1894, reprinted from the *British Naturalist*; *British Butterflies* (Gill), 1896; *British Moths* (Routledge), 1896; *Practical Hints for the Field Lepidopterist in three parts*, 1901; *Woodside, Burnside, Hillside and Marsh* (Sonnenschein), 1894; *Random Recollections of Woodland, Fen and Hill* (Gill and Sons), 1895; *Alpine Valleys* (Sonnenschein), 1895, and innumerable pamphlets of which a full authentic list will be given elsewhere.

His entomological work was extensive and incessant. He frequently lectured, besides giving addresses to Societies; and at the same time continued his writings and publications. Leisure was a thing to him unknown, and in the sense of having nothing to do—undesired. His was such a quick yet vigorous mind that when one task was finished he began another immediately: if it did not so happen that he had three or four running simultaneously in various stages of completion. Then he would rapidly take them in turn and cease not to labour until each had been fully dealt with.

He was a true friend to all who were known to him personally. Whilst he had little sympathy with those guilty of foolish action, he was always ready to give sound advice and prompt substantial help to rectify matters.

His abnormal memory, strong yet kindly personality, incisive reasoning, and exceptional versatility, made him a delightful companion to those who (like the writer) were frequently in his company.

His wholesome love of Nature, his thoroughness, earnestness and industry, filled all with wonder and admiration. He put his whole soul into everything he undertook. He did his utmost to raise entomology from a mere collecting pastime to a science, and he had little sympathy with anyone who did not regard it as such. To his success in this direction let others, more fitted, testify.

There was a kind of magnetism about him that quickly drew out

a strong sense of friendship. He was a friend of friends, and it is safe to say we shall not see his like again; the writer ever thinks of him with feelings of great endearment. Most of us will feel the poorer by his withdrawal, the richer by the effect of his character and devoted service.

His death makes a gap in the ranks of the few distinguished men of science we still possess in England, and the importance of his loss from a national point of view, will perhaps be even more widely appreciated on the Continent than at home.—“Bertrose,” New Cross, S.E.

A REMINISCENCE.

By T. J. Jenkins, L.C.P.

(Reprinted by permission from the Chatham, Rochester and Gillingham News).

I am but just returned from his funeral. Many were gathered around the grave, and all knew that they were paying a last tribute to a great thinker. The majority thought of him as he had developed in his life's work, some few of us were carried back to his early days, to the Medway valley where he was born, and where first he gave promise of great things. It seems but yesterday that I was waiting in Strood High Street, on the steps of the old Fountain Inn, for Jim. That Scotch cap seldom could be found, and often we raced to school nearly, but never quite, late. Memory gets farther back than that, and I see ourselves in the little annexe of the school in Strood High Street, kept by Miss West. How little we thought, that the young teacher whom we plagued, Miss Appleton, would share grandparentage with J. W. T.

The burning out of the school separated us for a few months, but as scholars at St. Nicholas we again joined each other, and carried on a strange parallel that few school chums can have experienced.

Through standard by standard we progressed, struggling and striving in healthy jealousy against each other, thick in friendship one day, breaking the peace another, yet ever held together by the joy of service and the desire to succeed.

In those earliest days there sprang into his being that force which coloured his whole eventful life. He was a born naturalist before he knew it, a lover of nature ere he comprehended the simplest of nature's laws. A square yard or two of stale black earth was to him a paradise, for there he could rear a few daffodils or a crocus, or a wallflower, and love them for their very selves. We were great readers, devouring all kinds of literature, especially tales of adventure and “daring do.” But he had, too, a disposition for action, and was at no time a dreamer. He struck up a friendship with a labourer who was skilled in bird catching and animal stuffing. Then his home became redolent of smells, neither sweet nor pleasant, and birds of all kinds were stuffed and enclosed in cases, chiefly made of cigar boxes. So his introduction to the Great Mother began. His tramps with his elderly friend, chiefly taken in the evening, spread over wide areas. Cuxton, Halling, Swanscombe, Hoo, Chattenden, Cliffe, became his happy hunting grounds, and his knowledge of country life, animate or inanimate, broadened and deepened. He was then but nine years of age.

At twelve the highest standard in the school was reached. We numbered three in the standard, and before the age of thirteen we were paid monitors with a class under our charge. Up to this point he had not specialised in natural science, nor shown any particular attachment to entomology. I recall the day, the hour, the spot, when we two sallied forth to catch the first butterfly. Within five yards of the portals of the Amalgamation Inn, in Station Road, I secured a tortoise-shell butterfly. It was my first catch and my last. But from that day J. W. T. never ceased to devote himself to the sport of catching moths and butterflies, and for the benefit of this and future generations, of studying them deeply, wisely, and exhaustively. It is difficult to realise, but it is safe to assert, that no day in his following forty years was allowed to pass during which he had not added something to his store of knowledge concerning lepidoptera.

We became pupil teachers, and so our struggles assumed an acute form. To be top was the aim. And top place he most often succeeded in obtaining. It was a leading trait in his character that the only place worth having was the "top." If he did not succeed always in all things, he has at the last gloriously succeeded, for his Presidency of the Entomological Society of London was indeed a crowning glory, and one of which Strood may justly be proud. I see in the *News* last week a reference to the late Mr. Roach Smith, and can myself testify to the accuracy of the statement made. That eminent scientist did indeed exercise an influence on the life of my friend, and with his influence should be coupled that of our old and revered schoolmaster, Mr. Jeffrey, than whom no man ever taught more wisely and well, nor understood better the pupil he taught. Looking back through the vista of years I recall that he held J. W. T. in high favour, for did he not make him "postman" for his letters to his lady-love, Miss Partridge, now, and I hope for many years to come, Mrs. Jeffrey.

The years of our apprenticeship fled quickly. They were years of stern work, both in the school with the classes and in preparation for examinations. Yet the study of entomology proceeded with him apace, and carried with it an acquisition of knowledge that it is difficult to measure. Latin became necessary to him, and he mastered Latin; in the same way, but later, when he found a knowledge of French and German must be acquired, he acquired it. Before he left Strood he had commenced that wide correspondence with other entomologists, which was to become extraordinary in its character and truly cosmopolitan.

December, 1876, was the month to which our hopes had turned through four years—should we pass the Scholarship Examination and gain entry to a Training College? We sat together. Thousands of students from all parts of England were in competition with us. And the result? We passed, he placed in one bracket, I in the next. Perhaps it is quite unique that two pupil teachers, starting their career in the same baby's school, should finish it with one mark only between them, after an examination lasting through an entire week. Before eighteen we were students together at St. Mark's, and, since he was twenty-two days' younger than myself, I imagine it may be claimed that he was the youngest Queen's Scholar that had ever entered a Training College. To me the college course was uneventful.

To him it was a call for renewed energy and extraordinary mental activity. He studied till midnight and rose again at five every summer morning. There was only one place he wanted, and that was "top." He entered 49th on the college list; he left it 4th, after two years of strenuous study.

January, 1878, found us assistants under the London Board. Quickly he made a name for himself by his remarkable energy, but he did not remain long at the school. He was transferred. I mention it because of the sequel. Some trouble arose on a question of corporal punishment. As an assistant he acted *ultra vires*, and was censured. Some five years later, in a spot in Southwark, marked very black in Booth's London, a great school trouble arose. The scholars rebelled, and the parents helped them. The head master was removed. His successor fled. The authority was at its wits end. Then the Inspector bethought himself of J. W. T. He was the man whose will, power, and courage might overcome the difficulty. He went, and the situation was saved.

Of his great record as a specialist in nature study, the *News* has already given a full account. Only a specialist could properly appraise his work in the field he chose, but I have heard it said "If in Paris or Berlin you ask a naturalist for the name of England's greatest authority in entomology and kindred studies he will reply 'Tutt.'" I believe it.

The world to-day is the poorer by his loss. He had anything but a robust constitution, yet the fire of his energy was immeasurable, and his courage to win through of the highest order. His vitality lasted to the end. I have, at times, thought to trace some resemblance in his face and form to Charles Dickens. Strood can claim the great novelist as a neighbour; it can claim the great naturalist as a son, worthy to be remembered, and deserving to be honoured.

ANOTHER REMINISCENCE.

By H. Smetham.

(Reprinted by permission from the *Chatham, Rochester and Gillingham News*).

Seldom have I perused a column in your paper with greater interest, pleasure, and gratitude than I did the chivalrous tribute paid to the life and work of Mr. J. W. Tutt as contained in your last issue. How true, how generous, how fragrant of memories it all was. How ungrudgingly was that tribute paid in every sentence of its graceful lines those who know most know best. It will be read your wide circulation over with keen appreciation. May I add a few lines, more in the nature of anecdote than of eulogy, the latter stands needless. Quite early in his entomological career, Mr. Tutt had applied to Lord Darnley (father of the present Earl) for the permission to follow his hobby over the Darnley estates. Needless to say that that permission was ever ungrudgingly given. The name of the revered Charles Roach Smith was a passport for any one of "his boys," and was accepted as a guarantee of that boy's character. Chattenden Woods were in those days famed as a resort of the "Purple Emperor," a butterfly of a gloriously radiant colouring. This gorgeous insect was rare, and only bred in certain spots in England. Among these famed

haunts, Chattenden Woods stood neither last nor least. The chief Government establishment that then existed there was the convict prison, the labour of its inhabitants being utilised to construct the earlier magazines. I believe the most impressive rendering of the Old Hundredth Hymn I ever heard was as I stood outside its chapel walls one beautiful Sunday morning and listened to its noble tones as sung by the convicts within. Moth hunting—like poaching—is a pursuit for the night. On one occasion my late friend and a companion were thus engaged in Chattenden Woods. They were diligently capturing various specimens which had adhered to a tree—the latter having been smeared with a decoction dear to the depraved appetites of these insects—when the joys of capture were rudely interrupted. Two convicts had escaped that night, and our two friends found themselves suddenly arrested by some armed warders—as being the wanted fugitives. Explanations and liberty followed.

Treacle and beer alloyed with rum was, if memory serves me, the potent mixture applied by these entomological artists to huts, trees, stiles, etc., to lure the flies to their doom.

A case where the humour stood on the side of Mr. Tutt and his then companion—who happened to be none other than the genial City Magistrates' Clerk (Mr. G. Robinson)—occurred on the Cuxton Road one night. The stile on the side of the L.C. and D. Railway crossing—then known by a deserved and melancholy fame as "Deadman's Crossing"—is the site now occupied by the iron bridge which passes over the line to the Wickham Cement Works. Our two young friends had plentifully debauched this stile with a copious thick unction of the above-named compound. They then pushed on to further pastures to the woods beyond, intending to call and collect the entrapped victims on the return journey. As they approached this stile on the way home they recognised with dismay that this erection was in the occupation of some altogether unexpected specimens! A young courting couple sat happily, all unconscious on the stile! As explanations might have been attended with painful possibilities (and could not possibly lend themselves to pleasurable explanations) our friends chose that better part of valour known as discretion, and left the lovers to their transient happiness. What they afterwards thought of the sticky decorations attaching to their garments, history has never yet recorded.

Unlike Ingoldsby's Sir Thomas, the writer had never been smitten with that desire to "go poking and peeping after things creeping." But if I did happen to come across anything uncommon in insect life, I generally posted it, or the information concerning it, on to my friend Mr. Tutt.

One Sunday afternoon—surely 30 years gone by!—I was walking along the road opening from Cliffe Road to Bill Street. On the left side the hedge, for a fair stretch consisted of a kind of privet or ivy-tree bushes. These bushes were thick with bloom, which latter gave off a sticky exudation. I beheld a spectacle so novel and unusual, and so unexpected, that I gazed upon the scene with genuine astonishment. Winged insects of all kinds, flies, moths, butterflies, wasps, etc., by the thousands buzzed and droned around these bushes. I watched them with amazement and interest. Masses of these insects hung to the flowers with faltering power; others simply fell helplessly down into

the vegetation below, where they droned on, beating their wings in a drowsy stupor, seemingly quite unable to rise.

I communicated this remarkable experience to my friend, J. W. Tutt, only to learn—alas for the frailty of insect life, as also for the human specimen!—that all these insects were out on an orgy of debauch! The juice of this flowering bush was a beverage of Nature's own decoction that was strongly intoxicating to these insects, and, as with the human family in like cases, the more cherished and beloved because of its potent qualities, which shall be malevolent or otherwise as the reader chooses. Never was I more astounded. Yet the longer I listened to my friend, Mr. Tutt, the more had I to admit this vicious tendency on the part of the insect world, which, hitherto, had never entered my wildest imaginings.

Mr. J. W. Tutt frequently lectured on natural history subjects, and he was about to give us (the Strood Elocution Class and friends) a lecture in the hall of the Strood Institute, entitled "The wonders of Insect Life." I urged him to include a statement touching this insect love of intoxicants in his lecture. He did so to the manifest amusement and interest of his audience. Later on this lecture—strengthened and improved, no doubt—was given before some London audiences.

Drunkness in the insect world proved to be good "copy." Its sadness was dwelt upon with mock lamentations in the columns of many newspapers, not the least humorous of these latter being in the columns of "Punch." There our comic contemporary headed the remarks "Tutt! Tutt!" I believe somewhere among my papers I yet retain a copy.

James William Tutt had a sympathetic nature, and his heart was ever truly in the right place. Those who knew him best feel how lamentable it was that fate should cut him down at the very zenith of his mental powers, and at the summit of his life's ambitions nobly achieved, with all his wonderful energy unabated. But we stand humbly outside the threshold of this wider knowledge. I touch not the sum and story of his great mental achievements—these stand abidingly on record in the noble services he rendered to the science he so devotedly followed. Mr. T. J. Jenkins is not alone in his recognition of the more than slight resemblance to Charles Dickens. Many who saw his portrait in our last issue could not fail to be struck by it. In the original photo contained in one of the later volumes of his great unfinished work, this is even more apparent and pronounced. His boyhood's friends still remained on as the friends of manhood—how consistently Mr. Jenkins' article shows. Mr. George Robinson remains named as the solicitor and co-trustee, to execute his last trust. So with the present writer. The third trustee was formerly one of his boy pupils.

Strood, January 25th, 1911.

BIBLIOGRAPHY.

By Hy. J. Turner, F.E.S., and Stanley Edwards, F.L.S.,
F.Z.S., F.E.S.

In the case of some of the larger works, the precise date of issue could not be ascertained.

B.L.	..	..	The Natural History of British Lepidoptera.
C.E.	..	..	The Canadian Entomologist.
C.L.	..	..	The City of London Entomological Society.
E.	..	..	The Entomologist.
E.M.M.	..	..	The Entomologist's Monthly Magazine.
E.R.	..	..	The Entomologist's Record.
S.E.	..	..	The South-Eastern Naturalist. (The Report of the S.-E. Union of Scientific Societies.)
S.L.E.S.	..	..	The South London Entomological Society.
T.E.S.	The Transactions of the Entomological Society of London.
[Y.N.(B.N.)]	Young Naturalist and the British Naturalist.

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CURRENT NOTES.

Although this number of the *Entomologist's Record* was to have been devoted exclusively to memorials of our late Editor, yet a subject of such urgency has arisen that it must needs be dealt with immediately, if there is to be any hope of dealing effectively with it at all. But indeed it can hardly be regarded as foreign to the main subject of the present number, for it is a matter in which we miss Mr. Tutt's personality at every turn; his love of fair play, his strong sense of justice, his power of rapidly seizing the important points of a subject, and above all, his fighting instincts, would have been invaluable in the present crisis, the more so, that had he lived he would now have spoken officially as President of the Entomological Society of London.

For a crisis has arrived in the annals of the Natural History Museum which concerns indirectly all botanists and geologists, and very directly all zoologists, and especially those in whose interest we write, the students of entomology. No one whose lot it has been to study at all frequently or continuously in the Insect Department of the present buildings can fail to have been struck with the lack of room at the disposal of students and curators alike, and even such accommodation as exists is a mere makeshift, the rooms occupied by the Entomological section having been originally intended only for store-rooms. There is, of course, as things stand at present, a very good site available for an extension of the Zoological portion of the Museum out towards, and then parallel with, Queen's Gate, in which proper accommodation for entomological collections and study might be provided; but we are now threatened with the loss of this site in consequence of its being used for the erection of a new Spirit Building. The present building, which it is proposed to demolish, stands on land which has been already assigned to the Trustees of the British Museum for the use of the Natural History Department, but which is now coveted by the Science Museum, the authorities of which, backed by the Board of Works, have, it seems, persuaded the Government to—well—*forcibly expropriate* the present possessors, and hand it over to them.

This nefarious project was exposed before the Entomological Society of London at their meeting on Wednesday, May 3rd, by the President, Mr. Bethune-Baker, Dr. Dixey, Mr. Waterhouse, and others, and the following resolution was passed unanimously, first by the Council and afterwards by the Society, copies being sent the following day to the Official Trustees of the British Museum (consisting, oddly enough, of the Archbishop of Canterbury, the Lord Chancellor, and the Speaker of the House of Commons), to the Prime Minister, and to the President of the Board of Education, whose department is concerned in the matter.

“The Council and Fellows of the Entomological Society of London have heard with grave anxiety that it has been proposed to build a part of the contemplated extension of the Science Museum on land belonging to the Natural History Museum. It has been represented to the Society that this would involve the demolition of the Spirit Building, and its re-erection between the main part of the Museum and one of the public roads.

It appears to the Society that the rebuilding of the Spirit Room in this position would involve the occupation of ground which it has hitherto been permissible to regard as available for the extension of the main building, and particularly of the Insect Rooms, in which they feel themselves justified in taking a special interest.

They would point out that the collections of Insects contained in the Natural History Museum form at present but an inadequate and incomplete representation of Entomology. Recognising as they do that the rooms in question are already filled almost to their utmost capacity, and that the space which can be put at the disposal of the many students of this branch of Zoology has been seriously restricted of late by the growth of the collections, the Society feel themselves justified in expressing to the Trustees of the British Museum the hope that they will take every possible step to avoid the calamity that would be implied

by the diminution of the area available for the enlargement of the Museum."

From the speeches made on this occasion, and from enquiries subsequently made at the Museum and elsewhere, we gather that the following are the facts:—

Differences of opinion had arisen as to the ownership of the land now lying between the respective buildings of the two Museums, as far back as the 'nineties, if not earlier. The land, of course, belonged to the nation, being part of that used for the Exhibition of 1862, and the Government had an indisputable right to assign it as they saw fit. In accordance with this right, in the year 1899, they arranged a definite line of demarcation, everything to the south of which was assigned to the Natural History Museum. On the land thus assigned a building has been erected for the reception of specimens preserved in spirits, known as the Spirit Building, which, with its fittings and subsequent additions, cost the nation considerably more than £30,000. The attempt which has been made to show that there had been a previous delimitation of the land assigned to the Natural History Museum further south than that of 1899, because a temporary fence was erected there, is, to put it mildly, most disingenuous. No such delimitation had ever been made, and the proof of it is that the present Spirit Building was erected in 1883, partly north and partly south of this fence, without any suggestion from the Office of Works—the then holders of the portion north of the ground assigned to the Natural History Museum—that the latter was occupying any ground but its own. The Trustees of the British Museum (of which the Natural History Museum forms an integral part), weakly perhaps, allowed the Office of Works to raise on their portion of the land some temporary buildings, on the definite understanding that they should remove them whenever requested to do so. This request has been made, several times we understand, but without effect, and the authorities of the Science Museum (with the Imperial College of Science)* are now apparently endeavouring to hold on long enough to establish a sort of "squatter's right," a proceeding on which it is unnecessary to comment, but which somewhat lessens the surprise which would otherwise be aroused by their subsequent action. For casting about for a site on which to expand, (a need the existence of which no one disputes), and being apparently desirous of inheriting the blessing pronounced on those who remove their neighbour's landmark, they concluded that a portion of the ground assigned to the Natural History Museum would suit their purpose, and regardless of the fact that the line of demarcation which they now demand cuts lengthways right through the present Spirit Building, they appear to have persuaded the Government, though not as yet we hope irretrievably, to over-ride the opposition of the Trustees, and to rob the Natural History Museum of this part of the land assigned to it, (which it needs at least as badly as those to whom it does *not* belong can do), and to compel the removal of the present Spirit Building and its re-erection on the only site available for the expansion of the

* This phrase is not, strictly speaking, correct, but as it is used by the other side in the dispute we have adopted it. The buildings (temporary structures of corrugated iron) were actually erected by the Office of Works, and the present disputants are, we believe, the authorities of the Science Museum on the one hand, and the Trustees of the British Museum on the other.

present zoological buildings. If no objection be raised to the erection of the Spirit Building along the edge of the Museum Grounds bordering on Queen's Gate, by the owners of the property on the other side of the road, it is conceivable that a cramped, ill-lighted extension might still be just possible, but if, as seems not improbable, the new Spirit Building should have to be pushed further back towards the present zoological department, no adequate space would remain for any extension whatever. Such details as the housing of the specimens contained in the present Spirit Building whilst the fittings are being transferred to a new one do not, of course, enter into the calculations of the Science Museum; it is a mere case of "*Vae victis.*"

We should not have thought of appearing to pit the Zoological and other kindred Sciences against the Chemical Sciences, but that this appears to be the line actually taken up officially by the other side, or at least by one in high authority there, a fact which seems to us to add greatly to the enormity of their offence; for we are given to understand that a petition was more or less privately circulated by the said authorities, or some of them, and afterwards presented to the Government in support of this act of spoliation, on the ground that Zoology is all very well in its way, but must not be allowed to interfere with the expansion of the Chemical Sciences. We have not seen this petition, and sincerely hope, for the credit of those concerned, that we have been misinformed, but the source from which our information was derived appears to us to be only too good. The suggestion made in the *Times* of May 8th, by Sir H. Roscoe, that the Spirit Building should be separated altogether from the rest of the Museum, merely shows that he has no idea of the uses to which this building is put; not only the Zoological, but even the Geological workers are unanimous in declaring that it would make much of their work impossible. It is much as though the Science Museum were compelled to remove all the German works in their library to some other distant building.

It behoves all who are interested in Zoology, and especially in the Entomological department of that science, to agitate in every possible way, especially through the press, against this act of spoliation, to which in private life we should apply another name; and let not those who are interested in Botany or Geology think that the affair is of no interest to them; for at least one possible solution of the difficulty would be their removal from South Kensington altogether, and, at best, the more the Zoological Department is crowded, the less room will there be for them.

A strong resolution in support of the claims of the Natural History Museum has been passed by the Council of the Linnean Society, and a sympathetic one by that of the Zoological Society, as well as that of the Entomological Society, which we have given above; and we greatly hope that a joint deputation of these (and perhaps other) societies may be appointed, to urge the matter at headquarters, either before the Minister of Education, or preferably before the Prime Minister himself.—G.W. *May 8th*

The Annual Congress of the South-Eastern Union of Scientific Societies takes place this year at St. Albans, on June 7th, 8th, 9th and 10th. From a proof copy of the programme just to hand, we anticipate a very interesting and instructive meeting. There is a large local committee, with Mr. A. E. Gibbs, F.L.S., F.E.S., as Hon.

Secretary, under whose experienced care we are quite sure that all arrangements will be well carried out for the comfort of the visitors. The County (Hertfordshire) Museum will be opened free on each day of the Congress, and there will also be a Loan Museum at the Town Hall, where members and friends of the Hertfordshire Natural History Society will exhibit their collections. Those delegates and members who attend the Congress will have opportunities for making observations in natural history at several of the afternoon excursions, and on the last day the local Society have invited the members of the South London Entomological and Natural History Society to join them in a field meeting at Gorhambury, the seat of the Earl of Verulam. It is the intention of the Hertfordshire Natural History Society to issue a Guide Book to the neighbourhood, dealing with Geology, Natural History, etc., within a radius of five miles of the city. We wish the meeting every success, more especially as it was an annual gathering in which our late Editor took a strong personal interest.

Many bulletins, pamphlets, etc., dealing with insects injurious in agriculture have recently been sent to us from departments or museums of foreign countries. A comparison of these elaborate publications with the meagre leaflets issued by our English Board of Agriculture is a striking instance of the old saying "comparisons are odious." We have before us a *Bulletin of the New York Agricultural Experimental Station* entitled *The Apple and Pear Membracids*. The *Membracidae* are a family of the Homoptera characterised by the bizarre forms of the pronotum of various species, and one which is very dominant in many areas of the new world. One of the British "frog-hoppers," *Centrotus cornutus*, will be called to mind as a member of this family. The brochure in question consists of some thirty-two pages with eight plates of many figures, and deals with every aspect of the life history of the four species concerned. Every detail of the structure and habits of these insects ascertained by long and close observation and experiment, is fully described, and illustrated by admirable figures, not only of the depredators themselves, but of the depredations they cause. On the practical side as regards agriculture no less care has been shown in advising not only what to do, but precisely how to do and when to do, that which will effectually deal with the trouble. Foremost among the antidotes is clean cultivation. It was found that the nymph stage of these insects depended on succulent weeds and plants for sustenance, hence the total clearance of all such anywhere in the neighbourhood of the orchards is a most efficient and practicable preventive, and if a control is obtained by the introduction and encouragement of hymenoptera parasitic upon the eggs, it is stated that immunity from any attack detrimental to the crops may be anticipated.

A few days after penning the above remarks, I turned to the weekly article contributed to the *Daily Telegraph* by Sir Ray Lancaster, under the heading "Prevention and Cure," to find the opening paragraphs imbued with the same ideas.

Sir Ray Lancaster says:—"There is no official entomologist in this country employed either by the Local Government Board (which has to do with the care of the health of the community) or by the Board of Agriculture (which has to do with regulations affecting our field crops, fruit crops, and our herds). In every other civilised country

there is a large staff of expert, highly-educated naturalists, engaged in studying injurious insects and how to deal with them. At the Imperial College of Science, in London, a course of Instruction in economic entomology has recently been started, under the direction of Mr. Maxwell Lefroy, the Entomologist employed by the Indian Government, who happens to be in England on leave. But this is only a beginning. The real need is for the definite employment and payment of expert entomologists by our public offices." . . . "The Colonial Office has recently made the usual attempt of Government offices to get scientific work done for nothing, by appointing an "entomological committee," the members of which are unpaid. It would be interesting to see an unpaid committee of lawyers or of engineers appointed to do serious work for the public service by a Government Department. The lawyers and the engineers would refuse to work without pay, but the Royal Society, and scientific men generally, are continually asked to do professional work for the Government without pay, and are weak enough to assent to the request. As is invariably the result in the long run, services obtained by cheap methods of this sort are (as justice demands that they should be), incomplete, delusive, and without permanent influence. Even good work obtained by a government office without proper payment is not valued by officials, and is in the end neglected and wasted. The scientific world has seen this in many instances, and has bitterly regretted the loss of valuable work done without payment or thanks, and received without appreciation or understanding. It is a serious necessity for the professional biologists to organise themselves as the engineers, chemists, and medical men have done, and to refuse to be exploited any longer by the clerks of Government departments."

That is the whole trouble. The government support is so meagre that it is totally insufficient even for the adequate upkeep of the Museum and its Staff. There is nothing left for extension or advance. Practically the whole of the additions to the collections are due to the patriotic munificence of private individuals, and the staff is so small in its proportion that it cannot cope satisfactorily with the mass of material that has accumulated, much more carry-on experimental and observational work, which is necessary for the elucidation of many economically important problems.

A communication has just come to hand from Professor A. Busek, whom we had the pleasure of meeting at one of those never-to-be-forgotten afternoons at the house of the late Mr. J. W. Tutt. Prof. Busek is a member of the staff of the Zoological Section of the Smithsonian Institution at Washington, and in his letter he incidentally mentions that he is at present a member of the Smithsonian Biological Survey of Panama, and is endeavouring to breed and collect the insects in that area more especially the Microlepidoptera. Do any of our Museum staff often go on Biological Surveys? If they go at all they get leave of absence, and go "without pay." When shall we do better?

The February number of the *Revue Mensuelle de la Soc. Ent. Namuroise* contains a very appreciative obituary notice of our late Editor. Mr. Tutt had for some years been an honorary member of the Society, and was indebted to several of its members for much matter which had been incorporated in *British Lepidoptera*.

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The June number will probably contain, in addition to the completion of several articles of the present number, contributions by Dr. Chapman, G. Wheeler, the late J. W. Tutt, Rosa E. Page, H. Powell, F. W. Colthrup, Mr. Donisthorpe, etc. Reports of several societies also remain over.

We should like to have reports of collecting at willows this year, from all districts around London, and also from southern, western, midland, and northern localities (including Scotland). Have the willows been productive in Ireland?

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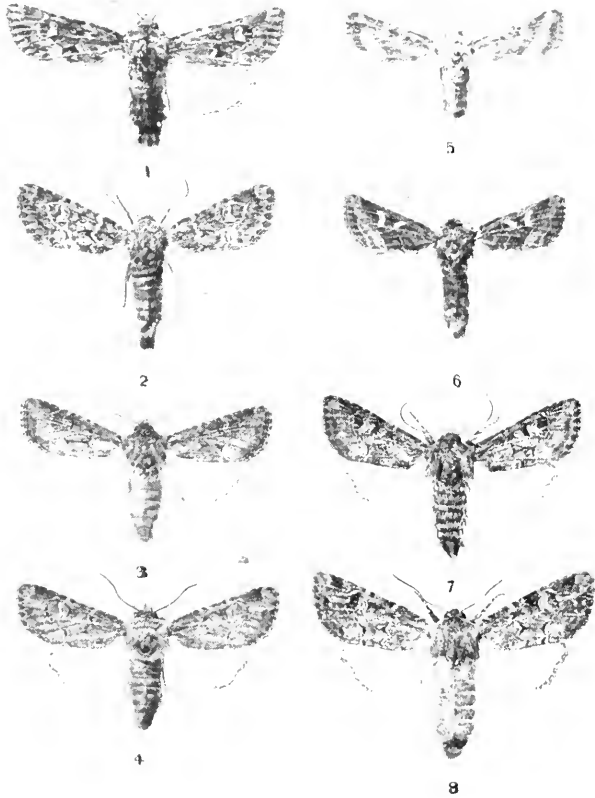


Photo. A. E. Tonge.

FIGS 1, 2, LUPERINA NICKERLI (BOHEMIA). FIGS. 5, 6, LUPERINA DUMERILII.
FIGS. 3, 4, LUPERINA TESTACEA (BOHEMIA). FIGS. 7, 8, LUPERINA TESTACEA
(SUFFOLK COAST).

Butterflies in Hungary in 1910.

By J. N. KEYNES, M.A., D.Sc., F.E.S., AND G. L. KEYNES.

Hungary has, up to the present time, been visited by comparatively few English entomologists. A list of the papers on Hungary, which have appeared in the *Entomologist* and the *Entomologist's Record* since 1890, is given at the end of the present article, and it will be noticed that these have been contributed by only five collectors. Any entomologist reading these papers cannot fail to be attracted, as we were, by the prospect of meeting many forms and species which are not usually to be found in the more western parts of Europe, and he should not be deterred by the length of the journey nor by an inability to speak Magyar. The country is interesting, its capital is in its situation one of the finest in Europe, and its people are charming; they are very quick to recognise an Englishman, and—partly, perhaps, because their newly constituted parliament has been modelled on the English system—they are ready to shew kindness to anyone of our nationality.

Mr. Sheldon was collecting in Hungary in May, 1910, while we visited the same localities in June and July, so that his paper and ours will between them cover the greater part of the season. We arrived at Budapest on the outward journey on June 23rd, but our stay there was short. First broods were over and second broods had not yet begun to appear, so that a visit to the well known Sváb-Hegy locality produced nothing more interesting than some fine specimens of *Klugia spini* and a few of *Scolitantides baton*. Accordingly, on June 26th, we started south for Herculesbad. We had expected to reach our destination the same evening, but an attempt to buy railway tickets elicited the fact that, owing to the recent floods, Herculesbad could not be reached by rail. We therefore spent the night at Temesvar, which we found interesting as a specimen of a flourishing industrial town in the centre of the great Hungarian plain. The next morning we travelled by rail to Bazias, and there took the steamer to Orsova. As already indicated, we had not originally intended to travel any part of the way by river, but in the end we were heartily glad that circumstances had compelled us to do so, for the scenery on the Danube between Belgrade and the Iron Gates is magnificent, and incomparably finer than anything that is to be seen on the upper reaches of the river. A carriage drive took us from Orsova to Herculesbad, where we began collecting on June 28th, and where we remained until July 16th.

The collecting grounds in the immediate neighbourhood of Herculesbad are somewhat limited, but entomologically this is the only drawback to a very rich locality. One may walk up the valley of the Cserna along shady paths and past occasional patches of hay and pastureland, or one may ascend through the woods to the summits of the Suskului or the Domogled, which lie on the east side of the valley. We found the road down the valley in the direction of Orsova unproductive, and the same was true of the Coronini meadows on the west side of the valley, though the woods on this side are worth visiting for *Pararge roxelana*. We found ourselves, therefore, practically restricted to the walk up the valley and the toilsome ascents of the Suskului and the Domogled by way of the Weisses Kreuz and the Quelle. No guide is required for either of these peaks. A steep zig-

JUNE 15TH, 1911.

zag leads to the Weisses Kreuz, and immediately beyond this there occurs the only chance one has of missing the way, a path diverging to the right, which leads to a cave but goes no further. At the Quelle, which is the favourite haunt of several species of butterflies, the routes diverge. The right hand path leads up to the Kleiner Domogled, where one emerges from the forest, though one must not expect to meet with many insects until one has traversed the intervening ridge and reached the peak of the Domogled itself. The left hand path leads to the summit of the Suskului and, although we made only one ascent towards the end of our stay, we were on this occasion surprised that it had not been more recommended by previous visitors; it is only described by Dr. Rosa, though the ascent is much more direct than that of the Domogled, pleasanter, and on the whole more productive.

The *Hesperiidae* seem to be comparatively scarce in this part of the country, and were represented only by occasional specimens of *Erymnis alcaee*, *E. althaeae*, *Hesperia carthami*, *Nisoniades tages*, *Argiades sylvanus*, and *Adopaea flava*. The Coppers were represented by three species—*Heodes virgaureae*, *Lowia alciphron*, and *Rumicia phlaeas*, which were to be found most abundantly in the meadows at the head of the valley, but sometimes also at the Quelle. The specimens of *H. virgaureae* are considerably larger than any we have taken in Switzerland or the Pyrenees (up to 46mm.*) and they shew a marked tendency to obsolescence of the white markings on the underside hindwing. The ♂s of *H. alciphron* are all darkly suffused with purple, and the ♀s are of the typical dark brown form with an orange band on the hindwing. The ♂s of *R. phlaeas* are considerably suffused, and both sexes are very distinctly tailed; they are, however, not dark enough to be typical *ab. eleus*, and must perhaps be referred to *ab. suffusa*.

The blues to be found at Herculesbad did not include many species, but this was compensated for by the great abundance of *Scolitantides orion*; this species was also very variable, and, though the majority are of the form *var. ornata*, our series contains several specimens of *var. nigra* and every intermediate gradation. *S. orion* occurred not only in the valley, but also on the Domogled route up to the summit of the peak. In the latter locality, at an elevation of over 6,300 feet, we made one of our most interesting captures, and the only one which was totally unexpected, namely, *Aricia anteros*. Of this species we took five ♂s on July 1st and 3rd, three of which were quite fresh. They were found over an exceedingly restricted area on the top of the Domogled, and we mistook them at first for *P. eros*; a comparison shews, however, that the ground colour of *A. anteros* is rather greener than that of *P. eros*, and the former is further distinguished by its chequered fringes, by the more suffused dark borders of the forewings, by a well marked discoidal spot on each wing, by the large orange-ringed black spots bordering the hindwing upperside (though the orange is almost absent in one of the specimens), and by the very pronounced series of orange spots bordering the underside of both wings. Kane also describes the possession of one, and sometimes two, basal spots on the underside forewing as a distinctive difference from the underside of *Aricia astrarche*; of our specimens, however,

* This and subsequent measurements are obtained by doubling the distance from the tip of the forewing to the centre of the thorax.

only one has well marked basal spots, a second has them faintly indicated, a third has a small spot on one side only, while two are altogether without them. This species is described by Kane as occurring in S. Russia, Greece, and Turkey, and it has not been previously recorded in Hungary by English entomologists, though Miss Fountaine has met with it in Turkey and Asia Minor; nor is it included in the Hungarian list published in Buda-Pest in 1896. Hungarian specimens are, however, now to be found in the collection at the National Museum, and Mr. Sheldon tells us that it has been recorded from Transylvania.

The remaining blues that we obtained were:—*Agriades coridon* (only a single ♂, but very large and with broad dark borders), *A. thetis*, *Lycaena arion* (mostly typical, but one ♀ has a peculiar chalky blue ground colour, lighter, even, than in most specimens of *L. euphemus*), *Glaucopsyche cyllarus*, *Hirsutina damon*, *Polyommatus icarus (alexis)* (the ♀s all of the brown form), *Aricia astrarche*, *Clastrina argiolus*, *Plebeius argyrognomon*. Several Rurals (Theclids) occurred in the valley, namely, *Callophrys rubi*, *Chattendenia w-album*, *Nordmannia ilicis*, *N. acaciae*, and *Klugia spini*, one of the latter being also found at the summit of the Domogled.

The two Pierids that are to be found at Herculesbad are of great interest. *P. napi* var. *napaeae* was by far the commoner of these, so much so that it was difficult to pick out the occasional specimens of *P. manni* var. *rossii* which occurred among them. The former is of great size (up to 62 mm.), and in its most extreme form the markings on the underside hindwing are almost entirely absent; some of the ♀s are very heavily marked on the upperside. Mr. Sheldon obtained the spring brood of *P. manni* at Herculesbad and these are apparently not so heavily marked as the summer form; in size our specimens are about the same as ordinary *P. rapae*. *Leucophasia sinapis* was fairly common, and the ♂s do not shew much variation, but the ♀s are all of the form *crysimi*. A fine specimen of *Colias edusa* ab. ♀ *helice* was taken on the Domogled.

The Argynmids were very much in evidence both in the valley and on the Domogled route, *Dryas paphia*, *Issoria lathonia*, and *Brenthis daphne*, being exceedingly common. *Argynnis adippe* occurred in its typical form and also as ab. *intermedia* and var. *cleodora*. *Dryas pandora* is rare in the district, but we took one ♀, unfortunately rather damaged, on July 11th, on the Suskului, where it had previously been found by Dr. Rosa in 1909. *Brenthis hecate* is also very rare, but we were fortunate enough to catch one very fresh ♂ in the Csernathal on June 29th.

Of the Melitæids, *M. maturna* was found at the Quelle and elsewhere on the Domogled route, but not abundantly, and some of the specimens were very worn. Most of them are of the typical form, but one has an almost uniform ground colour and must be referred to var. *wolfensbergeri*. *M. triria* was a species that was new to us and we were glad to find that fresh specimens were still to be obtained. It was very much localised, but was fairly abundant on the summit of the Domogled and near the top of the Suskului. It is a species that is difficult to catch, its flight being low and jerky, and had *M. didyma* occurred at this elevation, the two would have been difficult to separate on the wing; in the cabinet, however, the very much brighter ground

colour of *M. didyma* and the comparatively few black markings serve to distinguish it at once. The ♂s of *M. trivra* show considerable variation in the extent of the black markings; ♀s were very scarce, and of the two specimens that we caught, one has a ground colour very similar to that of the ♂ though rather more variegated, while that of the other, which is a freshly emerged specimen, is a peculiar pale ochre. A very large and bright form of *M. didyma* occurred in the valley, but not higher up. *M. athalia* was very much the most abundant Melitæid, and shewed interesting variations. The specimens are, on the average, larger than any we have previously met with, and the more heavily marked forms are presumably var. *mehadiensis*: the more extreme specimens of this form are very fine insects with broad black borders and thick central bands. A curious ♂ aberration, taken on July 1st, has well marked black borders, but the black central band on both fore- and hindwings is entirely absent; on the underside the black markings on the forewings are mostly absent, and on the hindwings the antemarginal orange band is obsolescent and the orange markings at the base are contracted into an almost solid quadrilateral blotch. The markings of this aberration are quite symmetrical and the wings are perfectly developed. We also met with occasional specimens of *M. aurelia*, but this species appeared to be rare.

Of the rarer *Vanessidae* we saw only one species, namely a fine specimen of *Polygonia l-album* (*van-album*), which was flying on July 13th in the woods below the Weisses Kreuz. It was feeding on the exudation from the bark of a large oak tree in company with *Satyrus circe*, *S. hermione*, and numbers of *Pararge roxelana*, but it never descended within reach of the net, even when the tree was climbed as far as was possible. The specimen was, however, very nearly captured at one moment, and a sufficiently close view was obtained to leave no doubt as to its identity. The tree was visited on the two following days, but there was very little sunshine, and the specimen was not seen again. *Eugonia polychloros* was very common, but we were not fortunate enough to meet with *F. xanthomelas*.

(To be concluded).

Some Lepidoptera of the "Fourshire Stone" District.

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

It is possible that some of those who have studied closely the County lists of localities in Tutt's *British Lepidoptera*, and more particularly those in the Butterfly volumes of that work, may have seen under the heading of Warwickshire the words "Wolford (Wheeler)" recurring with some frequency. I ought to begin by disclaiming any proprietorship in the list from which these entries are taken; it is not mine, but my brother's. Still, Wolford was my earliest, and for many years my principal hunting-ground, my first butterfly-net having been a gift from my father, (who was himself a collector, and was Vicar of the Parish for nearly fifty years), on my seventh birthday. I have once or twice had a few hours' collecting there during the last two years, but much of this paper must be a record of captures made long ago; the fauna of the neighbourhood however is so rich, and the sight of a net not belonging to one of my own people so rare, that I

cannot help thinking that some entomologists, who do not go abroad, might easily do far worse than take a holiday in this locality. Although the captures come under the head of Warwickshire, because Wolford itself, and the greater part of Wolford Wood, are in that county, yet by no means the whole list really belongs there, for Wolford is a village only two miles from the "Fourshire Stone," a point at which the counties of Worcester, Warwick, Oxford, and Gloucester meet. There is no place in the village which an entomologist could conveniently make his head-quarters, and the neighbourhood would be most easily and efficiently worked from Moreton-in-Marsh, a station on the G.W.R., about half-way between Oxford and Worcester, being itself within the boundaries of Gloucestershire, and possessed of two or three very possible abiding-places. The great wood itself has now for years been inexorably closed, not only to the public, but even to us, who for more than a quarter of a century had the free and undisputed run of it; but the high-road between Moreton and Wolford skirts it for about a mile, the public footpath between the same two places passes through a portion of it, and there is another road, crossed by the said footpath, and leading to the hamlet of Lower Lemington, which runs for a short distance bordered by the wood on both sides. The footpath, "the field way to Moreton," as it always was to us, must be somewhat minutely described, as it is by far the most accessible and richest of the good localities connected with the wood which are still open to entomologists. The beginning of the path is reached from the up-platform of Moreton station by crossing the branch line to Shipston-on-Stour, *i.e.*, it is on the side of the station farthest from the town. The first fields are now utilised for golf, but they used to be, and probably still are, a favourite haunt of *Ino statice*; *Anthrocera jilipendulæ* was also common there. Keeping to the path exactly, which perhaps is the safest thing to do, one arrives almost at the high road, but a sharp turn to the left takes the pedestrian finally off in the direction of Wolford Wood. These next three or four fields are not very prolific, though at the hedge-row at the far end of the first, one will probably meet with *Euchloræ cardamines*, *Gonepteryx rhamni*, or *Aglais urticae*, according to season, and almost certainly with the two commonest Pierids, *P. brassicae* and *P. rapae*. After crossing these fields the hunter will find himself at a "heath," enclosed till quite recently by wire netting to his right, but open to his left. Just before the heath however there opens to the left a broad grass lane which at times provides good sport, especially in the matter of Geometrids. In my early days there was a tradition that *Leptosia sinapis* had been taken by Mr. Hamborough, a former Rector of Evenlode, and if the species still lingers in the neighbourhood this lane is just where I should expect (in the light of later-acquired continental knowledge) to find it, though the said tradition pointed to the outskirts of the wood some 100 to 200 yards from the Fourshire Stone, after turning down towards Wolford, as the scene of capture. To return to the heath. Many common species are to be taken there at different seasons, *e.g.*, *Hesperia malvae*, *Nisoniades tages*, *Augiades sylvanus* and *Adopata flava*, *Polyommatus icarus*, etc., and last year I found *Coccyonympha pamphilus* to be well worth netting, as it displayed very wide variation both in tint and markings. It would no doubt be worth while

working this heath for moths, but the only species which occur to my mind are *Euclidia glyphica* and *E. mi*, until one arrives at the top of the heath, just before crossing the Lemington Road where *Melanippe hastata* sometimes occurred. At this point too begins the haunt of *Brenthis euphrosyne*, which is however more frequent after crossing the road and entering the wood; I found it here in some numbers but rather worn on June 14th last year. The path from this point, (where my brother took *Boarmia roboraria* in 1896), goes for half a mile or more through the wood, which is open on the left hand, but for most of the distance enclosed by a hedge on the right. Here the entomologist is advised to make the most of his opportunities, for this, which is still in Gloucestershire, is the only bit of the wood which he can enter. Here *Dryas paphia* is abundant in its season, and *Argynnis adippe* may also be taken, though the latter is commoner in the fields, which one enters on leaving the wood, and which are also the chosen haunt of *A. aglaia*, and of either *Anthrocera lomiceræ* or *A. trifolii*, perhaps of both species. Here too it is possible that the entomologist who is favoured by fortune may see *Apatura iris*, or even, if it should be a hot day after rain, have the chance of capturing it, for the path through the wood abounds in damp spots, and his Imperial Majesty's taste for such places is well-known. I have seen this glorious insect at the woodside too in the succeeding fields, and also on the road between the Fourshire Stone and Wolford, but its favourite haunts in the middle of the wood are no longer to be visited. On the oak trees on the left, at the further end of the wood-path, my brother has taken *Asphalia ridens*, but this of course would be possible only on an Easter holiday. The field immediately succeeding the wood (the *aglaia* field) abounded last year in *Hesperia malrae* and *Nisoniades tages*; *Polyommatus icarus* was also there and in succeeding fields, though not in abundance, and *Coenonympha pamphilus* was as common as on the heath. The field is a fairly large one and requires working all over, much would be missed by keeping to the path, which should however be taken up again where it enters another small piece of wood, the track through which is generally very muddy, but in which some nice Geometers may sometimes be picked up. On leaving this bit of oak-wood we arrive in a long narrow field, (known to us, but probably to no one else, as "the Vale of Tempe") which used to be one of our favourite hunting grounds. This field slopes downwards to the left to a small brook, dividing Gloucestershire from Warwickshire, on the opposite side of which it is met by another sloping in the opposite direction, which is, or used to be, equally prolific, and where *Agriades coridon* has been taken; both are now much more marshy than they used to be, and much more over-grown with meadowsweet and other thickly growing plants, but formerly at any rate they were specially beloved by *Brenthis euphrosyne* and *B. selene* and by *Melitæa aurinia**, and formed the only locality in the neighbourhood in which I have ever seen the latter. In and after August they were much frequented by the Vanessids, especially *Pyrameis cardui* (in some years), *P. atalanta*, *Vanessa io*, and *Aglaïs urticae*. The oak-trees at the top of the "Vale of Tempe" made a good sugaring place, and pupa-digging at their roots was in some seasons productive,

* I took *B. euphrosyne* commonly there on June 2nd, this year, and one specimen of *M. aurinia*, just out; I was too early for this and for *B. selene*. G.W.

though I do not remember to have found any scarce species amongst them. In some seasons *Psilura monacha* was to be found seated on almost every one of them, and oddly enough was taken at sugar also, while in others there was not a specimen to be seen; on one of these trees too my brother took *Drymonia chaonia* in 1891. Last year I found *Ino statices* there, and it was always a locality for *A. filipendulae*; *Gonepteryx rhamnii* is generally to be seen there, hibernated or otherwise, and *Pieris napi* may also be counted upon. An ash-tree, just at the end of the little piece of oak-wood mentioned above, was especially favoured for many years, and probably still is so, by *Bithys quercus*. There are several ways of getting from one of these fields to the other, but if the little side path is chosen which leads across a small gated bridge, and the track is followed right across the second field and into the next above it, it is easy by bearing to the right to reach the gate of another small wood, the paths of which are still open to the public. The undergrowth of this, being considerably different from that of the large wood, offers the chance of different species, particularly of Geometers, and the two Brenthids and *D. paphia* may also be obtained here if they have been missed in their old haunts. The entomologist is advised however to return to the "Vale of Tempe," if making Moreton his headquarters, and having reached the end of this field, to turn to his right and skirt the large wood, to cross the little stream at the bottom, and to make his way round to the high road. In the large field, which is crossed just before reaching this, I have taken *Chattendenia w-album*, which however I have never known to be common in this district, though it has been taken more than once on the strawberry beds in the Vicarage garden. In those days, one must add, the garden was remarkable for its magnificent elm trees, now, alas! a thing of the past. *Pyrameis atalanta* was another insect which haunted the garden, especially when there was a fine show of single dahlias, *Aegeria tipuliformis* flew abundantly around the currant bushes, and *Sesia stellatarum* was to be seen most summers; on one occasion my brother obtained in the kitchen a specimen of *Agrilus convolvuli*, which however had been crushed, and as far as I remember somewhat spoilt, under the foot of a terrified but undaunted domestic. In the field just in front of the house he took a specimen of *Colias edusa* ab. *helice* in 1877, a year when this species was wonderfully abundant, and he also sends me word that in 1896 he took *Celastrina argiolus* in the garden, which was the reverse of being a common species with us. One of our favourite occupations as boys, was beating the ivy on the garden wall for moths, but my principal remembrance of the result is the abundance of *Triphaena janthina* and *Camptogramma bilineata* that used to emerge; *T. interjecta* occasionally varied the monotony. The larvæ of *Diloba caeruleocephala* were very common on the laurel bushes, in fact "caterpillars" to me in my young days meant almost exclusively "privet hawks," "drinkers," "yellow-tails," or "figure-of-eights." (We were not scientific!) These recollections, dull perhaps to the reader, are apt to carry one away, and we must return to our hypothetical collector, whom we left arriving at the high road by skirting the wood. He will find himself facing another copse, and his way back to Moreton is to his right, but there are two or three species worth mentioning which have been obtained (at different times of year) within a short

distance to his left. Immediately at the end of the copse is the gate of a field which contains many thickets of hawthorn, by entering which, and going straight up the side of the copse till the end of the field is reached, he will arrive at the spot where my father used to take *Hamearis lucina*. I ought perhaps to add that I have never seen it there myself, but my only attempt was made when my father took me there, unsuccessfully, as a boy of nine or ten, and after that I was never at home at the right season. Returning to the gate, and continuing a few yards along the road, still towards Wolford, *Heliodes arbuti* may, in some seasons, be found not uncommonly by the roadside; sometimes, too, *Eugonia polychloros* was to be seen with tolerable frequency here, as also elsewhere on the outskirts of the wood. Returning to the point of exit on to the high road, a most productive locality is reached, where the road is skirted for some distance on the right by the wood, and on the left by another "heath." The former is "taboo," but possibly it is still permissible to enter the latter, in several parts of which *Callophrys rubi* is abundant, and *Hemaris fuciformis* is sometimes to be obtained, as well as the common species enumerated for the other "heath" and the succeeding fields. Of course, *Epinephele jurtina* and *E. tithonus* are abundant; and on the outskirts of the wood, in addition to *Dryas paphia* and the possibility of *Apatura iris*, *Enodia hyperanthus* and *Pararge egeria* are frequent. In one of the wood "rides" I have more than once taken *Melanargia galatea*, and possibly a specimen or two might come across the road, but the best locality in the neighbourhood for this species is the camp on Adlestrop Hill, very easily reached from the station of the same name, the first out of Moreton in the Oxford direction. It was, I believe, on the outskirts of the wood that my father took a few specimens of *Ruralis betulae*, but neither my brother nor I have ever seen it there. *Catocala nupta* was often to be seen along this road, and sometimes *Dicranura vinula*. *Polygona c-album* was to be taken at several places in this neighbourhood, but the only time I remember to have seen it common was just at the end of the wood shortly before the Fourshire Stone, somewhere in the early nineties. Of *Strymon pruni* I can only say that I believe my father took it somewhere hereabouts, and that it seems by no means an unlikely spot for it to occur. On reaching the Fourshire Stone the way to Moreton is, of course, to the right, and something under two miles straight along will bring the wayfarer to the town; but the wise collector will again take the first turn to the right, and will thus, in a quarter of a mile or less, reach the point where this by-road crosses the path by which he previously came, and striking into the "heath" on his left will return both by a pleasanter and a more profitable route to his destination.

I ought to have had much more to say of this wood and its outskirts but unfortunately, during my Oxford days, when most of my long vacations were spent at home, and when I should have had my best opportunities, I had almost entirely dropped Entomology, in favour of Music, Archery, and other things, and my interest in it was only revived a year or two later, from the fact that my colleague in my first mastership was Mr. A. Eland Shaw, whose first love was Lepidoptera, before he gave up this order for Orthoptera, with which his name is now always connected.

(To be concluded.)

Amphisbatis incongruella, Stn., probably myrmecophilous in the larval stage, and a few notes on some other Myrmecophiles.

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

TINEINA. — *Ecophoridae*. — *Amphisbatis incongruella*, Stainton, *Syst. Cat.*, 1849, p. 15. Sp. 34; Zeller, *Stett. Ent. Ztg.*, xxxi., 1870, pp. 304-5; Meyrick, *Handbook Brit. Lep.*, 1895, p. 638; Staud. and Rebel, *Cat.*, iii., 1901. Sp. 3540, p. 184; Spüler, *Schmet. Eur.*, iii., 1910, p. 441, fig. 189; pl. 90, fig. 84.

In the spring of 1907 I bred two little moths from a nest of *Formica exsecta* which I had brought home from Bournemouth on September 12th, 1906. It was suggested that they were Gelechiids, and new to science (*Ent. Rec.*, 1907, p. 256). I eventually gave one of them to Lord Walsingham, and it went with his magnificent collections to the British Museum. Mr. Hartley Durrant has now kindly identified it, it being necessary, however, to cut off the wings and make a slide of them before the specimen could be determined. Mr. Durrant tells me he would assume a real connection between the larva of this insect and the ants. The larva is said to feed on *Calluna* and *Erica* (*Ent. Ann.*, 1874, p. 22). The nest of *Formica exsecta* is, of course, constructed of grass and ling, etc. Zeller, in a footnote (*loc. cit.*), records the capture of the larva, and describes its case. It is very active, and makes a small case out of either end of which it can protrude. He found it by accident in summer in a sandy spot very suitable for *Formica exsecta* or other ants. As he could not find out on what the larva lived he was unable to rear it. On May 27th last year, I went to Bournemouth to meet Mr. Banks, and I took him to the spot where I had obtained the 1906 nest. We found an *exsecta* nest almost on the exact same spot. This I took, and have it still in a very large glass bowl with sand in. The ants have all died, but in the winter I found a thin long case fastened to the muslin over the nest. I broke it open but it appeared to be empty. I have just found a smaller one fastened to the side of the glass. Mr. Durrant thinks these are certainly the larval cases. I hope I may breed some of the moths later on. It is very satisfactory to have the species cleared up. The case would protect the larvæ from the ants, and of course they feed on the refuse of the nest, and would not be confined to *exsecta* nests. F. Smith wrote in the *Ent. Ann.*, 1869, p. 72, when speaking of Bournemouth: "In June I obtained all the sexes from a nest of *Formica congerens*: I searched in the nest of this ant for the *Tinea ochraceella*, but without success; when I first discovered the nest of this ant, a few years ago, I observed a number of minute moths running among the ants, but it did not occur to me at the time that it might probably be a rarity." It is very probable that these little moths were the same as mine. Mr. Durrant suggests that *Epidola*, with a somewhat similar case and very hard to breed, might have similar associations.

COLEOPTERA.—*Notothecta flavipes*, Gr.—In my myrmecophilous notes for 1910 I omitted to record the fact that Mr. Taylor and I found this beetle in some numbers in a nest of *Formica exsecta* at Parkhurst Forest, Isle of Wight, on May 15th last year. Its normal host is *F. rufa*, and it has never been recorded with *exsecta* before either here or on the Continent. There were too many specimens in the nest for

it to be regarded as a chance occurrence. *Notothecta anceps*, Er., is recorded with *F. evsecta* as well as with *F. rufa* on the Continent, and I have found it with the former in plenty at both Bournemouth and Aviemore.

Cryptocephalus fulvus, Goetz.—On April 16th, 1910, I found in a nest of *Lasius fuliginosus* at Wellington College a small case with a larva in it, very like a *Clythra* case in miniature, which I concluded must contain a *Cryptocephalus* larva. I brought it home and placed it in a small plaster nest with a few of the ants and some of the black material and contents of their nest. The larva crawled about with its case like a small *Clythra* larva, and fed on the refuse of the nest. It enlarged its case in the same way as a *Clythra* larva does. There was a little sand in the nest, and the part added to the case showed as a rim of different colour to the rest of the case. It fastened itself to a bit of wood at the end of May. The beetle unfortunately hatched whilst I was away in Scotland between June 8th and June 19th. My assistant (M. Cutmore) did not like to remove the beetle in my absence, and it was killed either by the ants or some of the *Myrmedoniae* which were present. I found its wing cases, thorax, etc., and the empty and broken larval case in the *débris* of the nest. In nature the beetle would promptly escape from the nest as does *Clythra*. Chitty recorded the capture of *Cryptocephalus 6-punctatus* near a nest of *F. rufa*, and expressed his opinion that it had come out of this nest (*Ent. Rec.*, 1901, p. 250), and Wasmann suggests that from some short notes by Weise it is probable that all the species of *Cryptocephalus* change to pupæ in ant's nests (*Krit. Ver. d. Myr. u. Ter. Arth.*, 1894, p. 159).

COCCIDÆ.—I have recently received some *Coccidae* back from Mr. Green, which he has kindly named for me. These are *Ripersia subterranea*, Newst., taken in a nest of *Lasius niger* at Box Hill, May 8th, 1910.

Ripersia tomlini, Newst., with *L. niger*, Box Hill, May 8th, 1910, and with the same ant at Sandown, Isle of Wight, April 24th, 1909, and May 14th, 1910. The localities for these two species are all new.

Dactylopius, sp. I found a number of a coccid with *Wasmannia auro-punctata*, at Kew, which Mr. Green believes to be the young of a *Dactylopius*.

ACARINA.—Mr. N. D. F. Pearce has also returned to me some more of my *Acari* captured with ants. They are some of the more difficult, and Mr. Pearce does not express his opinion on these specimens without doubt.

Urodiscella ricasoliana, Berl. (?) A single specimen taken in a nest of *F. rufa* at Weybridge, April 20th, 1910. I have only found it with *Lasius fuliginosus* before, and Berlese (*Redia* 1903, p. 340), only gives the same ant.

Uroplitelia oratula, Berl. (?) With *L. flavus* at Box Hill, May 1st, 1910, and in some numbers with *Myrnuca laerinodis*, May 20th, 1910, in the same locality.

Laelaps cuneifer, Mich. (?) Several large and curious looking specimens in a nest of *L. fuliginosus* at Darent Wood, April 2nd, 1910.

Laelaps myrmophilus, Mich. (?) Took a single specimen with *F. fusca* at Box Hill in May.

It seems to me to be best to record these specimens now, and I may be able to get them verified on some future occasion.

Luperina (?) (Apamea) gueneëi, Doubleday, as a species, and as a British species (with plates).By H_r. J. TURNER, F.E.S.

(Continued from page 92.)

On page 53 I have stated that the **I** mark "is practically always present, and more distinct rather than less" in *L. testacea*, while it is only by a stretch of the imagination that it can be seen as at all present in *L. gueneëi*. Mr. Baxter has just forwarded to me an example of the latter species in which this **I** mark is distinctly present, but he says that it is a very rare aberration, as he only knows of two specimens. He suggests that it might be called *ab. iota*. Mr. C. W. Colthrup and other gentlemen have either written or spoken to me as to the presence or absence of the **I** mark in *L. testacea*. Mr. Colthrup says that "in a long series taken last Autumn, in most of the specimens the longitudinal **I** mark is conspicuous by its absence." I have been unable to see his specimens, but he has sent me a photograph of ten varieties of this series, and strange to say at least eight of them show this mark rather more distinctly than less. His series all came from East Kent. Fig. 8, plate vi., is a very aberrant example of *L. testacea*, which Mr. Tonge states is typical of a number taken by him on the East Coast. I have doubted its identity, especially as the underside is almost identical in development of transverse lines, discoidals, etc., with *L. cespitis*, while the general basal colour is by no manner of means "suffused testaceous." Dr. Chapman, however, considers it can be no other species than *L. testacea*. On the same plate are figured *L. nickerlii*, figs. 1 and 2, *L. dumerilii*, figs. 5 and 6, and *L. testacea*, figs. 3, 4, 7, and 8. Figs. 3 and 4 are from Bohemian examples, while figs. 7 and 8 are Suffolk specimens.

Since writing the above notes I have been to South Kensington to look over the material in the National Collection, taking with me a short series of *L. gueneëi* and about forty varied specimens of *L. testacea* for comparison. The following notes are the result.

Not a single *L. testacea* has the same shape of wing as *L. gueneëi*, although the difference may be indescribable in words it is there; a series of each species side by side illustrates it well.

There is a specimen in the collection called *baxteri*. It came from the Leech Collection, and is labelled "Central France. Coll. M. Sand." To me it appears to be an undoubted *L. testacea*. The marginal area is dark, which never occurs in *L. gueneëi*: the wing shape is that of *L. testacea*; the fringes are certainly not at all characteristic of *L. gueneëi*, in which species they are light with strong light rays going well between the conspicuous lunules and becoming gradually evanescent in the light marginal area. This Leech coll. *baxteri* has a distinctly dark marginal area, which is one of the strong characters of *L. testacea*. The general colour is that of *L. testacea*, but not so strongly "suffused testaceous" as in the generality of specimens. The **I** mark is fairly well developed, the lunule ends being comparatively large. The light narrow band inside the dark marginal area goes out sharply towards the apex, another of the strong characters of *L. testacea*. It is certainly not the *baxteri* we know in England, which has a light ground colour, in fact "white" is the word used in its diagnosis, a term which could not be

used in describing this specimen, except in regard to its most aberrant marking the reniform stigma, of which the concavity and margin generally may actually be called "white." *L. nickerlii* is the species where this last character is very strongly marked, but the consensus of the remaining characters, to my mind, give no weight to a contention that it is that species. Out of the thirty specimens in the Museum Collection and some forty examples of my own (from all parts of Europe), in only one example is the reniform rendered conspicuous by a white concavity as in this so called *bacteri*. This specimen is a dwarf, very dark example, from Wallasey. (A pathological form [?]). The white is not very conspicuous, by no means as obtrusive as in *L. nickerlii*, but still sufficiently well marked to be noted at the first glance.

The Doubleday specimen of *L. guenei* has already been discussed by Mr. South, Mr. Bankes, and others, but I might note that the marginal lunules are strongly black and fairly distant from each other, the light parts of the chequered fringe go well up between the lunules so far as can be seen in the worn and faded specimen. Still, in spite of the age-fading, these black lunules, in depth of colour, shape, and distance apart, are a conspicuous feature such as never occurs in *L. testacea*, in fact in some examples of the latter species they are conspicuous by their absence.

From the figures on Plate vi. it will be easily supposed that *L. dumerilii* is in no way identifiable with *L. guenei*, and I believe that investigation of the genitalia shows that they are abundantly distinct, thus confirming what all the other evidence of form, markings, and colour points to. This leaves us with only *L. nickerlii* to consider. There seems a difficulty in obtaining specimens of true *L. nickerlii*, and there is very strong suspicion that the examples obtained by Mr. South and sent to Mr. Pierce for examination were not that species. Dr. Chapman has obtained some undoubted examples of this species and I hope shortly to be able to give figures of the genitalia of all the four species in question, since Mr. Murray has very kindly sent on several *L. guenei* for dissection.

Freyer in his *Neuere Beiträge zur Schmetterlingskunde mit Abbildungen nach der Natur*, vol. v., page 140, describes a species of *Luperina*, which he names *nickerlii* after Dr. Nickerl of Prague, its captor. He also figures the species on Plate 466, fig. 4. This was in the year 1845. As regards the figure it is wooden in the extreme, perfectly useless for the purpose of identification, and absolutely unlike the real moth.

The following is Freyer's description, which I have thought it advisable to put in the original so that nothing of the force of his words be lost.

"Von der Grösse, Gestalt und fast auch Zeichnung der *N. echii*. In der Farbe und Zeichnung nähert sie sich auch der *N. testacea*. Das Bruststück und die Vorderflügel sind röthlichgrau, letztere mit den gewöhnlichen 3 wellenformigen Binden, welche am Vorderrand aus weissen dreieckigen Flecken auslaufen. Im Mittelfeld steht die sehr deutliche weisse Nierenmackel mit dunkler Ausfüllung. Die runde Mackel ist sehr klein, ebenfalls weiss, mit dunkler Füllung. Die Zapfenmackel ist schwarzbraun und verfließt in einen gleichgefärbten Schattenstreif der sich bis zur zweiten Wellenlinie oder Binde,

erstrecht, wie dies bei den meisten Apameen der Fall ist. Die letzte weisse Wellenbinde vor den Franzen ist von der Mitte bis zum Innenrande am dunkelsten nach innen begrenzt und sie beginnt hinter der Flügelspitze. Die Franzen sind braun, und in solche laufen die Adern in weissen Punkten aus. Der Hinterleib ist schmutzigweiss, die Hinterflügel sind rein weiss ohne Mondflecken oder dunkeln Anflug an den Franzen. Die Fühler sind gefärbt hellbraun. Die Unterseite ist einfach weiss. Die Vorderflügel sind vom Vorderrand bis in die Flügelmitte bräunschattig angeflogen, nur die Nierenmackel sammt der letzten Binde scheinen heller durch. Die Franzen sind hier weiss und braun gescheckt. Die Hinterflügel zeigen Spuren von ganz schwachen Mittelpunkten.

Es wurde diese Eule einzeln von Herrn Dr. Nickerl bei Prag erzogen, und ich gebe ihr den Namen des Herrn Entdeckers, der mir solche gefälligst mitgetheilt hat.

Herrich-Schäffer's figure is better, but poor. The figure in "Spuler" (1910) is still better, and compares characteristically with those of *L. testacea* and *L. dumerilii* between which it is placed.

(To be concluded.)

Digne.

By ROSA E. PAGE, B.A.

So much has been written about this famous haunt of entomologists, that I approach the subject rather timorously. But the cold wet Spring of 1910, followed by an almost equally wet Summer, with temperatures much below the normal, had produced such a backward state of things over the whole of N.W. Europe, that it may be interesting to compare the dates of emergence of the various species of Rhopalocera with those of former years.

We left London on July 22nd; the day was cold, the skies leaden; similar weather conditions obtained in the Channel. When we arrived at Dieppe it was steadily raining, which it continued to do, the temperature remaining very low, during the whole journey across France, until we reached the Col de la Croix Haute, on the ridge of the Dauphiné Alps.

Immediately the train commenced the long descent towards Veynes, the weather changed. The herbage, which had been reeking with moisture on the northern slope, was here quite dry; glimpses of blue sky soon appeared, giving promise of more; as we neared St. Auban, the extent of blue steadily increased, and we could see that we were leaving the dull, gloomy, rainy zone behind us and entering what we discovered to be a belt of high pressure, extending over Southern France, and which providentially continued during the fortnight we were at Digne.

On the 24th, at 5 a.m., the sun shone brilliantly in an azure sky; there was every appearance of a glorious day and we went to seek the famous Baths. Our first capture was *Coenonympha dorus* on the river bed skirting the Grand Parade; this species was more abundant along the road, but swarmed, in perfect trim, in company with *Epinephele tithonus* on some pale yellow labiate flowers on the river bank, about a mile beyond the Etablissement. *Colias edusa* and *C. hyale* were

frequent, in good condition, but what *Alugia spini* there were, were worn. On the famous cherry trees near the Baths, busily sucking at the fruit, and in the orchard near the entrance to the cross gorge (so replete with the juice exuding from the trunks of the apple trees that we could approach almost near enough to touch them, without disturbing them), were both *Satyrus circe* and *S. hermione*, both species wary enough at the slightest movement of the net. Neither of these species appeared to be as numerous as in better years, both were evidently scattered over the whole district, as individuals were met with everywhere; the locality of the Baths is without doubt the most prolific. M. Cotte says they are fresh right down to September, as they do not fly much unless disturbed. We certainly found them in good condition up to August 4th (when we left Digne), those rejected being more often chipped or damaged than worn. One had to work persistently, however, to get a series of *S. circe* which, if easy to catch under certain conditions (such as sap-inbibing), is more elusive under others, and will persist in rising at the swing of the net, only to settle a little higher on the tree, in as awkward a position on a branch as it can select.

In the cross gorge we found *Satyrus alyone*, also in good condition, but no *S. hermione*: while on the trees near the Baths were *S. hermione*, but no *S. alyone*. If these are one and the same species, as some entomologists argue, why is it that within a short distance of each other their sizes and their habits are so different? *S. hermione* rests on trees, and is partial to sap and the juices of fruits; it also settles on the road, often in the shade of trees, but will generally be found to have been attracted by some over ripe fruit which has dropped from them; while *S. alyone* is a smaller insect, and both at Aigle and in the cross gorge at Digne, settles on rocks, or on the ground near them, but does not seem to trouble about fruit. *S. alyone* and *S. cordula* were found flying together, while *S. hermione* was associated with *S. circe*.

The first *S. jidia* ♂ appeared on the 26th, two more on the 30th, and two on the 31st; all perfect specimens. The broods of *S. cordula* and *S. actaea* this year almost coincided; our first *S. actaea* being taken on the 31st. *Enodia dryas* at this date were passé, as were also some of the *S. cordula*, but others were very fine, especially some of the females. After taking a number of *S. cordula* and *S. actaea*, one has no doubt that they are distinct species, it being quite easy to distinguish between them even on the wing. Of the genus *Hipparchia*, *H. briseis* ♂ was first taken on the 29th, on the right bank of the Eaux Chaudes, while *H. arethusa* ♂ did not emerge till August 2nd; but on the 4th, eleven ♂s were captured, just out of pupa. *H. semele* was met with from the 25th, onwards. Thus, out of eleven species of *Satyridae*, we obtained ten, the only one missing being *S. statilius*, which was not out by August 4th, but which is usually common at Digne.

Occasional specimens of quite fresh *Gonepteryx cleopatra* were taken. What a grand insect this is, as it flashes rapidly by one, displaying the orange flushes on its upper wings in the brilliant sunlight which it loves, or flying along the precipitous sides of a gorge, at a tantalising height above one's reach!

Polyommatus meleager ♂s were captured on the 25th; ♀s not

being seen till August 4th. The males fly with a crowd of other blues both near the entrance to the gorge and on the Dourbes road near the river, being difficult to distinguish, while on the wing in the brilliant light, from the commoner *P. coridon* and *P. damon*. Among the other "blues" on the mud we found two *Hirsutina admetus* var. *rippertii* ♂s. *P. hylas* was frequent on the right bank of the Eaux Chaudes, on the 29th, and *P. escheri* on the 30th. Other captures included three beautiful *Limenitis camilla* (two of which were *in cop.*), a fine *Pyrameis cardui* on the road near the Baths on the 28th. (the only one seen), a few *Loweia alciphron* var. *gordius* in the gorge on the 25th; one or two fresh *Melanargia galatea* var. *provida* on the 31st, on which date most specimens were passé, a few *Loweia dorilis* and the first two *Erebia neoridas* on August 2nd; a single *Bithys quercis* on trees near the Baths on the same date; together with one worn *Apatura ilia* ♀ and two ragged *Pyrameis atalanta*. *Papilio alexanor* was frequent on the 26th (but the worse for wear, and often with mutilated tails), flying along the precipitous sides of the gorge; while *P. podalirius* was much more common, and flew very strongly when the wind was high, ducking and dodging the net very cleverly. *Parnassius apollo* was only in fair condition on the 25th, but with some of the spots inclining to yellow. Larvæ of *Papilio alexanor* were taken on August 4th, by M. Jouffret, an entomologist residing at Digne; these were mostly small, but a few were more than half fed; he also showed us *Polyommatus melceger* ♀s taken near the Baths on July 31st. *Leptosia sinapis*, *Epinephela lycaon* and *Melitæa didyma* were frequent on the river bed at the entrance to the gorge.

The heat at Digne in August is light and dry, and is tempered by a strong wind, which springs up each morning about eleven, and blows against one all the way back from the Baths. Following the advice given by Mr. Rowland-Brown (see *antea*, vol. xii, p 57, etc.), we got out as early as possible each morning; the hot trudge under the rocks is not so tiring at 5 a.m. as it becomes later on in the day. We collected till midday, returning to the hotel for lunch and siesta; it became possible to commence setting about 5 p.m., when all Digne takes its constitutional under the trees in the Boulevard Gassendi, and the hum of voices gradually increases to a confused hubbub of laughter and chatter.

From July 24th to August 4th, with the exception of one rather dull and rainy morning, the sky was cloudless, and the sun brilliant. In this I believe we were peculiarly fortunate, reports from other districts being most unfavourable. I do not believe, however, that insects were nearly so numerous as usual, especially in the Petit Vallon, the cold wet spring having worked as much havoc among them as it did among the fruit.

The Orthoptera in the Canary Islands.

By MALCOLM BURR, D.Sc., M.A., F.E.S., F.L.S., F.Z.S.

(Continued from page 95).

We took up our headquarters at Tacoronte, a rather picturesque, scattered village, on the edge of the plateau, where the road begins to drop to the western coast of the island and valley of Orotava. We

had now definitely left the dull cloudy weather behind, and enjoyed a clear blue sky and hot sun, relieved by a fresh breeze from the sea; the evenings were cool, if not quite cold. The neighbourhood of the village is given up to the vine and to vegetables; beans do well at this altitude, something over 2,000 feet, and the villagers are particularly proud of their cabbages. An occasional palm-tree reminds us that we are in low latitudes, and the fine dragon-tree down the village shows that we have not left the Canaries.

In the daytime and the dusk, the stridulation of *Decticus albifrons*, Fabr., keeps the air alive, and at night *Ligryllus bimaculatus* takes up the chorus. The former, which I failed to see in the Grand Canary, is abundant everywhere in Tenerife. Its stridulation cannot be distinguished, by memory, at all events, from that of its northern congener *D. verrucivorus*, L., *Epacromia thalassina*, Fabr., swarms in the hedgerows, and *E. strepens*, *Platycleis grisea* and *Pl. tessellata* are abundant, as also is *Pachytylus danicus*. *Anisolabis annulipes* is fairly common under stones, and *Oecanthus pellucens*, Scop., is fairly numerous. *Phaneroptera nana*, Charp., is common in the herbage in the little "barrancos" or ravines.

A mile or two below the village, there is a row of low rounded hills; these are "fumarole," and some have the little crater well preserved on their summit. On one of these I found *Mantis religiosa*, common, *Epacromia thalassina* and *E. strepens* in swarms, *Acrotylus patruelis*, Sturm., common, *Caloptenus vulcanius*, common, *Pachytylus danicus*, common, *Phaneroptera nana*, Charp., *Platycleis grisea*, Fabr., and *Decticus albifrons*, Fabr., numerous, and *Oecanthus pellucens*, Scop., common. I looked in vain for earwigs, but found *Hololampra bivittata*, Brullé, in numbers among the pine-needles; young larvae and nymphs were in a great majority, adult females rare, and adult males almost unfindable. This species is peculiar to the island.

We moved down to Puerto Orotava as a base for the excursion up the peak; as the bluff is rounded on the road down, the view of the famous valley is indescribably beautiful; a long sweeping depression stretches before the traveller, green with vineyard and banana plantations, dotted with white houses, the deep blue sea on one side, a rugged row of red mountains on the other, and the mighty cone of the peak beyond, rearing his majestic head far above the clouds. When Humboldt paid his classic visit to Tenerife, and this sight burst upon his gaze, he fell to the ground to salute the finest sight in the world. It may indeed rank with the Bocche di Cattaro, or the bay of Rio de Janeiro.

The ascent of the peak involves great fatigue, but is abundantly worth any cost or labour. On the coast itself, *Acrotylus patruelis*, Sturm., and *Sphingonotus caeruleus*, L., are abundant; through the zone of bananas, there is little insect life; near the top of the zone of the vine, from 2,000 to 3,000 feet, the usual species were common, with the addition of a few specimens of *Stauronotus maroccanus*, Thunb., and *Edaleus senegalensis*, Kr., the latter interesting as being the Ethiopian representative of the common Mediterranean *O. nigrofasciatus*, De Geer. At about 4,000 feet we enter the Monte Verde, where there is no more cultivation, but dense thickets of "breso," a kind of shrubby heath, usually bathed in cloud; as we go higher, the "breso" is replaced by a woody stunted shrub, the "codeso," growing

among the barren rocks. *Caloptenus vulcanius* was the only Orthopteron noticed here. We caught a glimpse of one bird peculiar to the peak, *Fringilla teydenis*, a handsome slate-blue chaffinch, but saw no other birds beyond an occasional kestrel at the lower levels, and a handsome soaring Egyptian vulture. Above 7,000 feet, the path suddenly becomes less steep as we enter the "cañadas." This is an extensive plain, very flat, the bed of an enormous ancient crater, bounded by vertical walls of basalt.

The ground is a mass of small, rounded, soft buff or orange pebbles, that afford springy and agreeable walking; huge blocks of irregular dark red trachytic lava lie haphazard over the plain, the only relief to which is afforded by numerous green clumps of the "retama," *Retama rhodorhizoides*, the famous broom that grows here only, the only vegetation above the 7,000 feet level. We rode for over an hour over this plain, where the only insect life observed consisted of swarms of *Caloptenus vulcanius*, and *Sphingonotus caeruleus*, which was more numerous here than on the coast itself. As we approached the huge cone of the peak, standing like a solitary pyramid in the midst of the plain, we climbed the Montaña Blanca, a mass of pumice, and then by a steep and winding path up the base of the cone, to a stone hut, Alta Vista, built by an Englishman, to his eternal glory, on a spur between two black lava streams, at 10,702 feet. Our guides brought up dead "retama" wood, for the last plant was left behind at about 9,000 feet, for fire to cook our frugal supper and make coffee to warm our frozen bodies, for when the sun went down behind the peak and threw its great black conical shadow on the peaks and clouds on the east, the cold was biting and penetrating.

Of the ascent to the summit of the cone itself, this is scarcely the place to write, for of entomology we saw nothing. The crater is a small cup-like depression, white with sulphur salts, with yellow patches of crystalline sulphur, with puffs of sulphurous vapour oozing out from the ground on all sides; at our feet, the pink plain of the "cañadas"; beyond, the jagged cordillera of the island, the coastline standing out sharp against the blue sea, twelve thousand feet below us, like a map; the gaping vent of Mount Chahorra, with black lava streams all round, and last year's crater, like an open wound, bleeding black lava, a sore upon the landscape; then the Grand Canary on the east, looking but a mile or two away, really over fifty miles distant; in the west, the green isles of Hierro and La Palma. Until the sun was high, a keen wind numbed our hands, and we had been glad of thick clothes and heavy overcoat in which to climb the last 2,000 feet. When we found once more the welcome shelter of the stone hut, a couple of glasses of steaming hot wine put fresh life into our frozen veins.

Upon returning to Tacoronte, we made an excursion to Bajamar, in the hopes of finding the *Anataelia*: Dr. Cabrera had described to me the exact spot very carefully, and drawn a sketch map, so that there was no doubt whatever about being on the correct spot; it was a flat, stony waste, and I spent four hours tearing my hands and crushing my fingers by turning over stones; my only bag was a male *Forficula auricularia*, one or two *Anisolabis annulipes*, and one or two *A. maxima*. It was a great disappointment. I am uncertain whether to attribute my want of success to sheer ill-luck, or to the possible great scarcity

of the insect, for it is conceivable that so peculiar a species, with so restricted a distribution, may be verging upon extinction, and I believe it is a good many years since Don Anatael took a specimen; the season was correct, for we were there on September 22nd; it was in October that it was first taken.

As we drove back to Tacoronte, the heat became oppressive, and next morning a perfect gale was blowing, the "*levante*" or "*tempo del sur*," which corresponds to the sirocco of the Mediterranean, a hot wind blowing a fine red dust from the African desert, picking up clouds of dirt and powder from the road, which penetrate everything, and make life exceedingly disagreeable. I struggled in the teeth of this hot wind, filling eyes, ears, nostrils and skin with dry brown dirt, to the forest of Agua Garcia, where the Giant Heath grows to a height of fifty feet, yet is dwarfed by the huge laurel trees, with roots of terrific girth; the forest was cut by glades and shady ravines, sheltered from wind and sun, refreshed occasionally by a welcome spring of icy water. Here I looked carefully, at Don Anatael's suggestion, especially among the roots of the laurels, for *Forficula guancharia*, Heller, and *Holocompsa simonyi*, Kr., both peculiar species, but found nothing beyond a few specimens of *Hololampra bivittata*, Kr., nymphs and females only. On the outskirts of the wood, the usual species were abundant, *Epacromia thalassina*, *E. strepens*, *Caloptenus vulcanius*, *Oedaleus senegalensis*, *Platycoleis grisea*, *Pl. tessellata*, *Decticus albifrons*, a few *Mantis religiosa*, and *Phaneroptera nana*.

Don Anatael had especially advised me to search the thickets of "*maljurada*," or St. John's Wort, for *Orophila nubigena*, Kr., but I never saw a specimen. Sweeping produced, however, a number of locustine nymphs, which I attributed to *Calliphona*, Kr. This determination was verified soon by the capture of a fine female *Calliphona königi*, Kr. *Calliphona* is the local representative of the European genus *Locusta*, to which it is related. There are two species, *C. königi*, Kr., with abbreviated elytra, corresponding to *L. cantans*, and *C. allnaudi*, Bol., corresponding to *L. viridissima*, L. They are handsome green insects, of a large and more powerful build than the two *Locusta* referred to, resembling rather the East European *L. caudata*. While searching diligently in the scrub and grass, I caught a pair of *Ariajona margaritae*, Kr., an apterous Dectacid, allied to *Anterastes*, Brunner, and *Olynthoscelis*, Fieb. The genus is confined to the islands, and appears to be rare. Simony took it in the island of Hierro, and Krauss in Tenerife, but Don Anatael did not seem to have come across it.

I was still looking for a male *Calliphona*, and listening intently to all the stridulation around, detected nothing but the intermittent buzz of *Decticus albifrons* on all sides, when suddenly my ears were delighted by a loud and persistent shrill, like that of *Locusta*, but higher pitched, almost a whistle. I felt certain it must be a *Calliphona*, and stalked it down with patience, till I was rewarded by seeing a fine male *C. königi* sitting on a St. John's Wort, looking like a great green *Ephippigera*.

Thus my luck had turned, and though I had failed to find any one of the peculiar earwigs that I specially hunted for, nor *Hysicorypha*, nor *Blepharis*, the local leaf-Mantis, nor *Orophila*, I had in the last few minutes' collecting in the islands come across two of the most interesting Locustids of this fascinating fauna.

(To be concluded).

CURRENT NOTES.

During the past month we visited the Annual Exhibition of the Royal Photographic Society of Great Britain, held at Prince's Skating Club, W. Our attention was mainly directed to the Sections devoted to Natural History and Scientific Photography. These contained some of the most interesting and most successful work as of course might be expected when we mention such familiar names as those of Hugh Main, B.Sc., F.E.S., A. E. Tonge, F.E.S., A. H. Hamm, F.N.R.S., C. W. Colthrup, A. W. Dennis, and James Ward, F.E.S., as being in the list of exhibitors.

Mr. Hugh Main's exhibit consisted of a series of prints illustrating the Life History of the beautiful and delicate lace-wing fly, *Chrysopa flara*, together with a series showing the larva (ventral and dorsal views), pupa (ventral and dorsal views), and the imago of the musk beetle, *Aromia moschata*; Mr. A. E. Tonge had illustrated the Life-cycle of *Apatura iris*: Mr. A. H. Hamm had a series of prints to show the resting position and the protective resemblance attained by *Bryophila muralis* and *B. perla*: and Mr. C. W. Colthrup contributed a series of photographs of the resting attitudes of several species of moths. It is difficult to say which were the most successful of these, they were all beyond criticism and each exhibitor maintained his high standard of excellence in his own particular line of work.

But why, Oh! why were these beautiful productions relegated to a quite subordinate and bad position in the rooms? Why should such delicate works be hung in a very dark remote corner where the shadow of the electric light made it well-nigh impossible even with gymnastic efforts to see sufficiently well to fully appreciate them? We hope that on another occasion those responsible for the hanging will recognise the fact that there is nothing nebulous about Natural History Photography, it will stand the best of lighting, and in future may such excellent work receive better recognition from the Committee.

We had almost forgotten to mention the excellent photograph of one of our best known London natural history workers, that of Fred Enoch, Esq., F.L.S., F.E.S., F.R.H.S., of which a capital reproduction was given in the illustrated catalogue of the exhibition.—H.E.P.

In the March number of the *Canadian Entomologist*, L. W. Swett, of Boston, has begun a series of papers on the genus *Hydriomena*, which includes our species of *Hypsipetes*, but in America has a much more extended significance than our British genus is considered to comprise. In the May number F. H. Wolley Dod continues his valuable notes on the Lepidoptera of that little known area Alberta, and A. Gibson of Ottawa, commences a series of Studies in the Life-histories of Canadian *Noctuidæ*.

An *Illustrated Descriptive Catalogue of the Coleoptera or Beetles (exclusive of the Rhynchophora) known to occur in Indiana*, has just been sent to us by the author, Professor W. L. Blatchley, of Indianapolis, U.S.A. In the libraries of some of our London Societies we have often noted the row of bulky volumes issued by the Department of Geology and Natural Resources (including Natural History) of Indiana, containing a vast amount of facts, results of surveys, details of experimental work, possibilities of natural resources, as well as most comprehensive reports on "Mammals," "Reptiles and Batrachians," "Butter-

flies," "Orthoptera," "Gall Insects," &c. The above "Catalogue" is in no way behind in bulk, for it extends to no less than 1388 pages of closely printed matter, with 590 figures of the more important species, and many diagrams of structural details where required. 2535 species (exclusive of the Rhynchophora) are known to occur within the confines of the State, and nearly 800 other species are indicated as likely to be met with when a more thorough survey can be undertaken. The term "Catalogue" is really a misnomer, for the book is a treatise which must be of value for many years to come. There is a capital introduction with sections on "The Relation of a Beetle to other Animals," "The External Anatomy of a Beetle," "The Relations of the Beetle to other Insects," and on "Classification." The work concludes with a glossary of terms and an Index of Families and Genera only. We do like, in *all* works of any pretension to comprehensiveness, to have an index of specific names and synonyms; to omit this in a work of value from a natural history point of view, seems, to use a common expression, to be "spoiling the ship for a ha'porth of tar." We congratulate Professor Blatchley on the general arrangement of the matter, which affords the student, by detailed keys and varied type, every facility for ready and easy consultation.

A long letter on "the S. Kensington site" from Sir Norman Lockyer was published in *The Times* of May 30th, in which he complains that "the main question is being lost in the various side issues and details now being discussed." By the main question, judging by a later paragraph in his letter, he appears to mean the site for the buildings of the Science Museum, but surely this is the one question discussed throughout the *Times* correspondence from every point of view. Every one is agreed as to the need of a Science Museum, and of one that has room for expansion, and further, every one feels that the ideal site for it would be, *if possible*, at South Kensington, but the answer to the suggestion that this is possible is supplied by Sir Norman Lockyer himself in his opening sentence: "Practically the whole of the land has been allocated." Surely, in common honesty, this should be a sufficient reply, but if any further reason be needed it is supplied by the fact that the land so allocated is already occupied by a very valuable building, which, if not actually demolished, must at last be alienated from the purpose for which it was originally constructed in a very special manner.

Sir Norman Lockyer informs the public that he pointed this fact out some four years ago, but not, it would seem, with a view to explaining to the Commissioners the impossibility of employing this site for the Science Museum; on the contrary, it is almost impossible to avoid the conclusion that he suggested the contemplated act of spoliation, and he seems to suppose that this suggestion was in some way less reprehensible because it was made in 1907 than it would have been in 1909 or 1911.

It is generally admitted that in private life the morality of a "theft" is not affected by the amount stolen (unless altogether negligible), but with regard to an "act of spoliation" in public life (a very different matter it would seem), Sir Norman Lockyer is evidently anxious, in defence of the authorities concerned, to minimise the amount as far as possible, for he goes back to the old fiction about the "original fence," implying that there had been a line of delimi-

tation previous to 1899 further south than the line fixed in that year, whereas no such line of delimitation had ever been laid down, and the fence in question was a mere temporary convenience. Sir Norman's admissions with regard to the probable rapid expansion of the Science Museum, which everyone would hope for and rejoice in if it were placed on a site of its own, show that those who held that this institution would become an octopus whose tentacles would seize more and more of the otherwise allocated land, had in fact the gravest cause for their fears. Considering all this, his query as to the justice and decorum of the representatives of the Biological Sciences must be read with infinite relish. It is indeed deplorable that different groups of sciences should thus be put into opposition, but it is not the representatives of the Biological Sciences who are to blame for this.

It is of course unfortunate that there is no available site at South Kensington for the Science Museum, but it would be possible to minimise the inconvenience by eventually dividing the work of the Imperial College, the biological section continuing in its present habitation, and the physical section being located in the immediate neighbourhood, wherever it may be, of the Science Museum. This, of course, is not ideal, but would seem a possible solution.

One thing only could justify the use of the land assigned to the Natural History Museum for any other purpose, *viz.*, the consent of the Trustees; one thing only could justify that consent, *viz.*, the conviction that they held more land than the Museum could require for its expansion; and the only people who could assure them of this are the working authorities of the Museum. The said authorities, backed by all those who constantly or frequently work there, are unanimously of a contrary opinion, the Trustees have therefore naturally and necessarily refused their consent, and the matter should consequently be regarded as settled. The working authorities at the Museum seem to consider themselves precluded by their official position from taking part in the discussion, but those who frequently work there also know only too well the immediate need of expansion, particularly those whose work lies in the entomological section, for which no proper place whatever is available, the present utterly inadequate makeshift having been designed merely as store-rooms. One would like, moreover, to enlarge on the pitiful under-staffing of this department, and the huge accumulations of work waiting to be done, all of which urgently requires more room.—G.W.

The authorities of the British Museum (Natural History), South Kensington, are in want of living specimens of the larvæ of *Heplialus lupulinus* for the purpose of figuring and subsequent preservation. We are sure that our subscribers will be only too pleased to help if they have the opportunity.

To those of our lepidopterists who are interested in galls, we would call attention to the accounts given of two species of the smaller Lepidoptera, both of them new to science, in the *Canadian Entomologist* for January, by Prof. August Busck, of Washington, U.S.A. He states that the larvæ of one species *Gnorimoschema salinaris* feed in the stems of a salt-marsh plant *Solidago sempervirens*, causing gall growths, and those of the other species *G. subterranea*, feed in the roots of the *Aster multiflorus*, causing galls just at the surface of the ground. At the

same time he refers to *G. gallaesolidaginis*, which galls the stems of an upland species of *Solidago*, and to *G. busckiella*, which galls the upper branches of the *Aster*.

In that admirable quarterly magazine the *Annals of Scottish Natural History*, the January part of which has just been perused, we note an article by Mr. William Evans, F.R.S.E., entitled "Scottish Dragonflies; some further records and table of distribution." The writer appears to have been induced to collect these data by the perusal of Mr. W. J. Lucas's contribution on the same subject in the *Annals* for last July. He has attempted to obtain hitherto unpublished records, both from private persons and from all the available public museums. The result has been a large augmentation of data, and sufficient material to compile a table, graphically illustrating the distribution of the various species throughout Scotland. When we read that the expert aid and advice of Mr. J. J. F. X. King and Mr. Kenneth J. Morton have been freely used, there can be little doubt of the reliability of these records.

In the April part of the *Naturalist* Mr. J. W. Carter, F.E.S., states that he has a number of living specimens, ♂ and ♀, of *Scotosia dubitata*, taken on January 22nd last from a very large number, which were found hibernating on the roof of a cave in Wharfedale, Yorks, by a party of gentlemen engaged in explorations. Mr. Carter remarks that it would almost be safe to assume that contrary to the generally received opinion, pairing takes place in early spring. It is also interesting to know the exact kind of hibernaculum.

Mr. Kenneth J. Morton, F.E.S., describes (*Ent.*) a species of Plecoptera (*Nemoura dubitans*) as new to the British Isles. The specimen was taken at West Stow, in Suffolk, on April 11th, 1910, by Lieut.-Colonel C. G. Nurse.

In the *Entomologists' Monthly Magazine* for April, Mr. G. H. Verrall gives a list of another hundred new British species of Diptera.

In the same number (*loc. cit.*) Mr. Norman H. Joy gives a table by which to distinguish the various British species of the Coleopterous genus *Gabrius*.

The Conversazione.

By J. R. LE B. TOMLIN, M.A., F.E.S.

The Entomological Society of London held its second Conversazione on the evening of Wednesday, May 17th, and finding that most important factor, the weather, in its favour—has a most successful and well-attended meeting to look back upon. It was a particularly welcome feature of the meeting to see so large an attendance of ladies. By the kind permission of the President and Council of the Linnean Society, the Conversazione was held in their rooms at Burlington House, and the arrangements were in the hands of a Committee consisting of the Executive Officers of the Society, together with Messrs. Adkin, Donisthorpe, Stanley Edwards, and Rowland-Brown, the Rev. George Wheeler being Hon. Sec. It will be recollected that last year's Conversazione had to be postponed, almost at the eleventh hour, owing to the death of King Edward VII.

The rooms of the Linnean Society are very convenient of access, at the left-hand side of the entrance to Burlington House, and, though not so extensive as those placed at the disposal of the first Conversa-

zation in 1908, by the First Commissioner of Works, they proved to be adequate except in the matter of space for exhibits. The meeting-room on the ground floor was reserved for lectures, of which two were arranged—(1) at 9 p.m. "Recent Discoveries in Insect Mimicry," by Professor E. B. Poulton; (2) at 10 p.m. "The Tiger Beetle (*Cicindela campestris*)" by Mr. F. Enock; both were illustrated with lantern slides. The names of the lecturers are a sufficient guarantee for the interest and value of what they had to say.

The Council Chamber on the first floor was devoted to refreshments, and was an ideal room for the purpose on account of its size—none of those perilous journeys through the crowd with a full cup in each hand, none of those unpleasant illustrations of the proverb "there's many a slip" on one's own *corpore vili*. Instead of such discomfort there was plenty of room and ample opportunity to sit down if one were so minded. The exhibits were arranged in the Library and on one side of the Library Gallery, and in the former the cases belonging to the Linnean Society, containing many of their unique relics, made no inconsiderable addition to the interest of the evening.

Mr. Enock exhibited new species of British *Mymaridae* under the microscope as well as photomicrographs of the same. Mr. G. R. Baldock, living Stick Insects. Mr. L. W. Newman, living larvæ and pupæ of British lepidoptera; while Mr. Bacot's exhibit of live fleas with their ova, larvæ and cocoons attracted a good deal of attention. By way of contrast with these, we had the Hon. N. C. Rothschild's and Dr. Jordan's gigantic model of the tropical plague flea (*Xenopsylla cheopis*). Instances of mimicry were shown by Professor Poulton and Lord Avebury, while Messrs. Crawley and Donisthorpe had very interesting observation nests of British Ants with Guests; the latter also showed a very complete collection of myrmecophilous insects, as well as specimens under the microscope.

Mr. S. A. Blenkarn exhibited British Coleoptera, and Mr. James Edwards photomicrographs of the same; and Mr. H. W. Andrews, *Syrphidae*. Professor Selwyn Image brought some interesting old entomological books.

The exhibits of Lepidoptera were too numerous to record in entirety; we particularly noticed Dr. Chapman's last three new European butterflies, Mr. C. P. Pickett's *Angerona prunaria*—the results of thirteen years' interbreeding, Mr. Edelsten's *Nonagria* and *Leucania*, Mr. Kaye's *Heliconius*, the Hon. N. C. Rothschild's Gynandromorphs and New Guinea *Papilionidae*, and Messrs. A. Harrison and H. Main's *Boarmia repandata* and *Pieris napi*.

Two series of original illustrations, which attracted much favourable comment, were Mr. Eltringham's drawings for the plates of his work *African Mimetic Butterflies*, and the Rev. G. Wheeler's water-colour drawings of Swiss Butterflies.

◉ OBITUARY.

In the death of Canon Cruttwell, which occurred on April 4th, learned pursuits in general and entomology in particular have suffered a serious loss. Born in 1847, Charles Thomas Cruttwell received his early education at the Merchant Taylors' School under the Headmastership of the late Archdeacon Hessey. Like many other alumni

of that famous school, he joined the study of Hebrew to that of the Greek and Latin Classics, becoming in due course Classical Scholar of St. John's College, Oxford, and Craven University Scholar, besides carrying off the two Hebrew scholarships of the University. His career in *statu pupillari* was closed, after the gaining of two classical "Firsts," by his election to a Fellowship at Merton. Here he served for some years as Tutor, having among his colleagues the late Bishop Creighton, of London, and the present Bishop of Manchester. His extreme sense of duty led him, in 1877, to resign his position in College in favour of a post where, as he thought, he could exercise more influence over the lives of his pupils by catching them at a comparatively early stage of their mental development. But his career as Headmaster, first of Bradfield and afterwards of Malvern, was not in every respect a success. He was probably too sensitive and conscientious to be thoroughly comfortable amid the worries and anxieties inseparable from the conduct of a great school; and when he left Malvern, in 1885, it was plain that the strain of the last few years had told on him severely. The remainder of his life was passed in the more congenial surroundings of country parishes, varied by his terms of residence as Canon of Peterborough. As Rector of Ewelme, where his last years were spent, he had the opportunity of renewing his connexion with his old University, where he served as Select Preacher, and as Deputy for the Regius Professor of Divinity during the illness of the latter in 1906-7.

Cruttwell was a man of varied interests and activities. Nothing in the world of intellect seemed to come amiss to him. Literature, whether Classical, Semetic or Patristic, claimed much of his attention and was illuminated by his writings. A colleague remembers being invited by him to join in the study of Arabic during such odd hours as are to be found in the midst of an Oxford Term. As an undergraduate he cultivated the art of speaking in public, and made his mark at the Union, serving successfully as Secretary, Librarian and President. He also figured as an athlete. Multifarious as were his interests and pursuits, he was thorough in all of them. Everything that he undertook bears the stamp of accurate and patient work. The writer, who, as an undergraduate in the seventies, had the privilege of attending his lectures, well remembers his skilful treatment of difficulties, whether in the language of Sophocles, or in the philology of the Greek and Latin inflections. The notes of those lectures, which are still preserved, show a rare combination of ripe scholarship, of keen poetic insight, and of lucid exposition. The like qualities of accuracy and thoroughness were apparent in his work as an entomologist. From his earliest days entomology had been with him a favourite hobby, and throughout his life he remained an assiduous and successful collector of British Lepidoptera and Coleoptera; his keenness in field-work being rewarded by the capture of great rarities in both orders.

While at Malvern, Cruttwell married a daughter of the late Sir John Mowbray. His eldest son is at the present time a scholar of Queen's College, Oxford.—F. A. DIXEY.

ERRATUM.—Page 69, lines 3 and 5, should read "anterior femora of ♂," and not "anterior tibiæ."—G. W. NICHOLSON (F.E.S.).

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The July-August number will be a double number, and will probably contain two plates. It will also have Notes on Collecting, Scientific Notes, Report of Societies, and numerous Current Notes which have been unavoidably crowded out from the May and June numbers, in addition to several articles either in type or at the printers.

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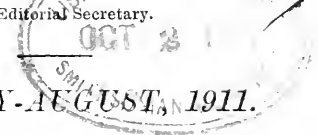
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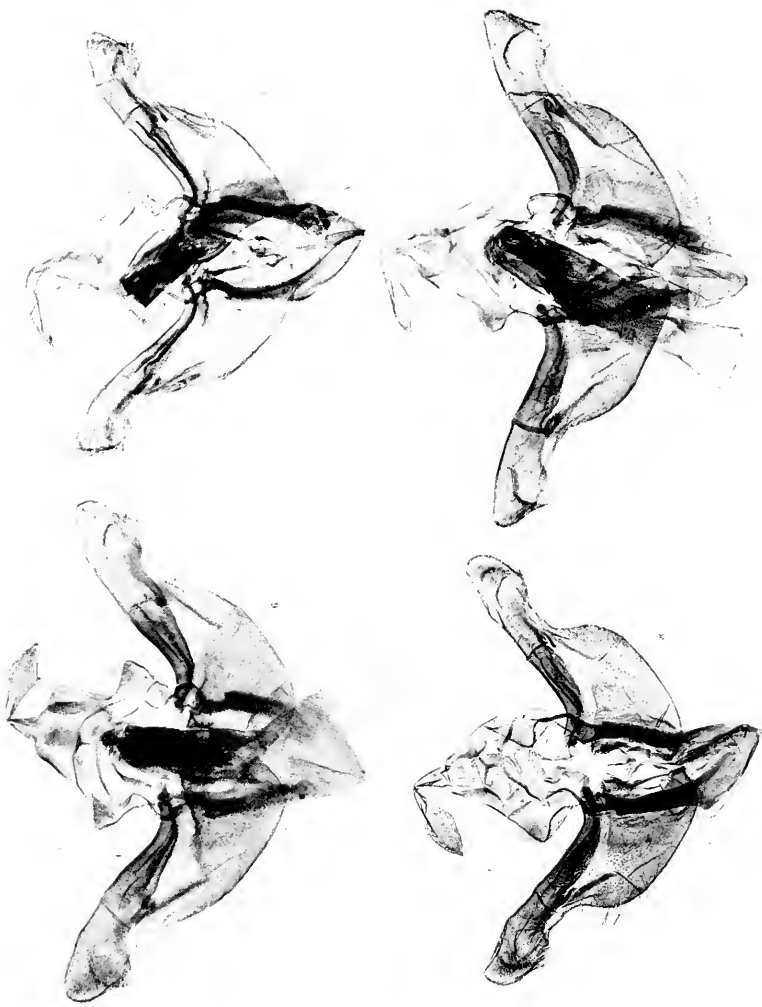


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The Entomologist's Record, etc., 1911.

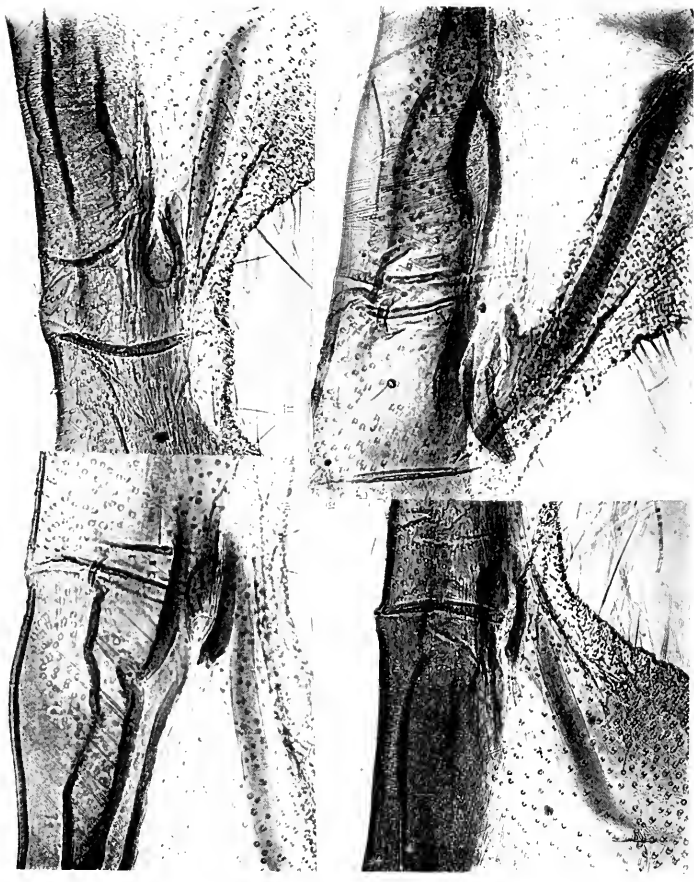


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PORTIONS OF THE CLASPS OF LUPERINA \times 54.

The Lepidoptera of the Jura.—Mont Vuâche.

By THE LATE J. W. TUTT, F.E.S.

It is difficult to appreciate how poor the season 1910 was in Switzerland, from a lepidopterist's point of view. The weather was continuously wet for the greater part of the summer, and insects correspondingly late and scarce. News from the mountains referred chiefly to collecting under most dismal conditions, and to such insects as occurred being both excessively late and few in numbers. It would appear that in such a season as this, only two courses were open to the ordinary individual for success, *viz.*, to go south of the Alps into the Mediterranean zone, or to go into the south of France which appeared to be less affected by the unfavourable conditions prevalent in Central Europe. For some time it appeared highly probable that we should not get a holiday abroad at all, but conditions altered somewhat after the summer vacation had commenced, and, although the usual available time was curtailed, a hurried departure was made to Geneva on July 27th, and the idea was formulated that it might be advisable to work the Jura, rather than the higher altitudes of the Alps and that some knowledge might be gained of this delightful region. Arriving at Geneva, the next day a call was made on Professor Blachier, and from him one obtained dolorous confirmation of the unsatisfactory state of the season for Lepidoptera. He proposed a visit to Arcive a village in the neighbourhood of Mt. Vuâche, and Mt. Collonges the southernmost outliers of the Jura chain. An early start (7.30 a.m.) was made next morning in dull grey weather, which continued with occasional showers during the greater part of the day. In spite of the weather, a walk that skirted the side of Mt. Vuâche, and there opened out upon the lovely Savoy Valley in the direction of Bellegarde and overlooking the Rhone, was not without interest, and suggested many possibilities in the way of collecting destined not to be fulfilled on this occasion. Just outside the station, on the flowers, *Anthrocera carniolica* was still asleep, but *Ematurga atomaria* very much awake, the species being noticed abundantly all the day, whilst a plume resting on the grass proved to be *Wheeleria baliodactyla*. The dull weather, however, proved too strong for insects, and it was not till nearly 9.30 a.m. when the temperature began to rise, in spite of the absence of sun, that a few species began to get on the move. Three species of *Anthrocera* were abundant enough on the flowers by the wayside, *A. carniolica*, *A. filipendulae*, and *A. hippocrepidis* without the fire of the Alpine form (*transalpina*), a few *A. lonicerae*, and a single *A. peucedani* red belted, with 6 spots. Now and again a wary specimen of *Hipparchia alcyone* provoked a chase; no longer, owing to the great difference in the genitalia, is there any question of the specific identity of the *H. alcyone* of Geneva, and of the Valais, which have been proved to be the last species, and not *H. hermione* (or intermediate as was suggested by some lepidopterists). The ♂ ancillary appendages prove that the latter species does not occur in the Valais, although common enough as far north as Fontainebleau Forest. *H. semcle* also occasionally appeared, the undersides marked strongly with a pale band, whilst *Agriades coridon*, ♂s only, were only just coming out—*Pieris rapae* was often netted by my companion in hopes of its being *P. manni*, but to no purpose, whilst *P. napi* was quite

JULY-AUGUST, 1911.

typical. *Epinephele jurtina* (*ianira*) was fresh and differed little, the ♂s dark with two very clearly marked ocelli on the underside of the hindwings, the ♀s varying much in colour on the underside. A single *Lithosia lurideola* was found on a scabious flower as also a single ♂ *Nemotois scabiosellus*, whilst an example of *Coremia ferrugata* was netted as it flew from the bushes. Lunch was eaten under a tree whilst the rain came down pretty smartly, but afterwards, as it almost ceased, we took a path that led us out on the flower clad slopes of the mountain. What this would be like on a fine day one can only surmise, as it was, the net was soon at work, and heaps of interesting small things were scooped up, e.g., good series of *Adkinia bipunctidactyla*, *Merrifieldia tridactyla* (*tetradactyla*), and a single fresh specimen of *Amblyptilia acanthodactyla*. *Acidalia ornata*, *A. rufata*, *A. ochrata*, and *A. ossata* were all common, but abundant beyond everything were *Eubolia bipunctaria*. *E. mesuraria* and *Pseudoterpna pruinata* also occurred, with a magnificently coloured freshly emerged example of *Thalera fimbrialis*. *Aspilates citraria* was also picked up. *Phycis subornatella*, *Argyrolepis subbaumanniana*, *Eupoecilia hybridellana*, a single *Coleophora wockeella*, *Crambus perlellus*, white and silvery, flew up, strangely with *Acidalia ornata*, lots of *Pyrausta purpuralis*, *Stigmonota composana*, etc. Among the butterflies disturbed here were *Enodia dryas*, *Coenonympha arcania*, *C. pamphilus*, and plenty of *Melanargia galatea*, but getting worn. *Lycæna arion* appears to fly more freely in dull weather than any other of the "blues" observed, and its heavy flight and its special colour make it quite readily distinguishable from any other butterfly found on these slopes when on the wing. The other "blues" noticed here were *Cyaniris semiargus* (apparently a second brood just coming out), *Agriades coridon*, *Polyommatus icarnus*, *Cupido minimus*, *C. osiris* (*sebrus*), *Ereves alcetas*, *Aricia astrarache* and a single ♂ *Polyommatus hylas* taken by Professor Blachier. Scarcely a ray of sunshine appeared to brighten up matters, and we worked on until 2 p.m., till we were now some miles from the station where we alighted. Then just as we climbed down the slopes into the roadway to head for the station, the sun broke out for a while and tempted us to stay. Specimens of many of the species hitherto noticed were frequently seen, as well as *Adopæa lineola*, *Agriades sylvanus*, and a single *Thymelicus acteon*, several examples were picked up, and we saw on one occasion two *Leptidia sinapis*, ♂ and ♀, sitting directly in line facing one another, and performing in the same marvellous manner as described so carefully and accurately in *Ent. Rec.*, vol. xxi., p. 201. The Professor stayed long enough to confirm the observations published in almost every detail, and then the ♂ flew away. There was no attempt at pairing, but the same wonderful performance of the head of the ♂ being moved rapidly from side to side, the stroking of the tongue, the butting of the ♀, and so on, whilst on one occasion when the ♂ desisted for some time, the ♀ made two distinct butts forward, as if to entice the ♂ to commence operations again. There, too, several newly emerged *Cupido osiris* were observed, but the Professor hurried on just then, I knew not why, but on enquiry learned that unless we caught the return train at 3.30 p.m., we could not catch another until 7.30 p.m., and that we should not reach Geneva till after 8.30. The necessity of hurrying was evident, and we pushed on although there was now only 20 minutes for the train.

We dropped down a watercourse and over the hedge, just in time to see the train coming from the tunnel and hurrying fast on to Arcive. We had two kilomètres yet to go and pursuit was hopeless. We lost the train by some five minutes, and having refreshed ourselves at the little restaurant at the station, set about looking round for something to do until 7.30. We went into the rough fields above the station and added *Plbeius argus* (*aegon*), several *Cyaniris semiargus*, *Cupido minimus*, *C. osiris*, *Polyommatus icarus*, and other common species to our bag, as well as a single example of *Lowia dorilis* that fell to the net of Professor Blachier. He also netted an example of ♂ *P. icarus*, on the hindwings of which the orange lunules of the underside showed faintly through on the upperside, but examination with a lens failed to disclose any orange scales on the upperside itself as in the ab. *rufopunctatus*. We walked on into the village of Collonges and got tea, and in the meantime the rain commenced again. It came down steadily from 6.30, and we spent the last half hour at the station waiting for the train. As we were there well in advance, the train of course was late, and it was 7.45 before it came into the station and took us homeward, damp and less ardent, into Geneva. How we wished that that quarter of an hour's lateness had been the lot of the afternoon instead of that of the evening train, but regrets were useless. It poured at Geneva, but a hot dinner and a good night's rest soon put matters straight, and our first experience of the wet season of 1910 was put in the pigeon-hole of memory, to be stored up as an experience that was past.

Notes of my Entomological Work during the Summer of 1909.

By H. POWELL, F.E.S.

[NOTE.—These notes were found among the late Mr. J. W. Tutt's papers, and with Mr. Powell's kind permission, we publish them.—H.J.T.]

When I last wrote you I had not decided what was to be done during the summer, but soon afterwards I arranged again with M. Charles Oberthür to collect for him, but did not start work until June 9th. Between May 1st and that date I had a big task in furnishing the United States Government with larvæ (fullfed) of *Oeneria dispar* and *Spilosoma chrysoorrhoea* from the Hyères district. This was not finished when I left on June 9th, but I found an intelligent man here, who carried on the operations until the end of the campaign. Altogether, we sent over 350,000 larvæ. Mr. Howard told me later on in Paris that the Hyères larvæ were richer in parasites than those from any other locality in Europe. He had consignments from other parts of France, from Germany, Austria, Russia, and Italy.

On June 9th I left for St. Quentin, in the Dept. of Aisne, to look for *Chrysophanus dispar*, which used to occur in the marshes of the Somme, but had not been seen for some years. I should say var. *rutilus*, but M. Oberthür calls it *C. dispar*, and it seems that the form was nearer the old English *dispar* than is var. *rutilus* from other places. I hunted the marshes at St. Quentin and elsewhere in the Aisne and Aube for three weeks, but came across nothing like *dispar* or *rutilus*, although the great dock was common enough in some places. The weather was very bad nearly all the time. At St. Quentin I obtained some information from collectors and relatives of collectors, who had taken it years ago, but it does not appear to have been taken during

the last five years at any rate, and M. Oberthür thinks that it is as extinct in that part of France as it is in England. Before asserting that, I should like to have another try, for there are many marshes which I had not the time to explore. It does still occur in the Aube, I believe, but of course it would be less interesting in that Department than in the Aisne and Somme, where the conditions are more English. The Bordeaux specimens are, I think, real *rutilus*. I called on an old lady at St. Quentin, who had about forty specimens taken by her husband fifty years ago in the Rouvroy marsh. Many were without antennæ, but the colours were very bright. They looked to me rather smaller than English *dispar*, and perhaps a little larger than German *rutilus*, but not very much.

In the forest near Laon, when the weather would let me, I took *Melitæa matura*, *M. aurelia*, *M. dictynna*, and *Brenthis ino*, besides *Pararge achine* and other more ordinary things; but for days on end it rained.

Then I came back to Hyères, to start almost at once for the Pyrénées Orientales, staying a day and a night at the Pont-du-Gard *en route*. The weather was just clearing up when I reached Vernet-les-Bains. I found the snow still thick on the mountains above 2,000 mètres, but warmth set in at the time. M. René Oberthür arrived a day or two afterwards and we did some good work. We collected sometimes together, but I often left him for ten days at a time to camp high up on the mountains, whilst he collected in the lower valleys. I got good series of most of the genus *Erebia*, which are to be found in these parts, *E. erias*, *E. stygne* (very large), *E. epiphron* v. *cassiope*, *E. tyndarus*, *E. lefebvrei* v. *pyrenaica*, *E. euryale*, and *E. neoridas*. *E. gorge* was rare, and so were *Latirovina orbitulus*, and *Aricia donzelii*. I did not get many *Hepialus pyrenaicus*, a species which should have been common. The yellow dusted form of *Odezia atrata* was abundant. *Colias phicomone* and *Brenthis pales* were fairly common in places, and *Anthrocera exulans* often swarmed. The females of this last species are not yellow-veined and dusted in this locality as they often are in the Basses Alps. I took two specimens in which the red spots of the fore-wings made one suffused blotch. There were plenty of *Melitæa aurinia* v. *merope* and I captured a long and very variable series. After August 15th, I did very little day collecting, but put in plenty of night work, first in the mountains and then lower down. I went into the Ariège for a fortnight; a much greener, damper country than the Pyrénées Orientales, but did not get much there. Returning to the latter locality, I went on with the night collecting until October 15th, at St. Paul de Fenouillet, Elne, Collioure, Port Vendres, and Ille. M. Oberthür says some of the species of the genera *Acidalia* and *Eupithecia* were very good, but I do not know what the species were. There were plenty of Noctuids, too, *Apamea dumerilii*, *Agrotis vestigialis* (?), *Leucania extranea*, *Agrotis constanti*, *Polia venusta*, *Heliophobus hispidus*, *Cosmia ulicis* (new to France), *Anophia leucomelas*, *Catocala optata*, etc. Some of the mountain Noctuids were new to the Pyr. Or. I came back to Hyères on October 17th, and after six months of open air life it goes very much against the grain to be shut up there.

Butterflies in Hungary in 1910.

By J. N. KEYNES, M.A., D.Sc., F.E.S., and G. L. KEYNES.

(Concluded from page 164.)

Earlier in June, 1909, Dr. Rosa found *Limenitis populi* abundant on the Domogled route; we met, however, with one very worn specimen only. On the other hand fresh specimens of *L. camilla* and *L. sylbilla* were taken, but these were not at all abundant.

Previous collectors at Herculesbad have been successful with the two species of *Neptis*, and Dr. Rosa and Mr. A. H. Jones both found *N. lucilla* very abundant on the Domogled route. For some reason, however, the season of 1910 seems to have been unfavourable to this species, and three specimens—two ♂s and a ♀—were all that we obtained. This was very disappointing, as we had hoped to be able to become familiar with the characteristics of this species and to compare its habits with those of the genus *Limenitis*. *N. aceris* did not occur on the Domogled, and was therefore never seen in the company of *N. lucilla*, and seldom with *Limenitis*, but it was fairly abundant in the valley. For cabinet purposes the species was quite over, and it was difficult to get specimens worth setting, but by the time we left Herculesbad the second brood had just begun to appear, and one fresh specimen was secured on July 12th. *N. aceris* is an exceedingly fragile insect, and the wings of nearly every specimen were irregularly chipped all round the edges, but the character of the injuries did not suggest frequent attacks by birds or lizards so much as damage sustained while the insect fluttered amongst the brambles and other bushes. We may mention in connection with this that only on one occasion did we observe a bird making an attack on a butterfly. The intended victim was a ♂ of *Dryas paphia*, but the attempt was a half-hearted one and the butterfly escaped. Birds were scarce in the district, and the lizards must have been a more important source of danger to butterflies; these lizards were very numerous, and seemed to be fond of sitting among the bushes often at some distance from the ground. Their green colour rendered them very difficult to see, but they could be heard scuttling away, and the disturbance among the leaves shewed where they had been. The flight of *N. aceris* is characteristic; it is very often to be seen floating about over bushes, and in this respect resembles *Limenitis*, but its flight is so much more gentle than that of its boldly flying relatives, and its size so much smaller, that it is not likely to be confused with them, at any rate by its human enemies. Our experience of *N. lucilla* was too limited to be of any value, but such as it was, it suggested that this species bears a very much closer resemblance to *Limenitis* than *N. aceris*.

Single specimens of *Apatura iris* were often to be met with in the Cserna-Thal, but there was no sign of *A. ilia*. In some seasons there appears to be a very great abundance of *Libythea celtis* at Herculesbad, and this was found to be the case by Mr. Jones in 1907 and by Dr. Rosa in 1909. In 1910, however, this species was scarce, and we obtained only four specimens, one in the valley and three at the Quelle.

The Satyrids at Herculesbad are of great interest, chiefly on account of *Pararge roxelana*, a very fine species, which has here its most accessible haunts. This species was formerly restricted to the woods immediately below the Weisses Kreuz, but during recent years it has

extended its range and is now to be found in some numbers on the opposite side of the valley, and occasionally all the way along the Csernathal. We obtained some fresh specimens during our first day's collecting at Herculesbad (June 28th) and others were met with on many succeeding days, so that we were able to obtain a very fine series including a number of ♀s; the species seems, however, to have a short period of emergence, and by July 12th the majority of the ♂s were badly damaged. *P. roselana* is not easy to catch, but, if the right methods be adopted, only the minority of those that come within reach escape. Sometimes the insect starts up at one's feet and it can then be caught on the wing, but more often it is to be observed pitching on the trunk of a tree and then the "scraping" method must be used. The tree must be approached very quietly since the insect is very sensitive to noise; when the butterfly is within reach the net is approached very cautiously to within a foot of it, and then the moment for decisive action has arrived. The mouth of the net is clapped smartly over the resting butterfly and in the same movement, the collector draws the net quickly towards him; the first part of the movement induces the butterfly to start up into the net, the second ensures that it stays there, and success is not affected by the diameter of the tree. As has been recorded by previous observers also, *P. roselana* has a special affection for the exudation from the bark of oaks, and in the afternoon considerable numbers were sure to be seen flying about certain trees; these were, however, usually out of reach. Another very marked characteristic of the species is the regularity with which it returns to a place from which it has been frightened, so that patience is almost invariably rewarded. *P. climene* has not been observed at Herculesbad, even by Hungarian collectors, since Miss Fountaine found it there in 1897, but this is probably, because, as she has since informed us, she obtained it only by taking a short cut up the Domogled. Her more direct route avoids the Kleiner Domogled, but involves climbing for some distance on the hands and knees, and is probably not often used. False hopes were roused in ourselves by a very singular specimen taken at the head of the valley; this turned out, however, to be a remarkable ♂ aberration of *Epinephile jurtina*, which has on its underside hindwing a row of five large yellow-ringed black spots, so that by the underside alone it can scarcely be distinguished from *P. climene*. Other specimens of *E. jurtina* are large, but are not, as might have been expected, of the form var. *hispulla*. We were also surprised to find only the form var. *egerides* of *P. egeria*: so far south the type might have been expected to occur. Other Satyrids found at Herculesbad have already been mentioned.

Perhaps the chief attraction which drew us to Hungary, was the chance of observing and obtaining *Erebia melas*. In 1909 we became familiar in the Pyrenees with the characteristics of *E. lefebrei* (*Ent. Rec.*, vol. xxii., p. 109), and at Herculesbad we succeeded in making the acquaintance of *E. melas*, but it appears to be a less accessible species than the former, and we cannot claim to have attained in this case to the same degree of familiarity. Other English collectors have usually left Herculesbad before this species had appeared, and Miss Fountaine is the only one who has actually caught it. She first met with it on July 21st, 1897, and states that it was common, though

difficult to catch, on the summit of the Domogled during the last fortnight in July, while Mr. Jones has received Herculesbad specimens from Nicolas Kolopenza late in July. Our own experience is curiously at variance with this; our first specimen was met with at 8 a.m. on July 1st at the very summit of the Domogled, but this was the only specimen seen in this locality, and another expedition to the summit on July 3rd proving a failure, we began to suppose that we must after all be too early. It was therefore a pleasant surprise to discover on July 10th that the laborious ascent of the Domogled was entirely superfluous, since the best locality for *E. melas* was in reality the familiar Weisses Kreuz, at an elevation of only 1600 feet. Some of the specimens taken in this locality shewed that the species must have been flying for at least a week, and we could doubtless have obtained it much sooner had it occurred to us to look out for it here. In our experience, the habits of *E. melas* are in striking contrast to those of *E. lefebrei*: the latter is to be met with at all times of the day settling on the screes, but for the most part we found the former flying gently up and down perpendicular limestone cliffs in the hottest afternoon sun. Such a precipice is crossed by the path just below the Weisses Kreuz, and here the butterflies may be caught; they can be seen on the wing for at least 100 feet below, but only at this point does the rock-face become accessible. Naturally the butterflies only occasionally cross the path in their course upwards or downwards, and patience must be exercised. By this method, in spite of the excessive heat, we obtained fourteen ♂s, the last being taken on July 15th. A single ♀ was also taken at rest on a shady path some 100 feet lower down. Our only ascent of the Suskului produced three additional ♂s, and others were seen; these were found under exactly similar conditions and at the same time of day, though at some 2,000 feet above the Weisses Kreuz. This would probably have been found a good locality for *E. melas*, had we worked it more thoroughly. Our series of eighteen ♂s is very uniform; none of the specimens shew any signs of the fulvous patch round the apical eyespots on the forewing, which appears in so large a proportion of our specimens of *E. lefebrei*. The degree to which the ocellations on the upperside are developed shews some variation, but unfortunately none of them exhibit the accessory apical ocellation, the relative position of which is, according to Dr. Chapman, an important factor in distinguishing *E. melas* from *E. lefebrei*. Most of the other points of difference between the two species, which have been recorded by Dr. Chapman (*Trans. Ent. Soc.*, 1908, p. 307), can easily be verified by a comparison of our series, the difference between the colorations of the antennæ and between the undersides of the ♀s being particularly conspicuous. We do not, however, find the difference in the position of the apical eyespots quite so great as Dr. Chapman states, our specimens showing an average difference of only 1mm. (*melas* 4mm., *lefebrei* 3mm.) in the distance of the second ocellation from the cilia instead of Dr. Chapman's 2mm.; but, since the difference is almost constant, this does not invalidate his point. On comparing the series as a whole, one notices that *E. lefebrei* is altogether a more varied, a finer, and a more robust looking insect than *E. melas*.

We had expected to be quite too late for *E. medusa* var. *psodea*, but we found this interesting form to be still fairly frequent on the top of

the Domogled and occasionally quite fresh, though, as was natural at this date, the ♀s were commoner than the ♂s.

The last species of interest at Herculesbad that we shall mention here was *Melanargia galatea* var. *procida*, which was very fine and abundant; but we did not meet with a single ♀ during the whole of our stay, nor were we fortunate enough to find the extreme melanic form, ab. *turcica*.

On July 16th we made an exceedingly hot journey back to Budapest, and on the following day we visited the Sváb-Hegy with better hopes of success than we had had on June 24th. We repeated the visit on July 18th and 20th, and on each occasion we were richly rewarded by this remarkable locality. The tiny *Pyrgus orbifer* was one of the species that we particularly wished to find, and fortunately the second brood was just beginning to appear; its small size renders this species very difficult to see and to catch, but we obtained five ♂s all quite fresh. Another interesting species was *Hirsutina admetus*, which, though very much confined to a spot on the north side of the hill, was very abundant, so that we were able to take a good series of both sexes. We also searched carefully for *Lycaena iolas*, but in spite of the large amount of *Colutea* to be found growing on the western slopes of the hill this species seemed to be scarce and only five specimens were obtained, of which three were worth keeping. *P. meles* was fairly common and in fine condition, but *Agriades coridon* was quite scarce; of the latter species we took ten specimens which call for no special remark except that even this short series includes two pronounced examples of ab. *obsoleta* (♂ and ♀), and one of ab. *arcuata* (♂). A rather undersized race of *Colias hyale* was to be found here, showing a marked tendency towards obsolescence of the central orange spot on the upperside hind-wing. Of the *Satyridae* in this locality *Hipparchia briseis*, which was new to us, was very fresh and plentiful. *Melanargia galatea* was also exceedingly common, and we obtained a considerable number of the interesting form ab. ♀ *leucomelas*, two or three of which were easily induced to lay, or rather, drop, about fourscore eggs in their peculiar and negligent fashion. These hatched during September and began to feed on a tuft of *Dactylis glomerata*: it remains to be seen whether they have survived the winter. (We fear this must now be answered in the negative, June 19th.) Our other captures on the Sváb-Hegy included: *Erynnis alceae*, *Chrysophanus thersamon* (one ♀), *Scolitantides baton*, *S. orion*, *Everes argiades*, *Dryas pandora*, *Argynnis aglaia* var. *cleodoxa*, *Melitaea didyma*, *Leptidia sinapis* var. *erysimi*, *Epinephile lycaon* (plentiful in certain places), and *Satyrus circe*.

The afternoon of July 19th, we spent in visiting the well-known locality for the two coppers, *Chrysophanus rutilus* and *C. thersamon*, which has been fully described by Mr. Sheldon. We had some difficulty in identifying the locality, as some of the previous descriptions are rather misleading, but now we feel no doubt that the simplest way of reaching it is to take the tram as far as the outskirts of Budafok (Promontor), and then to follow the path and stream which meet the right-hand side of the road at this point. At this date, the hay having been cut, the meadows were quite dry and looked most unpromising. For the first two or three miles we met with nothing of interest except a small race of *Coenonympha iphis*, and we began to fear that we were too early for the *Chrysophanids*. Finally, however, when we had

nearly reached Kamaraerdo, we obtained a single ♂ of *C. rutilus*, the only one of the species that we saw; this specimen is fresh but of very small size (34mm.). A little further on we found numbers of *C. thersamon*. This species was localised but plentiful where it occurred, and for the most part in good condition.

This completes the record of our entomological experiences in Hungary. The season was undoubtedly not as good at Herculesbad as it had been in previous years, but we are on the whole very well satisfied; we were fortunate enough to meet with practically every species that we had any right to expect, and, in addition, we made the unexpected capture of *A. anteros*.

While at Buda-Pest we visited the National Museum and Dr. Schmidt was kind enough to shew us the collection of Hungarian Lepidoptera. Dr. Schmidt had himself just returned from a collecting expedition to the Hungarian fen-lands and appeared to be very much pleased with his captures, which included several typical English fen-land species, such as *Macrogaster arundinis* (*castaneae*) and *Phlyctenia cilialis*. He informed us that this year (1910), even the Museum officials had not yet been able to obtain from the Crown authorities in Vienna permission to collect at Peszèr, the ostensible reason being the preservation of somewhat hypothetical game. Dr. Schmidt's courtesy was characteristic of the general attitude of Hungarians towards the English visitor.

1. "A Fortnight's Collecting at Budapest." By W. E. Nicholson, F.E.S. *Entomologist*, June, 1893, Vol. 26, p. 191.

2. "Two Seasons among the Butterflies of Hungary and Austria." By Margaret E. Fountaine, F.E.S. *Entomologist*, December, 1898, Vol. 31, p. 281.

3. "Lepidoptera in Hungary in June." By Albert Hugh Jones, F.E.S. *Entomologist's Record*, November, 1907, Vol. 19, p. 245 and 281.

4. "Collecting in Hungary." By Albert F. Rosa, M.D. *Entomologist*, May, 1909, Vol. 42, p. 108.

5. "The 'Large Copper,' its Habits, and One of its Present Haunts." By W. G. Sheldon, F.E.S. *Entomologist*, September, 1909, Vol. 42, p. 219.

6. "Six Weeks among Hungarian Butterflies." By W. G. Sheldon, F.E.S. *Entomologist*, October, 1909, Vol. 42, p. 246.

7. "Notes on some Hungarian and Austrian Butterflies in 1910." By W. G. Sheldon, F.E.S. *Entomologist*, October, 1910, Vol. 43, p. 269.

The Orthoptera of the Canary Islands.

By MALCOLM BURR, D.Sc., M.A., F.E.S., F.L.S., F.Z.S.

(Concluded from p. 178.)

The relations between the Canary fauna, as shown by its Orthoptera, and that of the Mediterranean province are very marked, but there is a strong individualist element, with an Ethiopian bias.

The earwigs are characteristic. We need not discuss the cosmopolitan *Labidura riparia*, Pall., *Anisolabis annulipes*, Luc., and *A. maritima*, Bor. *Labia minor*, L., and *Forficula auricularia* are essentially Palæartic species, but are becoming naturalised in North

America, Australia and parts of Africa. These are the only species recorded by Krauss except *Anisolabis maxima*, Brullé, a very striking and well marked earwig peculiar to the islands, and common enough there under stones. *A. major*, Brullé, certainly refers to immature specimens. Since the publication of Krauss' paper, four new species of apterous *Forficula* have been described, namely, *F. cabreræ*, Bol., *F. guancharia*, Heller, *F. canariensis*, Burr, and *F. uoris*, Heller; they are all rare, the last two being based on unique specimens, all have abbreviated elytra, and probably will require a special genus for their reception. They afford a strongly characteristic feature, but are outdone in peculiarity by *Anataelia canariensis* previously referred to.

In the cockroaches, there are the usual cosmopolitan species, and four endemic species, *Hololampra bivittata*, Brullé, sole representative of an extensive South European apterous genus, *Holocompsa simonyi*, Kr. (Tenerife), and *Loboptera fortunata*, Kr., a good-sized chestnut-coloured representative of the common Mediterranean *L. decipiens*, Germar, only recorded as yet from the island of La Palma. *Holocompsa vestita*, Brullé, has not yet been satisfactorily identified.

In the Mantids, there are four species, with one peculiar genus. The common European *Mantis religiosa*, L., is numerous enough. Then there is *Parameles limbata*, Brullé, of which *M. gracilis*, Brullé, is probably a synonym, the remarkable *Blepharis mendica*, Fabr., a green and white mottled leaf-mantis, which occurs also in North Africa, and the elegant local representative of the Mediterranean genus *Empusa* and of the Ethiopian *Idolomorpha*, Sauss., namely *Hypsicorypha juliae*, Kr.

The total absence of *Phasmids* is not remarkable in an insular fauna.

The Acridian fauna is chiefly notable for the poverty in small grasshoppers. *Stenobothrus* is only represented by *S. simonyi*, Kr., discovered by Simony in Lanzarote, and *S. epacromioides*, described first by Krauss from Senegal, where it plays the part of an outlying representative of a truly Palearctic genus. Krauss describes a local variant under the name of var. *nigrorittata*. Simony took *Acerida unguiculata*, Ramb., in the Grand Canary and *Oxyoryphus compressicollis*, Latr., appears to be the insect referred to by Brullé under the name of *tereticornis*. It has not been recorded since. *Epacromia strepens*, Latr., and *E. thalassina*, Fabr., are both numerous, the latter being perhaps the commonest and most widely distributed grasshopper in the islands. *Stauronotus maroccanus*, Thunb., also occurs. In the *Oedipodidae*, we find *O. canariensis*, Kr., a local race of *O. caerulea*, L., *Sphingonotus caeruleus*, L., is common; in Tenerife, it occurs from sea-level up to nearly 10,000 feet, and there is a local species *S. canariensis*, Lucas, which is imperfectly separated from *S. savignyi*. Krauss records also as distinct *S. asper*, Brullé, from Lanzarote and Graciosa. I have in my collection three old specimens taken by Fea in Lanzarote; they were determined by de Bormans as *Sph. callosus*, but are probably to be referred to *S. asper*, Brullé. All three European species of *Acrolytus* occur, but *A. longipes*, Charp., is the least common. *Thalpomena picteti*, Kr., is peculiar as being a member of a North African, but Palearctic genus.

Oedipoda fuscocincta, Luc., an Algerian species, is recorded by Brunner, and the handsome *Quirogesia brullei*, mentioned from several islands, but not found by me, is another species found also in Northern

Africa. *Pachytylus danicus*, L., as might be expected, is quite common. The Mediterranean *Oedaleus nigrofasciatus*, De Geer, is replaced by its Ethiopian representative *O. senegalensis*, Kr.

Of the *Acridiidae* proper, there are but few representatives, but they are all interesting. As we have seen, the common south European *Caloptenus italicus*, L., is replaced in the islands by a local form, *C. volcanius*, Kr. I cannot help feeling that Bolivar's record of *C. italicus* from the Monte Verde and the "cañulas" is based on bad evidence. As we have seen, *Arminda brunneri*, Kr., a peculiar monotypic genus, plays the part of *Platyphyma* and *Podisma*. *Dericorys lobata*, Brullé, is another peculiar species with African affinities, being closely allied to *D. bolivari*, Kr., from the Rio de Oro.

The *Pamphagidae* are very naturally not represented, and of the *Tettigidae*, there is but *Paratettix meridionalis*, Ramb.; this is not common.

The *Locustidae* are represented by a few species only, but these are interesting. The only *Phaneropteridae* are *Ph. nana*, Fieb., recorded by Krauss and Bolivar from several islands.

No *Meconemidae* occur. Of the *Conocephalidae* there is only the common *C. nitidulus*, which is common. *Locusta* is replaced, as we have seen, by a peculiar genus *Calliphona*, Kr., with two species. There is the remarkable insect *Orophila nubigena*, Kr., of which only the male nymph has so far been described; it is rare, and occurs on St. John's Wort. It has the appearance of a Pseudophyllid, and has features in common with that group and the *Meconemidae*: it is so distinct that Krauss found it necessary to form for it a special subfamily, the *Orophilinae*. In the *Decticinae*, *Decticus albifrons*, Fabr., and *Platyceleis grisea*, Fabr., are very common, the local race of the former is distinctly smaller than the typical continental form. The dimensions of my specimens from Tenerife are as follows:—Length of body, ♂ 26-32mm., ♀ 28-33mm.; length of pronotum, ♂ 7-8mm., ♀ 7-8mm.; length of elytra, ♂ 36-41mm., ♀ 39-43mm.; length of post. femora, ♂ 28-30mm., ♀ 31.5-37mm.; length of ovipositor, ♀ 18.5-20mm. *P. tessellata*, Charp., *P. intermedia*, Serv., and *P. laticauda*, Brunner, are also recorded. Peculiar is the genus *Ariagona*, Kr., with a single species, *A. margaritae*, Kr., an apterous form allied to *Anterastes*: its supposed rarity is probably to a great extent due to its skulking habits.

There are several species of crickets; the common South European species are: *Oecanthus pellucens*, Scop., *Trigonidium cicindeloides*, Latr., *Gryllus brunneri*, Selys, and *Gryllomorpha longicauda*, Ramb. *Gryllus hispanicus*, Ramb., occurs also in the Spanish Peninsula, and *G. guanchicus*, Kr., is peculiar. *Liogryllus campestris*, L., is replaced by the African *L. bimaculatus*, De Geer, the common cricket of the islands. The European Mole-Cricket, *Gryllotalpa gryllotalpa*, L., is recorded on the slender authority of Brullé; it is probably to be rejected, as suggested by Bolivar, as the Mole-Cricket of the islands appears to be the smaller form, *G. africana*, Pal., taken by Alluaud in the Grand Canary.

To resume, the Orthoptera fauna of the Canaries is not rich, but highly peculiar, and well deserves further investigation; this requires patience and time, as good localities are few and the interesting species are all rare. Up to nearly 3,000 ft. it is hard to find an uncultivated spot, and so as a rule below that limit, only the usual general southern species are common.

The Description of a Lepidopterous Ovum.

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

It has been suggested to me at various times that a schedule of the chief points to note in the description of a lepidopterous ovum would be very useful to some of our more enthusiastic field workers. Some years ago, simply for my own use, I compiled a rough list of such details as I found mentioned in a large number of descriptions of ova given by different writers. This I have revised and added to, but before publishing it I thought it would be advisable to submit it to Dr. Chapman for his criticism and opinion. His remark in his private note to me was somewhat strong, but probably as a preface to his criticism and advice, herewith included, it will serve its purpose to drive forward a more perfect registration of facts, in opposition to the tendency to mark time for an indefinite period at certain stages of our scientific methods.

Dr. Chapman says (*in litt.*):—"Although it condemns some of my own work as prehistoric, I have written a short introduction that you may use or not as you like."

He then goes on to say:—"M. Oberthür contends, and we have no higher authority, that no name of a lepidopteron should be valid that is not founded on a good figure, a description alone being the source of many of our difficulties in nomenclature. Our superstitious veneration for a description dates from a time when a good figure was, in, say, ninety-nine cases out of a hundred, an unattainable luxury. Things are different now-a-days. Substituting usefulness for validity, the same arguments and conditions are even more applicable to eggs. The best descriptions of eggs are, perhaps, Scudder's, how few, however, read them, and how evanescent that number would be without his figures to enable them to grasp them. To "describe" an egg you must take a photograph such as Mr. A. E. Tonge has made us familiar with, you must take two others of rather greater magnification, one vertical and one exactly lateral, two others of still larger magnification to show the details of the sculpture, say, laterally, and still another to show the structure and details of the micropylar area,* like those of Mr. F. Noad Clark.

Written descriptions will then be confined largely to points of Life-History rather than description, it will also elucidate points that for any reason the photographs are hazy about, it will deal with colour, and may refer to any points of relation or distinction from other eggs, or the classificatory value that its structure appears to suggest.

It should, however, if possible, give accurate measurement. Much description may be saved by saying it is a more or less ordinary Pierid, Noctuid, or Geometrid egg, or belongs to those Geometers, whose eggs are becoming upright, or as the case may be.

We now know broadly the characteristics of most groups of the macro- and of some of the micro-lepidoptera, but there are still many of the latter that we know nothing of, and a good many of which we know something, without being able as yet to group them.

It may be useful to have a schedule of points to be dealt with in describing an egg, leaving out those that the photographs sufficiently

* These must all be to a definite standard scale of magnification.—H.J.T.

show. No one will probably try to describe an egg that does not already know something about them, but the most expert may omit some important detail, if without a scheme, a *memoria technica*.

A description of an egg under a hand lens only is practically of little or no use, though it may sometimes be better than nothing."

While fully recognising the logic of the above remarks on most of the questions raised, I do not consider that any points should be omitted from the schedule, but rather that they should be included with some indication that such and such points and details are far better registered by photography. Their inclusion serves to direct the attention of the observer to the particular aspects of the points, which are necessarily to be kept in view to obtain the desired result.

Accurate measurements are of the utmost importance. Roughly, one can obtain the relative sizes of eggs by reference to the photographs if, and the if is emphasised, they are all done to a standard scale. On this subject Dr. Chapman says (*in litt.*):—"The results of even the best photographers vary fractionally from the scale of enlargement they give, and to secure accuracy, the best method I find to be to make a camera outline of the egg from each point of view, and, at the same time, and on the same paper, mark under the camera from a micrometer scale. Such outlines may sometimes serve instead of those photographs that are only given for the sake of form and measurement."

Mr. F. Noad Clark has very kindly sent me on the following details of two methods of taking the measurement of ova under the microscope. He says:—"One method is by means of a stage micrometer. This is a glass slide ruled in $\frac{1}{1000}$ ths and $\frac{1}{10000}$ ths of an inch or $\frac{1}{10}$ ths and $\frac{1}{100}$ ths of a millimetre, and costing five shillings. The object is focussed through the microscope with camera attached, as in photomicrography, and the image projected on the ground glass screen is carefully measured with a pair of compasses. The ovum is then replaced by the stage micrometer, and the corresponding measurement of the image of its divisions taken.*

Another method, and the one generally adopted, is by using, in addition to the stage micrometer, an eyepiece micrometer. This is a glass disc ruled with arbitrary divisions, and is placed upon the diaphragm of the eyepiece; the number of divisions corresponding with the object is then noted and read off on the stage micrometer, which has meanwhile replaced the object or egg. This method entails the purchase of an eyepiece micrometer, costing five shillings. The "Ramsden" eyepiece micrometer is probably the most convenient of all methods. It is, however, somewhat costly.

For the measurement of the depth or thickness of an object, some microscopes have the fine adjustment screw so graduated that each turn of the screw represents a proportionate measurement in millimetres.

It follows, of course, that, given a photograph or drawing of an egg magnified by a certain stated number of diameters, it is easy to estimate the size of the original by dividing the magnified or reproduced image by the number of diameters."

* This is my method, F.N.C.

POSITION :

Date of deposition—time of day.

Where laid.

Method of laying.

Loose, fastened.

Batches, singly. No. in batch.

Covered, naked. With hairs, excretions, etc.

Imbricate, irregular heaps.

Rows or piles.

In cases, crevices.

Hidden, exposed.

Upright or flat.

Relative lengths of 3 axes.

Direction of 3 axes. Relative to surface on which laid.

Influence of surroundings.

Crevice, hairs, other ova.

Size in mm.

Diameters—height.

Constant or not.

Sexual size variation.

Racial variation.

Hibernation—duration of.

Development before — during — after.

FAMILY CHARACTERS :

Pierid—Noctuid—etc.

GENERAL APPEARANCE :

Of the batch—resemblances.

Of the ovum.

Colour—at deposition. Relation to surface on which laid.

Colour—after deposition. Relation to altered surface (winter changes).

Colour—before hatching.

Colour—at hatching.

Periods of change.

Shape—dahlia-like and hemispherical, globular, ovoid, oblong, tiarate, scale-like, etc. (must be accurately given by photographs).

False ribbing (caused by pressure of hairs of plant, etc.)

MICROSCOPIC CHARACTERS :

(Exact sculpturing to be figured as well as described).

Surface.

Smooth — rough — pitted — transparent — glossy — dull — opaque — etc.

Hairy—papillose.

Position of hairs—length.

Changes in surface.

When—why.

Colour influenced by changes in character of surface.

Ribbing.

Number of ribs. Constant or otherwise.

Long—short—anastomosing.

Relation to micropylar area.

Continued to base or not.

Edges even or saw-like.

Reticulation.

Regular or irregular.

Cross ribbing. Fine or large.

Sunk or raised.

Micropyle.

Position on ovum.

Depressed—flat—raised.

Composition.

Size—shape of central cell.

No. of radiate cells. Shape of cells. Constancy of no. of cells.

Relation to ribs.

What is *Polyommatus ariana*, Moore?

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

(Concluded from page 88.)

Butler (*Proc. Zool. Soc. Lond.*, 1886, p. 368) speaks of *ariana* Moore, as being taken at Murree on the 8th and 11th of August and the 3rd of September, 1885, two of the latter specimens ♂ and ♀ are in the British Museum coll. and are of the *icarus* form. Butler however (*Ann. & Mag. Nat. Hist.*, 6th ser., i., p. 148, 1888) writes later as follows: *C. ariana*, ♀ Thundiani, 19th August; ♂ ♀ (*in coitū*) 29th August, 10th September; ♀ 15th and 24th September, 1886. All the specimens with the exception of one taken on 19th August rather small for the species; the ♀ appears to vary almost as much as in *C. icarus* of Europe." Of these Thundiani specimens six (3 ♂, 3 ♀) including the large one and 2 of those taken *in coitū*, *viz.*, the pair taken 29th August, are in the British Museum coll. and present further difficulties. They are very square and compact looking, a complete contrast to *eros*: the ♂s of a dark but bright blue on the upperside, the ♀s being almost typical *icarus*, but all on the underside varying greatly as to the amount of orange spotting and of blue scaling, the large ♂ may be put out of the question as belonging, in spite of its

locality, to a different form, and corresponding with yet a third series from the Leech collection, consisting of large specimens, which were obtained from McArthur, who took them at Kokser, in the Himalayas, just south of Kashmir, in July, 1888. This series is extremely variable in the shade of the ground-colour, in the black spotting of the border on the hindwing, and, most of all, in the breadth of the very suffused black border on both wings but especially on the forewing. With these are associated four ♂s from the Elwes coll., three labelled "Lahore" and one "Kulu," and taken on July 7th and 8th, 1884 at an elevation of 1,600 ft., which exhibit all the same peculiarities. Of the nine ♀s in this series seven vary very little except in the size and extent of the orange spots on the upper side, while one has barely a trace, and the other, a small specimen, only shows slight indications of these markings. It is difficult to believe, in dealing with this series on the upperside, that one has not to do with a form of *P. amanda* (with the exception of one ♂, labelled "v," which obviously belongs by reason of both upper and undersides to the *eros* group, and has no claim, beyond its locality, to be associated with the rest), but the underside shows this to be quite impossible, and brings them somewhat nearer to that series of *ariana* which Chapman has pronounced to be *icarus*, though the importance assumed by the white streak and the obsolescence of much of the underside spotting, especially on the hindwings, brings some of the specimens, in spite of their size and shape, nearer to the last mentioned *eros*-like group which is associated with *stoliczkana*. It was probably however, of such specimens as these that Alphéraky wrote as follows, in his paper on the Lepidoptera brought from Thibet by General Przewalsky (*Bom. Mém. Léop. v.*, p. 109, 1889): "*Lycaena ariana*, Moore. 5 ♂s taken between the 7th and 12th of June, 1886, between the village of Lou-ya-toun and the town of Gaotü, and a ♀, taken July 1st the same year, in the village of Honàn Tchün, do not differ from the examples of northern India (Himalaya). This *Lycaena* described in 1865 (Proc. Z.S.L.) seems to be midway between *icarus*, Rott., and *amanda*, Schn. Some specimens have the two spots one above the other in the basal half of the forewings on the underside as in *icarus*, but they are wanting in others, as in the form *icarinus*, Scriba, to the extent of 3 out of 5 in the Indian specimens brought back by M. Pontaine. The blue colour of *ariana* is nearer to that of *amanda* than to that of *icarus*."

It must have been of some such ♂s that de Nicéville wrote as follows (*Butts. of India*, iii., pp. 72, 73) with regard to the dark border, (though it is needful to remark that Moore did not say in his original description that *ariana* "has no outer black border on the upperside of both wings;" he merely omits to mention that it has, and such a border exists in a narrow form in all his specimens and is very marked in the original figure). He says, "Both sexes are variable; the male, as described by Mr. Moore from Kunawar, has on the upperside of both wings no outer black border; this is so also in some specimens that I have from China and parts of Kashmir; in others, moreover, from Pangî, Lahoul, some parts of Kashmir, and Ladak, there is a distinct black border, which is very variable in width; in one Pangî specimen, in which it is at its maximum, it is over one-tenth of an inch wide." He adds that "the underside of the ♂ varies in the shade of the ground colour, in the prominence of all the mark-

ings, and in the total absence in some examples of the marginal reddish spots." He describes the ♀ as being on the upperside "most frequently entirely smoky brown with no trace of blue coloration," the orange spots showing every graduation between "a complete series of six on the hindwing and five on the forewing," and being "almost obsolete." "The underside is always much darker than in the male, all the spots are more prominent, usually there is a conspicuous series of sub-marginal orange spots to both wings, and the discal white streak on the hindwing is frequently less prominent than in the male."

So far as can be judged by appearances, we seem to have in this series a third species, or at least form, not definitely belonging either to the *eros* or the *icarus* group, but having some affinities with both, and also with *amanda*. The whole group is very difficult to disentangle; *hunza*, Grum-Gr., and *erigone*, Grum-Gr., bear at least as much resemblance to *icarus* as to *eros*. On what ground the former is given by Staudinger as a variety of *stoliczkana* it is impossible to guess; the two could not be further apart to be in the same group at all. (Grum, *Rom. Mém. Lép.*, iv., p. 397). Bingham (*Fauna of British India*, Lép., ii., p. 341) gives *ariana* as a var. of *stoliczkana*, and does not further mention it in his description of the latter. This appears even more unaccountable.

Moore has also the two following references to *ariana*, but we have no means of determining to which form so named by him he refers. *Proc. Zool. Soc. Lond.*, 1874, p. 271, the name simply occurs in a list of Lepidoptera collected in Cashmere by Captain Reed. In the same publication, 1882, p. 46, it occurs again in a list of Lepidoptera collected by Rev. J. H. Hocking, chiefly in Kangra district, north-west Himalayas. In the *Scientific Results of 2nd Yarkand Mission*, p. 6 (1879), the name occurs again as being found at Mataian, Dras Valley (11,200 ft.), Leh, September 6th and 8th. In this case the Leh specimen is in the British Museum collection, and is of the form determined by Chapman as *eros*. Doherty, *Journ. A.S.B.*, iv., pt. 2, p. 133 (1886), also mentions *ariana*, Moore, as being found at Naini Tal from 4,000-8,000 ft., but without any indication as to what form was intended.

Grum-Grshimailo (*Rom. Mém. Lép.*, iv., p. 401) has remarked on the mixture of *icarus* and *eros* forms under the name of *ariana*, but he does not seem to have been acquainted with any of Moore's specimens, which would certainly have increased his perplexity, as he was familiar with the original description and figure. He also (*loc. cit.*, pp. 398, 399) remarks on the nearness of *hunza* and *erigone* to each other, and the resemblance of the former to *icarus*, but treats *hunza* as a separate species, and *erigone* as a var. of *eros*.

The whole difficulty has arisen in consequence of Moore's having labelled two species with the same name, taking apparently a specimen of one form for the type, and of the other for the original figure, and perhaps also for the original description. In my own judgment we should in this case rely on the figure, as being less open than the description to differences of interpretation, and in that case Moore's *ariana* would be a local race of *icarus*, and another name would be required for the *eros*-form, which I believe, so far as one can judge without the evidence of the earlier stages, to be closely connected, but not co-specific, with *eros*.

Luperina (?) (Apamea) gueneei, Doubleday, as a species, and as a British species (with plates).By H_v. J. TURNER, F.E.S.

(Concluded from p. 173.)

It will be recalled to mind that Mr. R. South, in November 1889, identified a specimen of *gueneei* sent him by Mr. Baxter, from St. Anne's-on-Sea, as *nickerlii*. He says (*Ent.*, xxii., p. 271): "By the courtesy of Mr. Leech, I have had an opportunity of examining three specimens of *nickerlii* from Bohemia." These specimens in the Leech collection were probably the true *nickerlii*. Mr. South continued in his belief until the result of Mr. Pierce's examination and comparison of the genitalia of *testacea* and (supposed) *nickerlii* forced him to abandon his views (*Ent.*, xlii., p. 292) in December, 1909. That the specimens, obtained by Mr. South and sent to Mr. Pierce for examination were not *nickerlii* and must have been a form of *testacea*, seems now to be amply demonstrated, and Mr. South's previous identification of 1889 is supported by the extremely strong evidence of the identity of the genital structures in *gueneei* and *nickerlii*.

I have before me four specimens of undoubted *nickerlii* and twelve examples of *gueneei*, and I must say that a very close examination and comparison of the markings gives no point of differentiation. All the markings of the one form are in the other, of course differently emphasised as to depth of colour, and differently contrasted with the adjacent markings in tint, but still all are there in similar positions and covering almost exactly similar and equal areas of the wing surface. Still, so far as my experience goes, one would never confuse one form with the other, the dominating shades of the two forms are very distinct, not even could var. (ab.) *fusca* be confused with *nickerlii*, although as Dr. Chapman says the *figure* of the former might readily pass for a representation of the latter form.

Dr. Chapman has, most kindly and at considerable inconvenience to himself just now, given me a closely detailed report of his careful examination of the genitalia of the species under consideration, which I herewith give in full. At the same time he has furnished the material, from which the three plates have been made, to illustrate his remarks and to emphasise the results he considers himself justified in assuming from the facts he has ascertained. He has no doubt whatever that *L. gueneei* and *L. nickerlii* are only geographical forms of one and the same species. He writes as follows:—

"Mr. Turner asks me to report on the genitalia of the species he has been examining in connection with *L. gueneei*, a species of which the unusual number taken last year has enabled him to tell us more than previous authorities with limited material succeeded in doing. The account given by Messrs. South and Pierce (*Ent.*, 1909, p. 289) fails to reach a final result from the unfortunate circumstance that they had various forms, but not the one that gives the key to the true solution. Mr. Pierce reports his *nickerlii* as probably a form of *testacea*, and in this he was probably right, but his expressing such a doubt is proof positive that his specimens were not *nickerlii*, the appendages of which are quite distinct from those of *testacea*. The *nickerlii* I have obtained not only appear to agree with the description and figures of *nickerlii* but are quite distinct from *testacea*, though still they are sufficiently near it to belong to some species that can be no other than *nickerlii*.

The conclusion I arrive at is that *gueneei* and *nickerlii* are one and the same species. The genitalia are identical; they differ from those of *testacea* precisely as described by Mr. Pierce (*Ent.*, *loc. cit.*), and in several other quite definite details which he did not, probably, think it necessary to complicate his notes with.

Someone will say, if the genitalia are the same, and the two are only one species, why are they so unlike? to which query my reply is simple. The moths are not unlike; to my eye they are identical, and they each differ from *testacea* in precisely the same manner. I will go further and say that the best figures I know of *L. nickerlii* are in Mr. Turner's plate (*Ent. Rec.*, vol. xxiii., pl. iii., figs. 1 and 2). These, which Mr. Turner calls var. *fusca*, come out in the plate rather darker than the actual specimens, but it is probable that even darker specimens of *gueneei* occur, in which case the moths themselves, and not merely their figures, would be simply *nickerlii*. Mr. South's figures (*Ent.*, xlii., pl. vii., figs. 1 and 2) of *nickerlii* seem to be that species, but if so, cannot have been the examples submitted to Mr. Pierce. Mr. South does not tell us from what specimens these photographs of *nickerlii* were taken.

The only difference between *nickerlii* and *gueneei* is that the former is a dark moth, the latter rather a light one. But Mr. Turner's var. (ab. ?) *fusca* goes more than half way to bridge over the difference, and such differences of dark and light races are too familiar to us to found species upon them. The curious point is that our insular form, contrary to the general rule, is the pale one and not the dark one. Its habitat seems fully to account for this, what the habitat of *nickerlii* may be, I do not know, it is indeed too rare a species for anything very definite of this to be known. It is to be expected that the identification of the two forms as one species, and the recorded habits of *gueneei*, may enable some of our continental confrères to make the species more familiar to us.

The photographs on plates vii, viii and ix, will show the difference between *testacea* and *nickerlii*, and the agreement between those of *nickerlii* and its var. *gueneei*. These show the five points of difference noted by Mr. Pierce between *gueneei* and *testacea* and the agreement of *gueneei* and *nickerlii* in these items. There are, however, quite a number of other points in which *nickerlii* (var. *gueneei*) differs from *testacea*. The points Mr. Pierce notes (*Ent.*, xlii., p. 292) are the pointed extremity of the clasp in *gueneei*, form and hairs of clavus, size and breadth of uncus, armament of ædæagus, and of vesica.

Those who profess to be still sceptical as to the value of the genital structures, as affording characters for the discrimination of species, seem to treat them as of a similar order of importance, as Mr. Porritt expresses, not altogether unjustly, as belonging to a varying spot or shade of colour and in wing markings (*Ent.*, vol. xlv., p. 227). It would be more correct to value these structures as equal to that of the whole thorax, wings and legs included. They are the whole of two segments, with some other important structure added, and present not one character, but a whole host, just as the wings do. The objection to them is that they require some preparation before we can examine them, and then usually require microscopic scrutiny. A further difficulty is that with such defective technique, as a non-specialist like myself can apply, the preparations do not always afford photographs

that explain themselves. To return to our *nickerlii*, the five differences noted by Mr. Pierce might each be dealt with as including several minor points. Amongst others not referred to by Mr. Pierce, I may mention the extension by which the sacculus connects with the further portion of the clasp, joining it at the origin of what I take to be the ampulla of Pierce. This extension is strengthened on its dorsal margin (or near it) by a chitinous rod. This rod in *nickerlii* is more slender than in *testacea* and it so happens that this makes it look longer than in *testacea*, though as a matter of fact, it is if anything rather shorter. At its distal end this rod appears to return along its dorsal margin for a short distance, into the end of a weakly chitinised area. This return portion however in *nickerlii* (*guenei*) is in fact a distinct piece, of a wedge-shape, starting from the end of the weaker area. In *testacea*, on the other hand, it is less chitinised, more fused with the rod below, and its basal end, instead of looking like a totally separate structure as in *nickerlii*, looks like a short weak finger of the rod pointing across the clasp. These differences are illustrated in Plate IX.

On the opposite side of the weak space the shaft of the clasp shows three dark lines. These are, I believe, merely folds, due to some peculiarity in preparing the specimens. The same process, however, does not produce this effect in *testacea*, though curiously enough in one specimen of *testacea* there seems to be some actual structure on the upper of these lines; this one I have chosen for figuring, but in as far as this makes it agree with *nickerlii*, it is an aberration.

Dumerilii is clearly a closely related species, but not so close to them as *testacea* and *nickerlii* are to each other. I take the synonymy to be:—

nickerlii, Fr.

var. *guenei*, Dbl. (*incerta*, Tutt).

ab. *baxteri*, South.

ab. *fusca*, Turner.

ab. *minor*, Turner.

ab. *murrayi*, Turner.

ab. *iota*, Turner.

It seems to me that Mr. Turner does not quite correctly present Mr. Banks' views on the value of the genitalia for specific determinations. From his article I gather that his views are very like those I have often expressed, *viz.*, that if the genitalia markedly differ, then we have two species. If they appear to be alike, it does not follow that two forms are one species, and is only conclusive evidence to that effect for those who already believe them to be one species. I may say, however, that I have never myself seen two unquestionably distinct species with identical genitalia, and suspect that a closer and more minute scrutiny would give a different aspect to reported cases.

In the case we have in hand the differences between *nickerlii* and *testacea* would abundantly separate them were they otherwise supposed to be only one species, whilst the identity of the appendages in *nickerlii* and *guenei* proves them to be only one species, because the case for believing them to be two species is of the very weakest. As geographical varieties, their differences either in the genitalia or otherwise is much less than is very common between the geographical varieties of other species."

Since receiving the above remarks from Dr. Chapman I have been

to the Natural History Museum, S. Kensington, again. The series of *L. nickerlii* in the National Collection contains specimens from the Leech collection, and probably they are the actual examples with which Mr. South compared the *gueneei* taken twenty years ago. Comparing these specimens, marking for marking, with the undoubted specimens of Dr. Chapman, there can be no doubt that they are identical, the only difference being that the whole of the specimens in the Museum collection have a generally darker coloration than those of Dr. Chapman, one of which is lighter than the other three.

Next I compared the type of *gueneei*, the original 1862 (1860 ?) specimen of Doubleday, with the four *nickerlii* of Dr. Chapman. The lightest specimen, the one referred to above, was almost a facsimile of the Doubleday type of *gueneei*, the only differences being that the definition of the fresher insect was more pronounced than that of the specimen nearly half a century old, and rubbed, with defective fringes and blurred definition. It was certainly a remarkable similarity, even the general coloration differed but very slightly. In examining these specimens it is very important to hold them at precisely the same angle with the light or quite different effects are given. It is very useful at times when examining specimens to hold them at a fair distance obliquely, when the definition of some areas comes out better and some shades contrast better with the surrounding colour.

Finally, I took the specimens of *gueneei* (12) and compared them with the *nickerlii* in the Museum collection. The conclusion I arrived at was the same as expressed above, I could find no mark of distinction in the wing pattern, only the general coloration of a series of the two forms was markedly different. Yet when the two series were held obliquely between the light and the eye, the brown general colour of *nickerlii* was subdued to some extent, and the *gueneei* developed a brown shade which assimilated very closely to that of the former.

By picking specimens of the two series and arranging them with the Doubleday type in the middle, a fairly complete series of gradations from the light *gueneei* to the darkest of the *nickerlii*, could be made.

The characters referred to in differentiating the *gueneei* form from *L. testacea* are apparent in all the examples of *L. nickerlii* I have seen, but in the latter species all markings are much more definitely developed in contrast with one another. There is the same soft white coloration of the hindwings, the marginal dashes or incipient lunules between the veins are of precisely similar appearance, and these wings have not the tarnished appearance of those of *L. testacea*. The stronger emphasis of the markings in *L. nickerlii* brings out the **I** mark in a good proportion of the examples I have seen. The marginal and submarginal areas of the forewings agree in both size and depth of colour in the two forms. The positions of the transverse lines are quite similar, and the emphasis of the different portions of these lines to one another correspond, *i.e.*, where there is a want of definition of a portion of one of these lines compared with another portion in *gueneei*, in *nickerlii* the definition of the said portion is not so clear as in the portion corresponding to the better defined portion of the line in the former species. The shape of the wings in the two forms are quite similar, and is not the shape of *L. testacea*. The small deep black marginal lunules present in the forewings of *L. gueneei* are reproduced precisely in depth of blackness, in shape, in size, in definiteness, and in separation in the *L. nickerlii* forms.

Probably during the coming season some of our continental workers will be on the look out for *L. nickertii*, and we would like to know what the ova are like, and how and where laid. Our English collectors are very keen this year on getting the ova of the *gueneei* form and on endeavouring to find the foodplant of the larva, so even if no information is obtainable from the continent, the facts concerning the early stages which we fully anticipate will be discovered in this country, will give a clue to the further elucidation of the life-history of *L. nickertii*, the type form.

EXPLANATION OF PLATES.
PLATE VII. (all $\times 12$.)

- Fig. 1. *L. gueneei*.
2. *L. dumerilii*.
3. *L. testacea*.
4. \AA dæagus of *L. testacea*, vesica extended (and slit).
5. \AA dæagus of *L. dumerilii*.

In fig. 1 the bunch of large cornuti on the vesica is distinct enough to be compared with the same organs in *testacea* fig. 4. They differ a good deal in size in *testacea*, in fig. 5 they are unusually small. The largest examples I have seen are smaller than in *gueneei* (*nickerlii*).

Fig. 4 and 5 are placed so that the ends of the \AA dæagus (apart from the vesica) are at the same level, the point of attachment to the floor of the genital cavity (a little beyond middle of \AA dæagus) is the most evident in fig. 4.

PLATE VIII. (all $\times 12$.)

- Fig. 6 and 7. *L. gueneei*.
8 and 9. *L. nickertii* (Bohemia).

PLATE IX. (all $\times 54$.)

Portions of clasps in the region of the base of the ampulla.

- Fig. 10. *L. gueneei* (the same specimen as fig. 1.)
11. *L. nickertii* (same as in fig. 8.)
12. *L. nickertii* (right, same as in fig. 8.)
13. *L. testacea* (same as in fig. 3.)

"These figures illustrate the agreement of *nickerlii* and *gueneei* in one of the small details in which they differ from *testacea*.

"They also illustrate the difficulty of showing such details by the photography of specimens not prepared in the best manner.

"In all the specimens the dark lines, longitudinal and vertical, in the strong dorsal section, are folds due to pressing the specimen flat, and vary from specimen to specimen, though the structure is such that three longitudinal folds, occur in *nickerlii* (*gueneei*) and are fewer in *testacea*.

"The greater strength of the chitinous bar in the lower section of the clasp in *testacea* comes out unmistakably, also the vagueness of the returning portion, the inner end of which can, in most specimens, with difficulty be seen to be more than an excrescence on the general margin. These parts are identical in *gueneei* and *nickerlii*. I have chosen the *gueneei* (Fig. 1) in which the small return portion is most distinct; that it looks (say as compared with fig. 12) fused with the main rod is a question of focussing, compare the other *gueneei* (figs. 6 and 7). In all these (*nickerlii* and *gueneei*) it is a well defined piece, as compared with the vague process of *testacea*. The small articulated portion above it ('ampulla' of Pierce) varies very much in both species, and I cannot rely on it for specific characters, though it is usually shorter, rounder (more globular) in *nickerlii*, larger and more produced in *testacea*. Fig. 13 shews a rather more pronounced specimen of *testacea* than usual. Amongst the variations is one of *gueneei* in which instead of one normal "ampulla" there are two very small ones."—T.A.C.

Five days at Macugnaga.

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

After leaving Bèrisal, I spent a couple of days at Baveno so as to enable me just to take a glimpse of lovely Lake Maggiore. The first day, August 2nd, was spent on the lake itself, basking in the sunlight and enjoying to the full the three "Isolas," Bella, Madre, and Superiore, pearls in a setting of sapphire, utterly lovely, making the restless northerner rather long to sit and dream. And as he dreams, one song alone, one scene, may be, forces its way before him—nay, force is not needed here—a scene out of Tennyson's *Princess* glides along to view, and you hear the distant melody "Swallow, swallow, flying, flying South." As you dream you wonder, is it true—amidst scenes so soft, so lovely, so entrancing—

"That bright, and fierce, and fickle is the South
And dark, and true, and tender is the North."

Of course the truth of the latter is not doubted, but the former, is it really so in a land so blessed by Nature's Lord?

We left the query without an answer, the beauty of our surroundings carrying our thoughts elsewhere. The next day was spent up Monte Mottarone, and I shall not soon forget the temperature and the atmosphere of the woods that cover the lower part of the upward path—thunder in the air—oh! for a breeze, never did the ancient mariner long for a breeze more than I did then, and just as I got to the "Albergo" at the top and had by no means satisfied myself with the view, the storm broke. Hail and torrents of rain; there would be no insects for me on my way down as there were none on my way up, scarcely even were the bees able to fly in the intense heat, and it was only an occasional *Erebia aethiops* and *Aphantopus hyperanthus* that were literally picked up out of their resting places that showed themselves at all. I was up betimes the next morning for I had the long and lovely valley of the Anzasca to ascend ere my desired haven (Macugnaga) was reached. Again insects were very few and far between, partly due no doubt to the fact that searching was impracticable owing to the "time limit" whilst the day was dull and a strong wind was blowing, but all the same the views were entrancing, so much so that it was 10 o'clock p.m., ere I arrived at the Hotel Monte Rosa, where I had engaged a room. August 5th was a quiet day, first I wandered down the valley to the lowest village, and then after lunch up the valley to take my bearings. Down the valley in the brilliant sun *Heodes virgaureae* gleamed like jewels as they flitted in abundance from flower to flower, the females evidently just beginning to come along. *Agriades coridon* was very abundant in the male sex, only one female being netted, in colour they were certainly more than a mere tone bluer than the Swiss specimens I had been previously taking, there were moreover one or two pretty forms, one with very narrow dark margins, and another with unusually broad margins, in which in both wings were a row of pale spots that in the hindwing extending right up to the costa. *Plebeius argus* and *P. argyrognomon* raced neck and neck which should be the commoner. *Parnassius apollo* was common—fine darkish specimens, *Sesia stellatarum* poisoning over the nectar of the flowers was another common sight, occasionally its rapid flash from flower to flower being quite too quick and sudden for the eye to follow. Here also a single

typical *Callimorpha dominula* turned up, and *Argynnis aglaia* in abundance. The next day I took a walk up the south side of the parish (I cannot use the word village for the parish of Macugnaga consists of about ten little scattered villages, if such they can be called), with the final object of the Belvedere, *i.e.*, the green alp running into the Monte Rosa glacier and splitting it into two tongues designated by the names Macugnaga and Monte Rosa glaciers. The hay meadows were being cut with great rapidity, with the consequence that no butterflies beyond the commoner species were seen, but in the stony bed of the stream my eyes were gladdened by various species. *Polygonmatius hylas* was not uncommon, the general colour being deeper blue than usual, though one large specimen was of a brilliant lustrous tone. *Cyaniris semiargus* also was fairly plentiful, the females as abundant as the males. The commonest *Erebia* here was *E. goante*, and I found it easy to catch—quite different from the same species on the sun-burnt slopes of the path up towards the Moro Pass. *E. ligea* and *E. euryale* were flying together here also, but not in any special abundance, whilst *E. ceto* also frequented the sides of the stream. As I made my way in the green Alp (the Belvedere), largely covered with rhododendron, but little was on the wing, and I returned to the hotel in a discontented frame of mind. The next two days I devoted to the Moro side, exploring about a third to half-way up the pass, but the higher parts were unproductive, though lower down, just about the tree limit, the number of specimens, if not of species, was very plentiful. *Heodes virgaureae*, females, as also males, were abundant, the latter a nuisance almost, but the females were very fine, including many nicely radiated forms with a series of blue dots on the secondaries. The colour of these in all cases was about midway between typical specimens and the form var. *zermattensis*, rather nearer the former than the latter. *Erebia epiphron* was common, as also was *E. melampus*, but all the specimens were of the variety *sudetica*. *E. mnestra* was rare, but *E. tyndarus* common everywhere; among the hot rocks *E. goante* loved to spread out her velvety wings, and was very clever in avoiding the net, dipping just below the ring of the net in so graceful a way that though occasionally exasperating, it was very lovely to see her sail away. Among these rocks, and on the dry sandy path, *Argynnis niobe* var. *eris* would also love to sun themselves, though generally they were much too busy with the flowers on the steep slopes on either side. All that I took were of the *eris* form, and I did not see one typical specimen, var. *eris* being very common. Once I stood on a vantage point enjoying the sight of the fleecy clouds around one of Monte Rosa's peaks—How the clouds change up there! they are always coming up from the Italian side and hovering around, except in the early part of the day, when one rarely sees the range clear for more than a few minutes at a time, there they are, ever changing their form, and so light that the mountain side is seen through them, adding wonderful beauty to the scene. But to return—my eyes wandered from the mountain peak to the earth below, to the mass of flowers at my feet, and at last they rested on a beautiful bush of very unusual form and colour, so I made my way down the slippery slope with extra care so as not to disturb whatever it might be, for I felt sure there must be more than flower there, and I was glad to

find a beautiful female *Malacosoma franconica* var. *alpicola*, which allowed herself to be boxed without even disturbing her slumber. *Argynnis amathusia* was fairly frequent everywhere, but was getting *passé*. *Melitaea athalia* was not rare, only three specimens of *M. phoebe* came across my net. In the valley itself *Aporia crataegi* in both sexes was common, and one specimen gave me a smart run, for I saw distinctly a bright red spot on each hindwing, it looked remarkable in the brilliant sun, but it proved to be nothing special after all—probably only a spot of the excrementary pupal fluid that had somehow spurted on to the upper surface of the wings. I took several specimens of *Loweia aleiphron* var. *gordius*, but all were quite past their best. *Plebeius argyrognomon* was most abundant, whilst *Aricia astrarche* appeared to be rare, for I only took three specimens, all quite fresh. *Pararge maera* also turned up in good condition, as also did *Coenonympha arcania* var. *darwiniana*. *Chrysophanus hippothoe* was rare, and only one example of its variety *eurybia* put in an appearance. Among the moths, I took a single *Crambus zermattensis* and a single *C. conchellus*. *Anthrocerus loniceræ* was probably the commonest Anthrocerid, and typical *A. filipendulæ* came next. *A. purpuralis*, of course, was not rare, and I took a small series of *A. transalpina*. *Adscita statices* var. *heydenreichii* was the only one of that genus. *Endrosa (Setina) aurita* (typical) and its var. *ramosa* fell victims to my net more than once. Of Boarmiids I saw but few, *Gnophos serotinaria*, *G. myrtillata*, and *G. mendicaria* were the only ones I took of that genus. *Larentia caesiata* was comparatively rare, and at the last another *Crambus* was taken fairly high up, *viz.*, a single *C. radiellus*, and just below this spot several *Ortholitha limitata* and one *O. bipunctaria* were inveigled into my net. I believe I omitted to say that two or three *Lycæna arion* without any spots on the upperside were also captured. Thus ended my visit to this lovely spot. The next day I went over the Moro Pass to Saas, and a terrible day it was, mist to begin with, rain to continue, whilst snow and hail in driving fury greeted us at the top of the Pass, so that I was glad of the shelter of an overhanging rock until the worst was over. I certainly did not have less than two hours heavy snow walking, frequently soft enough to sink up to one's knees in—but all things come to an end, and this did, for in due time we arrived at Mattmark, and were glad of a substantial meal ere pursuing our way to Saas Fée.

The Pairing of *Aglais urticae*.

By DR. T. A. CHAPMAN, F.Z.S., F.E.S.

Observations on the pairing of this species, and indeed of the *Vanessids* generally, are all too few, so that the following is probably worth recording. About 2.30 p.m. on May 7th, 1911, Mr. Lionel Adams and I were in a grassy lane where there was a large patch of nettles with stems of the season some 6 to 15 inches high. Close by we noted a pair of *A. urticae* on the ground, one, believed to be the male, some inch or two behind the other, and both with wings expanded and facing from the sun in the attitude in which the *Vanessidae* usually bask. The male gradually approached the female, but on two or three occasions when the male got close the female set off for a flight of a circuitous and zigzag character with the male in pursuit, and then settled again not far from the place from which she

started; she also made one or two very short flights. After what I may call finally settling down, the female moved very little; she sat in the usual basking attitude on some nettle leaves where the plants were rather dense, so that there was almost as continuous a platform as though she was on the ground. The male was behind her in similar attitude, at first with about half-an-inch of interval between them. I stood some three or four yards away and feared to go nearer, so that the precise movements were in some respects indistinct. The male advanced towards the female by little jerky movements at perhaps ten seconds interval; the movement was not merely of advance, but was accompanied by a depression of the front part of the insect. This movement was more frequent as the male advanced, the interval between the insect was soon passed, and the male advanced until his head was nearly over the posterior margin of the thorax of the female. The advance at each movement was less, but the depression of the head was more marked as this position was attained. During this process it so happened that the sun became rather obscured several times, so that whether as a result of the failure of heat and light, or merely as an ordinary part of the process, on three occasions when the male had reached an advanced position over the female, she closed her wings over her back, and the male had to retire and did the same, but for a shorter time. That this was a manœuvre due to failure of sunshine, seemed probable, as it coincided in some degree with the varying brightness, and on one occasion was only partially and momentarily made. I should have noted that as well as the depression of the anterior portion of the body, the male made some special movements of the head, all of which, however, that I could see, was that some paler plumage was shown in the region of his neck, that looked as if there was a twist of the head as well as a lowering or nodding of the head, in addition to the boring movement of the whole body. I managed once or twice to see the antennæ pretty clearly during this movement, and they did not appear to tap the female, or take any special share in the procedure. When for the third or fourth time the male had advanced so as to have his palpi about over the middle of the female's thorax, the female suddenly took flight, and the male after her. Almost before I had time to feel disappointed that the process was futile and that I had spent my time watching without result, when the female had in fact flown some two or three yards, she dived suddenly into a small opening amongst the nettles, the male after her. We waited a few minutes and then went to investigate what might have happened. We found, however, that in the place below the orderly nettle tops, some fifteen inches above the ground, there was an inextricable tangle of live and dead nettles and other plants, dead leaves, etc., giving on a small scale a picture of the impenetrable thickets of living and dead material that we read descriptions of as characterising the most inaccessible places in tropical forests and jungles.

We worked gently, at least at first, and cleared some inches of ground where the butterflies had disappeared, and got a view into the maze all round this, but could not find the flies. We then cleared all round about, and some twelve inches away finally discovered the male butterfly, and immediately after the female. The latter had a portion broken out of a hindwing which was perfect previously, so that I do

not doubt that the butterflies were violently used by some of our clearing processes, and had probably been paired before we interfered with them; it was several moments before the male had courage to fly away, though the sun was shining.

Our observations took something over half-an-hour, of which some 12 to 15 minutes at least were occupied by the approach of the male after the female had finally settled down. This part of the procedure may have been longer than usual if the interruptions noted were due to the sun being obscured and were not normal parts of the courtship.

Prof. Poulton's observations (*Proc. Ent. Soc.*, 1904, p. xlii.) are somewhat fuller than my notes, but the agreement in many details is evident, though I made my notes before referring again to Prof. Poulton's narrative. The final dash and disappearance was a most startling occurrence, and owing to the nature of the ground was more complete and baffling in the case of the insects I saw than with Prof. Poulton's, indeed the disappearance was so complete, that in investigating it destroyed the actual proof that pairing had really taken place.

Some Lepidoptera of the "Fourshire Stone" District.

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

(Concluded from page 168).

Another direction in which good results may be anticipated is Bourton-on-the-Hill, a village some two miles from Moreton, in the opposite direction to Wolford, being situated on the slopes of the Cotswolds. At the end of the village is an inn, where an excellent meal may be obtained if required. When I was living at Burmington, some six miles beyond Moreton, we used to drive over for a day's sport, and always fed and "put up" there. Shortly beyond the inn on the right-hand side of the road, and slightly removed from it, is an old quarry which affords excellent sport. It is the nearest locality for *Cupido minimus*, and the best for *Agrion coridon*. *Melanargia galatea* is also to be taken here, and many other species of the more widely distributed kinds. But for actual sport I can recommend at this spot the chase of *Macrothylacia rubi*! The space is somewhat confined, and it never, or scarcely ever, attempts to get outside it, and its rushing flight, headlong, but with constant and most unexpected turns and twists, makes its capture both a work of art and a most valuable athletic exercise. But it can be done—for I well remember that in 1891 after an afternoon spent in the chase with my then pupil (now the Hon. Wm. Shute Barrington, who I fear has given up Entomology), he offered my wife 6d. for every specimen she could catch on the wing, and on a second visit, a few days later, she caught several, though I don't think she ever got paid! *Nemeophila plantaginis* is also an abundant species at this spot; and a little further on, at the side of the hedge skirting the Dovedale drive, several good Geometers, including two, if not three, of the genus *Emmelesia* are to be obtained. This latter place also produces the Argynnids and Brenthids, but less abundantly than Wolford Wood.

If our supposed Lepidopterist be also a bicyclist, he will find many other Cotswold localities easily within his reach, towards Broadway in the one direction, and above Bourton-on-the-Water towards Cheltenham in the other. These roads abound

in old quarries, all of which ought to be carefully searched for *Lycaena arion*, which is certainly found still in some of those nearer to Cheltenham, and was, and probably is, a fairly frequent species in the neighbourhood of Lower Guiting, where the late Rev. Jos. Greene used to take it years ago. Nor must it be forgotten that this was one of the last localities where *Cyaniris semiargus* was taken in England, and probably nobody has ever really looked for it since Mr. Greene left Guiting, for it would require continuous and persistent looking for, so many are the suitable places for its occurrence. We are, I think, apt to put the disappearance of *C. semiargus* on a par with that of *Chrysophanus dispar*, whereas there is really nothing parallel in the two cases. The latter species was only found in the fen-lands, most of which were drained about the time of its disappearance, it was either peculiar to England, or, if co-specific with *C. rutilus*, belonged to a very local species, and one which is very scarce in most of its habitats in Western Europe; whereas *C. semiargus* was much more widely distributed in England, is by no means particular as to its haunts, and is common, often very common, over most of Europe, even up to the coasts nearest to our own, and there is no assignable reason for its extinction, and frankly very insufficient reason to suppose that it really is extinct. For although England is comparatively rich in collectors, still what large tracts of country there are absolutely unworked, how completely isolated a country collector often is, except in a few favoured (?) spots, and how impossible it is for one man (or boy, or perhaps lady) to work thoroughly a large tract of country for an inconspicuous species, especially when it is considered that most of our more isolated collectors are in other respects busy people, whose time for collecting is very limited, and who as a rule have probably more time for night work than for hunting in the day, and that most of our town workers have to take a day off when they can. If we add to all this the fact (and it is a fact) that to many entomologists (lepidopterists at any rate) collecting is the merest hobby, and that enthusiasts are few, I think it will seem clear that the evidence for the extinction of *C. semiargus* in England is really of the flimsiest, although it has almost certainly left some of its ancient haunts, those for instance in the neighbourhood of Birmingham, for which I, for one, am not inclined to blame it. I doubt for example whether a net has ever been seen in its old Guiting haunts in all the years that have elapsed (about 50 I think) since Mr. Greene left the neighbourhood. Certainly, since I have known Bourton-on-the-Water, which is only some four miles from Guiting, I have never seen a net, except my own, in the neighbourhood, nor do I know of a lepidopterist nearer than Broadway; and I have never been at the place myself at the time and under weather conditions that would make a search possible; further, I have no reason whatever to suppose that the same set of circumstances, and the same line of reasoning, do not equally apply to scores, if not hundreds, of other English localities. Until we can assert that all possible localities have been thoroughly worked, we are surely generalising from insufficient data when we assert the total extinction of such species as *C. semiargus*, or imagine that *Everes argiades* is only to be found in two localities. Outside a radius of some 50 miles from London, and a much smaller one from some of our large towns, notably Liverpool and Birmingham, the only

localities that have been thoroughly worked are some of those on the South Coast, a fair proportion of the Lake District, and a few which have been made famous by some well-known resident entomologist, or have been patiently and carefully searched by such a worker as Mr. Greene, or Archdeacon Bree, or Mrs. Hutchinson (I purposely avoid mention of those still living), the number of whom probably does not amount altogether to a couple of dozen. This is a long digression, but I hope not a useless one, for it touches upon a point which is rarely, if ever, appreciated at its true value.

One other locality I must mention, namely, Burmington, to which I referred just now. This is a very small village some six miles from Moreton going by Todenham, or about seven by Wolford. During the one summer that I lived there, having several elm-trees in the garden and a small orchard attached to it, I sugared almost every evening, and though unfortunately in those days I made but few notes, and those few are not now at hand, one or two of the results seem of sufficient interest to mention; for although that particular spot is not available, yet others in the neighbourhood would doubtless produce the same species. The *Cosmiidae* were specially abundant, *Calymnia trapezina*, of course, in great variety, but both *C. affinis* and *C. diffinis* were frequent in the garden; all the genus *Xylophasia* again, except I believe *X. hepatica*, were there, either at sugar or at light, *X. monoglypha* was of course the commonest, but neither *X. lithoylea* nor *X. sublustris* could be regarded as scarce. At light of course *Spilosoma menthastri* was the commonest of all species, and frequently became such a nuisance that the specimens had to be caught and put into an empty jug (to be turned out when I turned in), but next to this by far the commonest species was *Hadena oleracea*; several others of this genus were also in evidence. There was a hedge on the right hand side of the narrow road leading from Burmington to Willington which was a favoured haunt of the *Plusiids* at dusk. Both species of *Habrostola* and *Plusia iota*, *P. pulchrina* and *P. chrysitis* were abundant, *P. gamma* needs no special mention, and there were many Geometers, not all by any means common, to be obtained in the same place. The hedge at the left-hand side of the hill leading up from Midford Bridge to Burmington was another good spot, but here I only mention the abundance of *Scotosia retulata* which it yielded, because I never happen to have come across the species elsewhere. I have not now at hand the means to attempt even an approximately correct list of the species found in this prolific neighbourhood, but if it should at any time (next Christmas for example) come about that my brother and I can work one out together, by means of my notes, and his, and my father's which are in his possession, and which were made in his interleaved copy of Wood's *Index Entomologicus*, it might prove not without interest to do so, and I shall then hope to publish it.

Mr. Tutt's Views regarding Mimicry.

By LIEUT.-COL. N. MANDERS, F.R.M.C., F.Z.S., F.E.S.

This note is somewhat belated, but my excuse must be that I have just returned from a trip to Java and found among a pile of correspondence the number of the *Record* devoted to its late Editor.

I think it would be of interest to most entomologists to know

exactly Mr. Tutt's views regarding this vexed question. I may say that the letter quoted was written with reference to a paper, which I subsequently submitted to the Entomological Society, on the subject of certain butterflies (*Euplaea*) occurring in S. India, which were regarded by some authorities as a Müllerian combination. In this paper I put forward the view, from my observations in India, that the facts could be more simply interpreted by an environment acting similarly on similarly constituted mechanisms, and it was unnecessary, therefore, to bring in for their interpretation a complicated theory for which little or no direct evidence had hitherto been produced. He writes: "24.7.10. . . . Your paper seems to cover the ground exactly, and to illustrate . . . what I have insisted on throughout, *viz.*, that insects with common habits and living in a similar environment tend to become similar on broad lines. Each species has within itself a wide range of variation capable of being drawn on under different conditions of environment. Similar conditions draw out special characteristics, and produce, therefore, general similarity. So-called Müllerian associations, therefore, may be the results of similar pattern, similar habitats, similar environment, when worked up locally. I do not wish to underrate the possibilities of Müllerian mimicry, but this museum made mimicry without knowledge of habits, environment, etc., are to me anathema."

These pithy sentences so characteristic of the man and his manner, bring him most vividly before my mind.

CURRENT NOTES.

At the Congress of the South Eastern Union of Scientific Societies held at St. Albans in June, the question of "the South Kensington site" came before the delegates. Mr. W. Mark Webb proposed the following resolution: "That this Union, consisting of 59 affiliated Societies, and comprising nearly 10,000 members, view with dismay the possibility that part of the land allocated to the British Museum (Natural History) for its extension should be taken away to form the site of a new museum, and respectfully suggest to the authorities that they should seek another piece of ground, which would allow for the proper development of both the existing and proposed institutions." As an amendment it was proposed to refer the matter to the Council for consideration at some future date, but it was pointed out that it was a most urgent matter, and after a considerable discussion and the consultation of a rough plan of the site and relative positions of the museums, it was very apparent that if the proposals of the Government were carried out, the future extension of both Museums would be impossible. The members present were practically unanimous in their support of the motion which was then carried *nem. con.*

This resolution has been sent to the Prime Minister and also to the Trustees of the British Museum, and no efforts are being relaxed to bring about an arrangement which would be satisfactory, both as regards the present accommodation in the two museums and as affording full room for their natural growth and extension. It is agreed on all sides that the present temporary accommodation of the Science exhibits is most inadequate and unsuitable, and that even if permanent

buildings were put up on the site proposed they would hardly afford sufficient accommodation for the immediate future, while there would be no possibility whatever of their enlargement and extension at any subsequent period.

In the *Times* of June 17th, Dr. Shipley wrote a letter suggesting the purchase of the Crystal Palace by the Nation as an open space and for Museum purposes, the idea being to locate the College and Museum of Science there. Thus would ample space be provided not only for the present needs of the Department, but for all possible extensions, with but little curtailment of the very large open space on the margin of which the Palace building stands. Objection may be made that this site is too far from the Metropolis. But this matter of distance is more apparent than real since the adoption, by the London, Brighton and South Coast Railway, of electricity as a source of rapid traction, with its consequent cheapening of fares, better accommodation, and more frequent trains. The idea has received considerable support if one may judge from the letters which have been written subsequently. We are reminded that some time ago there was a proposal on foot to purchase the Crystal Palace and grounds as a Memorial to King Edward VII. Is not the magnificent New Victoria and Albert Museum a huge memorial building devoted to the accommodation of all branches of examples in applied art? And why not have a similar building on an adequate site devoted to the housing of all that appertains to the furtherance of applied science?

In the June number of the *Canadian Entomologist* is a very useful article on the "Nomenclature of the Male Genitalia in Lepidoptera," by J. McDonough, Ph.D., of Decatur, Ill. It comprises a historical summary of the work done in the investigation of these organs, now raised to such importance from a systemic point of view, with especial reference to the terminology used by various writers. The author of the article applies the law of priority to these and gives a summary and diagnosis to each of the terms, which, in his opinion, should be used. He adds a short bibliography, but by no means a complete one, for we note that more than one of the writers he refers to are omitted from the list. However, the article is well worth reading by those who are interested in this line of entomological investigation. It is pointed out that Zander, in the *Zeit. wiss. Zool.*, vol. lxxii., p. 557, etc., in 1903, published an excellent treatise on the female genital organs, revising the whole of the work hitherto done, giving a clear and definite idea of the development of these organs, and demonstrating the relationship of the various parts to each other. Much of the article by J. McDonough is taken up with a summary of the above treatise, while the remainder is an attempt to rectify the most confusing application of the various terms used by different writers for the details of the organs they are discussing. Such confusion is probably unavoidable to an extent, but a deal of it arises from the fact that many writers rush into print without endeavouring to find out what has been done by previous workers, abroad as well as at home, although some confusion of terms undoubtedly is unavoidable when investigators are working at the same subject in widely separate localities, or in places more or less completely out of scientific touch with each other. In his conclusion he points out that the following is the proper terminology for the more important portions of the male organs.

Valve or *Clasp* (= "Harpe" of Smith and Pierce).—The two lateral outer appendages (= "Harpago" of Buchanan-White).

Harpe (= "Clasper" of Smith and Pierce).—The inner hook-like armature of the "valve," arising from or near the base of the same.

Uncus.—The hook-like dorsal appendage of segment xiii., the terminal segment.

Scaphium.—The process arising immediately ventral to the "uncus" and the anal opening.

Ringwall or *Penis funnel* (= "Juxta" of Pierce).—The chitinous cone at the base of the valves from which the "Penis" protrudes.

Penis or *Edicagus*.—A strongly chitinized rod-like structure projecting from the "penis funnel." (Strictly speaking, this is only the distal end of the organ.)

Vesica.—The "ductus ejaculatorius," or membranous eversible inner tube of the chitinous penis-rod.

Saccus.—A medio-ventral chitinous sac projecting forward into the abdomen, attached to the anterior margin of segment xii.

We are pleased to see that Dr. Malcolm Burr, one of our colleagues on the staff of the magazine, has just been made an honorary member of the Société Entomologique Namuroise. This active Society was founded some fifteen years ago and contains a number of very good workers, among whom we note particularly M. L. J. Lambillion and Baron de Crombrugghe. It issues a *Revue Mensuelle* containing an abstract of the proceedings at its meeting and the more important papers read. Our late Editor was one of its honorary members. This Society quite deserves the repute it has gained in the opinion of continental entomologists.

In the number for May 13th of the *Entomologische Zeitschrift* is commenced a most important series of articles entitled "Gynandromorphous Macro-Lepidoptera of the Palearctic Fauna." We note with regret that the author, Oscar Schultz passed away almost immediately after sending his M.S. for publication. It would appear that this is the sixth series of articles published by this author on the same subject since 1896. They comprise a descriptive account of every Gynandromorph, which it has been possible to trace, among the Palearctic Macro-Lepidoptera.

Series I. began in the *Illustrierten Wochenschrift für Entomologie*, vol. i., Neudamm, 1896.

Series II. began in the same magazine, vol. ii., 1897.

Series III. began in the same magazine, vol. iii., 1898.

Series IV. was published in the *Berliner Entomologischen Zeitschrift* vol. xlviii. pp. 71-116, 1904.

Series V. began in the *Entomologische Zeitschrift* vol. xx., No. 19, etc., 196.

It was thought that the above references would be useful to those interested in the subject. All work of this kind, the collecting of scattered information and facts, is most useful to the worker, but such classificatory work takes an enormous amount of time and is almost an impossibility if only needed as one of the subordinate portions of the work one may be engaged upon.

A long series of very detailed critical notes and considerations of aught that pertains to European *Lycaenidae* is appearing week by week

in the *Entomologische Zeitschrift* of Frankfort. A hurried glance through several of these chapters shows them to be very thorough, with full references to all the authors concerned, both old as well as modern. The variation existing in each species is dealt with from an historical and synonymic point of view, as well as from consideration of its differential characteristics. Such a compilation needs a great deal of research, and if well done from all available sources should prove of great value to future writers on the group. No doubt those who contemplate the completion of the present volume of *British Lepidoptera* will need to consult these notes.

In *Societas Entomologica* for April 22nd, we notice that P. Cameron, F.E.S., has the commencement of a series of articles on "New Genera and Species of *Chalcididae*."

In the same magazine for June 3rd, the Hon. N. Chas. Rothschild contributes an article suggestive of the much needed discovery of the parts of the life-history of *Lycaena arion*, which as yet remain a riddle.

The receipt of the *Annual Report of the Manchester Entomological Society* reminds us that one of the main objects of our small local coteries of nature lovers, is the elementary education and initiation of the young who are to be the future workers in the investigation of the marvellous adaptations of life to surroundings. We see by the annual statement that the Society has but 46 members, and that the average attendance at the meetings has been nearly 20, speaks well for the individual enthusiasm, in spite of the fact that no inconsiderable proportion of them live outside Manchester itself. There are four plates in this number, one of which is coloured, and a portrait of the President, Mr. C. F. Johnson, F.E.S. Plate iv. showing some 30 specimens of *Ayrotis ashworthii*, ranging from pale to very dark, gives us an admirable idea as to the potentiality of the species to show variation in its ground colour. The only paper printed *in extenso* is that by Mr. J. H. Watson, entitled *Notes on the Life-Histories of Certain Species of the Saturniidae*, with three plates, containing a record of breeding and hybridisation experiments made during 1910 with the species of the genera *Caligula*, *Philosamia*, *Coscinocera*, *Attacus*, and *Hemileuca*. Among the papers read, but not published, we notice one by our old friend Mr. W. Mansbridge, F.E.S., entitled *Mendel's Theory of Heredity*, which was made doubly interesting by the fact that Mr. Mansbridge gave full accounts of his own experiments in the breeding of *Aplecta nebulosa*, *Boarmia repandata*, and *Acidalia virgularia* in illustration of the principles of the theory. We do not like to carp, but we do wish to see these smaller publications, if only for the sake of those younger members, brought out in conformity with the customary convention of italics for scientific names, and trivial names with small letter initial.

In the last number of the *Bulletin de la Société Entomologique de France*, we note that Dr. Malcolm Burr, F.E.S., communicated a *Note on the Distribution of Forficula lesnei in England*. We are pleased to find that an increasing number of British workers are getting into touch with continental societies and workers. This is as it should be. Let us hope that we shall get less duplication in entomological work, with its consequent intricate synonymic difficulties. It should be an axiom for all authors of papers with any attempt at original work to

send copies to the chief societies and to the chief exponents of the particular group or groups discussed. We have long been too insular in our work, and it lies with ourselves to make a determined effort to break down the isolation in which continental workers for the most part have kept us.

In this connection we see that the April number of the *Deutsche Entomologische National-Bibliothek* contains an article contributed by Dr. Burr, "A Preliminary Revision of the Labiidae," the April number of *Societas Entomologica* contains "Descriptions of New Genera and Species of Chalcididae," contributed by P. Cameron, and the April part of the *Annales de la Société Entomologique de Belgique* contains "Notes on the Salivary-Glands and Syringe of two species of Hemiptera," by J. C. Kershaw, F.E.S., and "On some controversial items concerning a few Rhychota" by W. L. Distant, F.E.S.

The *Transactions of the City of London Entomological and Natural History Society* for 1910 was issued shortly after the belated number for 1909. It is the twentieth number of a series of annual records of a Society which has been doing very steady work in natural history education for many years past. One always looks for a contribution from Mr. L. B. Prout, and this year we have a long and excellent article from his pen, "Notes on the Acidaliinae." Mr. C. P. Pickett has an article on field work and breeding, in both of which he excels, and there is a chatty reminiscence of the old days at Wicken Fen by that veteran collector, Dr. J. S. Sequiera.

In the *Ent. Mo. Mag.* for April Mr. A. E. Carter describes a Dipteron *Hilaria aeronetha*, Mik., as new to the British List. It had been in his collection unidentified since July 1907, when it had been taken at Comrie in Perthshire. It is closely allied to both *H. interstincta* and *H. maura*. In a footnote Mr. Collin remarks that the species was reported many years ago from Leith Hill and from Tunbridge Wells.

We hear that the acceptance of the collection of British Lycænids made by the late Dr. Gerald G. Hodgson, of Red Hill, was only provisional on the part of the Trustees of the British Museum. No guarantee was forthcoming that the collection would remain intact, and in consequence the offer was withdrawn. We believe that the authorities of Cambridge have been offered the collection and have accepted it. The great national collection is thus the loser of a very fine exposition of variation in one of the most attractive families of the Lepidoptera. Would it were not so starved by finance, with its consequence, want of adequate accommodation for the collections and for students.

A perusal of the section devoted to Lepidoptera in the current parts of *Verhandlungen der k. k. zoologisch-botanischen Gesellschaft in Wien* has recalled to our mind the bare, non-informational system of loose nomenclature, which is gradually creeping into our entomological literature. If we are to have trinomial names, why not multinomial, and so back to the old pre-Linnæan times when species had no definite names, but were designated by phrases, very diffuse and indefinite. But it is not so much at the use of the multinomial names that we are carping, as at the bare and empty phrases that are being used, e.g., *Erebia glacialis alecto pallida*. This hypothetical name does not give us the information it should do. By putting it thus: *Erebia glacialis* var. *alecto* ab. *pallida*, we understand that *alecto* is the name of a race

of the species *E. glacialis*, and that *pallida* is an aberration of the race *alecto*, whereas if it were put *Erebia glacialis* ab. *pallida* it would mean a pale aberration of the typical form of the species. To omit the abbreviations, var., ab., etc., seems to us quite as bad as the most reprehensible expressions like *Loweia* var. *gordius*, etc., which have recently crept into our magazines. These slipshod methods of writing ought never to have been allowed to come into our science. Science, to be really science, admits of no slovenly methods; it must be exact, not only in its essentials, but in its use of terms, which are the handles, as it were, of its essentials.

SCIENTIFIC NOTES AND OBSERVATIONS.

BIRDS EATING BUTTERFLIES, ETC.—In the *Entomologist's Record* for June, 1903, I gave some notes on the above, and it may be of interest to record the following observations made since:—On the evening of August, 1907, at the foot of Beachy Head, Sussex, I was interested in the movements of a pair of stone-chats, which kept flying to and fro between an elder tree and the long grass, 30 feet away. Approaching the tree, the parents and a family of fully-fledged young ones flew away. On examining the ground under the tree, I found it strewn with the wings of *Agriades coridon*, which is very plentiful there, resting on the long grass, etc. On other occasions I have observed both a cuckoo and a kestrel doing the same. In the New Forest, on March 31st last, I saw a pair of stone-chats catching and eating *Brephos parthenias* in the brilliant sunshine. They were not, however, always successful in their attempts. On August 12th, 1908, at Eastbourne, I watched sparrows in a garden systematically catching *Pieris brassicae*, but on the appearance of a specimen of *Colias edusa*, although they made the attempt, they quite failed to catch it. On July 28th, 1909, on Herne Bay Station, Kent, I watched house sparrows, who had their nests in the ornamental tops of the platform posts, feeding their young on *Epinephela jurtina* (*janira*), which they kept bringing from an adjoining field. The wings were nipped off and dropped on to the platform. On September 16th, 1909, at Eastbourne, and following nights, I watched a kestrel hawking for moths round the electric lights by the bandstand after dark, and during the performance by the band.—C. W. COLTHRUP, 127, Barry Road, East Dulwich. April 28th, 1911.

ON A SWIMMING HABIT IN WASPS.—While on a visit to North Wales in August, 1909, wasps were very plentiful, and on the 19th, in the pass of Aberglaslyn, I was sitting on a rock close to the water's edge watching the leaping trout, when my attention was drawn to a number of yellow insects which kept settling on the water, swimming about, and then quite easily raising themselves from it and flying away. They were obviously catching insects on the surface of the water, and on some of them swimming close to where I was, I was surprised to find they were specimens of the common wasp. I know nothing of this Order of insects, and the habit may be well known, but I thought it worth recording.—ID.

ABUNDANCE OF ACRONYCTA PSI AND A. MEGACEPHALA, AND SCARCITY OF CATOCALA NUPTA IN 1910.—At East Dulwich the imagines of *A. psi* and *A. megacephala* were extremely plentiful last year, as also were

the larvæ of both species later on, but those of the former species were badly stung by the common Dipteron, and it was not till the end of the season that I was able to get larvæ that produced healthy pupæ. *C. nupta*, usually a common insect with us, was on the contrary, as far as my experience went, conspicuous by its absence.—ID.

AN AGGRESSIVE HABIT OF MOTHS.—Monsieur J. de Joannis records in the "Bulletin of the French Entomological Society" for March last, an interesting and curious observation on two species of *Heterocera*. The two species in question are *Arcyophora longivalvis*, Gn., and *A. zanderi*, Feld. M. de Joannis has a nephew on the West Coast of Africa, who was surveying a district at Diondougou in Guinea, and who told his uncle what had taken place. Whilst on the survey his hut communicated with a corral, where his horses were picketed in the open. On one night about March 15th, 1909, he was awakened by the horses kicking and neighing, he therefore called to his boys to go and quiet the animals but they replied that there was nothing the matter, it was only the flies teasing the horses and that it would soon end. The trouble, however, continued and at last he himself went to see what it was; the moon was brilliant and he could see distinctly the "mouches" which he tried to catch in a small net he had brought with him. This, however, made the horses more restive, so seeing the insects settle on the horses eyes—as he says "sur la glande lacrymale"—he noticed one rub itself against the picketing stake, and then he found a crushed moth, and by holding the horses head with one hand and using the net with the other he succeeded in taking several specimens. He then took a very bright lamp to try and attract them away from the animals but without avail. After having settled for a moment on the eyes of the horses the moths would fly and rest on the mud walls of his hut where they would stay ten or fifteen minutes and allow him to examine them closely with his lantern, remaining quite immovable whilst their antennæ would vibrate with an extraordinarily rapid movement, they would then attack again the eyes of the horses. Sometimes he himself felt the insects dash at his own eyes, but as he wore glasses it did not matter. So sudden, however, was the attack that he had not time to lift his hands before they had flown away again. This went on for five nights in succession, after which it ceased, as his "boys" told him it would. I am sure M. de Joannis will forgive us for recording so interesting an observation in *The Record*.—G. T. BETHUNE-BAKER, (F.E.S., F.L.S.), 19, Clarendon Road, Edgbaston, Birmingham. May 20th.

NOTES ON COLLECTING, Etc.

HYBERNIA LEUCOPHAEARIA, ETC.—In answer to Mr. Turner's enquiry (p. 98) I send my notes on *Hybernia leucophaearia*. In 1907 I took accurate notes of all specimens of this species seen in Richmond Park, 132 in number. The different forms occurred in the following proportions, pale form 68 per cent., black form 21 per cent., intermediate or difficult to classify 5 per cent., var. *marmorinaria* 6 per cent. I also took notes on *Nola confusalis* and its var. *columbina* in Epping Forest in 1907 and 1908. In the former year I took 36 of the type and 9 of the variety, in the latter year, 26 of the type and 6 of the

variety. Roughly speaking this gives a proportion of 80 per cent. typical and 20 per cent. melanic specimens. The black form of *H. leucophaearia* is always more difficult to see than the paler forms. In the case of *Nola confusalis* I have written in my diary that once where the two forms were resting side by side on a dark beech trunk, the conspicuous appearance of the pale one compared with the melanic one was most noticeable. On oak or hornbeam some of the pale ones are as hard to see as the dark forms, but none of the dark ones are ever as conspicuous as some of the pale ones. This year I have seen 34 specimens, of which 30 were of the pale form and 4 var. *columbina*.—E. A. COCKAYNE (F.E.S.), 16, Cambridge Square, W. May 8th, 1911.

EPICHNOPTERYX UNDULELLA.—It is stated in Barrett's *Lepidoptera of the British Islands*, Vol. 2. p. 353, that an example of this species was contained in the series of *Epichnopteryx retiella* in the collection of the late Dr. Mason. This eastern insect is quite easily overlooked, more especially as it appears quite early in the year, during the latter half of April and the beginning of May, flying in the sunshine over sand hills. *Epichnopteryx undulella* may possibly occur in the British Islands, and should be searched for in the Breck District, and elsewhere in sandy localities in East Anglia. Its district in Europe is less Eastern than that of *Eupithecia extensaria*, and of *Noctua subrosea* now extinct in this country.—(HON.) N. C. ROTHSCHILD (M.A., F.E.S.). May.

DARK FORMS OF HYBERNIA LEUCOPHAEARIA.—In the April number of the *Entomologist's Record*, Mr. Turner, commenting on a note of mine, raises the query as to whether the uniformly dark form of *Hybernia leucophaearia* still occurs at Richmond Park, and in what percentage this form occurs compared with other forms. So far as my experience of this year goes, I can testify that the dark form of this species still occurs in this locality, and that it does not appear to be restricted to one particular part of the Park as was the case at the time to which Mr. Turner refers. I found that the darker forms occurred wherever *H. leucophaearia* was met with. In these darker forms there is a good deal of difference in the intensity of the coloration, and one rarely meets with the extreme form in which the colour is so uniformly dark as completely to obscure the usual markings. With regard to the percentage of the darker forms, I should say that they occurred in the proportion of one to three of the lighter forms. I also took a good few *H. leucophaearia* at Wimbledon Common, and on comparing notes with Mr. Gadge, who spent some time there this season working for this species, we came to the conclusion that the darker forms were more common there than at Richmond Park. *Ab. marmorinaria*, Esp., was not uncommon, both at Wimbledon Common and Richmond Park, but of this form my finest specimens are from the latter locality.—J. ALDERSON, 14, Dafforne Road, Upper Tooting, S.W. May.

A SHORT NOTE FROM SICILY.—I send you a postcard from Randazzo, in the neighbourhood of Etna, just to show you I am alive. Between the town and the snow, which is more or less present the whole year on the mountain, is a grand entomological hunting ground, and I have had the good fortune to get two sunny days together. It has not so far been at all sunny in so-called "Sunny Sicily" during the present month of May. Just now the only species out in this locality are *Euchloë damone*, mostly males, *Thais polyxena*, getting over, *Glaucopsyche cyllarus*, in very fine condition, *Euchloë cardamines*, males worn and

females scarce, and *Eugonia polychloros*, worn. *Aglais urticae* larvæ in plenty, and thousands of small larvæ of *Malacosoma franconica*. The commonest butterflies are *Anthocharis belia* var. *ausonia* and *Pontia daplidice*, which are everywhere, but getting worn.—J. PLATT BARRETT (F.E.S.) May 23rd.

LEPIDOPTEROUS NOTES AROUND BIRMINGHAM.—During the last month I have been trying to collect around this district, and have visited Earlswood, Umberslade, and Wood End, but have taken very little. April 1st brought me one *Hybernia leucophaearia* at rest, and six *H. progemmaria* to the net, whilst sugaring only brought *Taenioampa pulverulenta*, one *T. incerta*, and two *Orrhodia vaccinii*. At sugar on the 8th we got more *O. vaccinii*, whilst *T. stabilis*, *T. pulverulenta*, and *Scopelosoma satellitia* were fairly plentiful. *T. gothica* was scarce, only one *T. incerta* in company with two *H. progemmaria* were attracted by the sweets prepared for them. On the 15th the same species were again taken, and in addition one *Pachnobia rubricosa* at rest on a little willow outside the wood. It seems to me that *T. rubricosa* and *T. gracilis* keep out of the woods, preferring instead the lanes near by. On the 16th I took *Caradrina morphens*, and when I got home thinking it was a *T. pulverulenta*, I was hesitating to set it when I noticed the silvery underwings, and had a pleasant surprise considering the time of the year. On April 17th I went to the Wye Valley with my two sons, and between us we searched from eight to ten miles of palings and used our nets as much as we could, and out of a total of twenty hours hunting we secured one *T. gracilis* at rest on moss, two Lithosiids, one *Tephrosia bimularia* of very large size, two black narrow winged Pugs and two other Eupitheciids as yet unnamed, whilst we caught on the wing one *Anticlea badiata*, one *Lobophora carpinata*, and one *A. nigrofasciaria*. On the 23rd we took our first larvæ of *A. caja* just fresh from their moulting, whilst a week later we took two *Selenia bilunaria*, several *Cerastis vaccinii* again, and one larva of *Aplecta nebulosa*. This is a very poor result for a month's work, but at places where last year I took hundreds by searching only, this year, using all means at our disposal, my two sons and I have taken just twenty-four insects.—T. T. FOUNTAIN, Darwin Street, Birmingham. May 8th, 1911.

Geneva's Butterfly Week.

By P. H. MUSCHAMP, F.E.S.

Geneva's butterfly week began on the May 13th, and terminated on May 22nd. Three years ago the Geneva Lepidopterists' Society were notified by their treasurer that their last publication had run them so far into debt, that there was no possibility of producing a *Bulletin* that year. It was then, that one of the members had the brilliant idea of filling the cash box from profane pockets by inviting the man in the street to pay a franc for the privilege of seeing what interesting things butterflies really are, and of comprehending what this strange madness, that causes respectable elderly men to run about the country in the glaring sun and to furtively climb up lamp-posts on moonless nights, can show to excuse itself. This first exhibition was a distinct success, the public were interested and willingly gave the mite which enabled the young society to produce a well illustrated *Bulletin*.

The funds being once more at a very low ebb this year, it was

decided to call again upon the public to help us, and our "butterfly week" is the happy result. This exhibition of lepidopterous insects, though specially meant for the uninitiated and therefore abounding in beautiful exotics, was none the less extremely interesting to the local wielders of the green net. The room which is about 70 by 35ft was tastefully decorated. All around three sides of it were sloping stands covered with drawers placed at a convenient angle and at a convenient height for observation. Down the centre of the room were inverted "V" stands similarly laden, and the ends of these "V" stands were so cut as to admit of breeding cases of living larvæ being exhibited. The walls were covered with photographs, and with prints and zoological specimens lent by the Zoological Society. Here and there were to be seen, what are called "tableaux," that is, big show cases filled with heteroclite, heterogeneous insects, fearfully and awfully arranged in the shape of flowers or geometrical figures, forming a heterodox whole to make women wonder and children gaze with bated breath.

The drawers that attracted the public most were those supplied by Messrs. Frühstorfer and Oberthür. The former of these gentlemen exhibited 26 large drawers, each of which contained a splendid series of one or other of the "show" insects. The first two of these drawers, taking them in order as we entered the room, were filled with thirty *Papilio blumei* and twenty *P. aegeus* from different localities. Thirty magnificent specimens of *Tcinopalpus imperialis* filled the next, then came cases of those gloomy looking savages, *P. payeni*, followed by *Hebomoia glaucippe* and about a hundred *Tachyris nero*, with many interesting varieties and aberrations. The next drawer, filled with *Ixias pyrene*, about 130 of them, was particularly worthy of interest on account of a beautiful gynandromorphic specimen having right forewing and left hindwing ♂, left forewing and right hindwing ♀, a perfect example of "X" gynandromorphism. Drawers filled with series of *Hestia*, *Ideopsis*, *Euploea*, *Tachyris*, *Kallima paralecta*, *Hypolimnas*, *Rhinopalpa*, *Stichophthalma frühstorferi*, *Caligo* and *Zeuwidia*, completed Mr. Frühstorfer's really splendid show. M. Charles Oberthür had most kindly sent from Rennes fourteen drawers, including some fine *Ornithoptera*, to wit, *O. alexandrae*, *O. paradisea*, *O. schoenbergia*, *O. meridionalis*, *O. victoriae*, *O. regis*, *O. chimaera*, *O. croesus* (12), *O. priamus*, *O. urvilliana*, and *O. troyana*. To these succeeded drawers of the most beautiful of the Morphos. Among some Satyrids was a wonderful specimen of *Zelotypia stacyi*, to see which, in my opinion, it was well worth the eight hours' journey from Stäfa to Geneva. With Mr. Morton's insects were some fine Satyrids and a very beautiful specimen of *P. weiskei*.

Dr. Reverdin showed long series of Swiss and other Hesperids, with numerous photographs of the male genitalia of forty-six species, including ten varieties of *Hesperia alveus*. Highly interesting were photographs proving clearly that *H. malvae*, *H. melotis* and Rambur's *H. fritillum* (generally confounded with *H. malvae*), are all distinct species. Thanks to these photos we can assert that *Gegenes lefebvrei* is distinct from *G. nostradamus*, *Erymnis boeticus* from *E. althaeae*, and *H. sibirica* from *H. andromedae*. Dr. Reverdin's work with the genitalia of these butterflies is doubtless of the greatest scientific value. He has grouped his Skippers according to their genitalia, and they all fall into very natural groups. The only revolutionary group

is that of *H. cacaliae*, *H. centaureae*, *H. andromedae*, *H. sibirica*, *H. alpina*, and *H. sidae* (!).

Dr. Courvoisier had sent a very interesting and most carefully worked out theory relative to the systematic variation and aberration of the Lycænid group, illustrated by a large number of photographs. One hopes that Dr. Courvoisier intends to publish these photographs and the notes relative to them. It is impossible to do more than mention Messrs. Courvoisier's and Reverdin's work, in the limited space afforded by this magazine. A part of Dr. Reverdin's notes with excellent plates has already appeared in the *Bulletin de la Soc. Lep. de Genève* for last June, and the rest will appear in due course in the same *Bulletin*.

Monsieur Lacreuzé showed a certain number of giant photographs of the genital organs of a few Hesperids, and several greatly enlarged photographs of the insects themselves.

A long series of Vanessids produced by heat and feeding experiments, together with the complete biologies of several Lasiocampids were Dr. Pictet's interesting contribution to the exhibition. Monsieur Mazel had covered 180 square feet of space with species of the genus *Papilio*, all different. Monsieur Hellé exhibited butterflies from the Celebes, and Monsieur Pastel had sent a collection of moths and butterflies from the Picarde Artésienne, showing a considerable variation in Pierids. Professor Blachier provided the genera *Heliconius* and *Syntomis* of South America. Among a few moths exhibited by this gentleman we noted three superb *Drurya antimachus*, and in a couple of drawers containing *Lithocolletinae* and *Nepticulidae* were a number of interesting species from the Geneva district, including the smallest of moths *N. microtheriella*. Monsieur Culot showed a number of the beautifully coloured plates, which he is preparing for his own work *Noctuelles et Géomètres d'Europe* and for M. Oberthür's *Lépidoptérologie comparée*, which we consider the finest work of its kind ever produced. Monsieur Culot also exhibited a collection of Geometrids.

Monsieur Mongenet's Burnets and Monsieur Guye's Erycinids were very interesting, especially the former's series of *Anthrocera carniolica* var. *jurassica*, a most beautiful insect. Mr. J. W. Harrison sent from England a drawer of *Biston* hybrids and a certain number of living larvæ. The *Bistons* exhibited were *B. pilzii* (Stdf.), *B. hnmii* (Obthr.), *B. denhami* (Harrison), *B. helenae* (Hrsn.), *B. langii* (Hrsn.), and *B. harrisoni* (Hrsn.). Mr. P. A. H. Muschamp showed a drawer of melanising butterflies and moths, among which were some practically spotless *Apatura ilia* ab. *iliades* and *A. iris* ab. *iole* and a black ab. of *A. (Zyg.) viciae* (*meliloti*). A number of little Geneva schoolboys, who have formed a small society of their own, sent a couple of drawers of aberrations that did honour to their activity. Remarkable among these abs. were a very dark specimen of *P. memosyne*, from Berisal, a *Dryas paphia* ab. *nigricans* and a *C. hyale* ab. *nigrofasciata*. In Monsieur Rehfoüs' exhibit was a *P. apollo* ab. *novaræ* from the Salève, Geneva.

Very few insects, other than Lepidoptera, found a place in the "Bâtiment Electoral" kindly lent to the Society by the town authorities. There were a few *Phylla* and other examples of mimetism. I must not, however, omit mentioning M. Jullien's fine collection of

Chrysidés, among which were 60 *chripostigma*, an insect, which before M. Jullien found it, was not supposed to exist in Switzerland.

Judging from the attendance on Saturday afternoon and the whole of Sunday, I may safely assume that the Geneva butterfly week was a decided success. Besides the members of the Geneva Lep. Soc. and the exhibitors, who with the exception of Messrs. Oberthür and Harrison, were in full force, I had the pleasure of noting many well-known entomologists, including Messrs. P. J. Barraud (England), Horatio Querci and Madame Querci (Italy), Guédât (Tramelan), Von Buren von Salis and Major Vorbrodt.

On the evening of the opening day a crowded room at the Athénée heartily applauded Mr. Merton's entertaining and instructive lecture on "An Entomological Voyage in Sumatra and Ceylon." The lecture was illustrated by a large number of lantern slides. In the course of the week lectures were given by Monsieur Oberthür on the "History of Entomology and the Discoveries of Great Entomologists," by Dr. Pictet, on the "Instinct, Intelligence and Habits of Insects" according to J. H. Fabre, and lastly, a lecture by Dr. Reverdin on the "Anatomy of Lepidopterous Insects."

I should like to add by way of conclusion that such a meeting as this is bound to be a success, bound to be of the greatest interest to all who were able to be present at it. Almost all entomological societies cover so large a ground that it is practically impossible for any one man to take a keen interest in every subject under discussion. A meeting of zoologists must be a very tower of Babel, whereas a meeting of students of one special branch of natural history is not unlike an Esperanto congress, in which everybody is enthusiastic, for all speak the same tongue and have the same ends in view.

SOCIETIES.

SOUTH LONDON ENTOMOLOGICAL AND NATURAL HISTORY SOCIETY.—*March 9th.*—JAMAICAN BUTTERFLIES.—Mr. A. E. Gibbs exhibited a collection of Lepidoptera from the Cuna-Cuna Pass, Blue Mountains, Jamaica, including the rare *Papilio homerus*, and fine local forms of *Aganisthos odius*, *Gynaecia dirce*, *Hymenitis diaphanus*, *Calisto zaugis*, *Adelpha abyta*, etc. A NEW LARVA CAGE.—Mr. Newman, a new kind of larva cage, introduced by him after many months' experience. It was of waxed cardboard, and he stated that foodplant kept well in it. NOLA ALBULALIS, VAR.—Mr. Adkin, a form of *Nola albulalis*, in which the dark brown band was reduced to a dark narrow stripe only, giving a much more delicate appearance to the insect. SYNTOMID MIMICS.—Mr. W. J. Kaye, several Syntomid species of the genus *Pseudospher* and the wasp models which they so closely mimicked, in build, shape of antennæ, legs, colour, etc. GRAPHIPHORA AUGUR, VAR.—Mr. Sheldon, the two specimens of a Noctuid about which much discussion as to their identity arose many years ago, and which were named *Agrotis helvetina*. They are now regarded as pale, putty-coloured examples of *Graphiphora augur*. VARIETIES OF EPINEPHELE TITHONUS AND CAMPTOGRAMMA BILINEATA.—Mr. Blenkarn, a pale xanthic form of *Epinephele tithonus* from the Isle of Wight, and a fine dark clouded example of *Camptogramma bilineata* from the same place. *March 23rd.*—Mr. Stanley A. Blenkarn, of Becken-

ham, was elected a member. **XYLINA CONFORMIS**.—Mr. W. J. Kaye exhibited a series of *Xylina conformis*, all but one from Glamorganshire, and remarked on its occurrence and distribution. **DISEASE AMONG BEES**.—Mr. Newman called attention to the devastation caused by some hitherto unknown disease among bees in the South of England. It was most contagious, and scarcely a hive remained over a large area. **SHORT NOTES ON BREEDING, ETC.**—Mr. Buckstone, a bred series of *Apocheima (Nyssia) hispidaria*, and gave particulars as to breeding. He also contributed notes on the occurrence of numerous dwarf examples of *Hybernia defoliaria* at Richmond, the pairing of *H. marginaria* ♂ and *H. defoliaria* ♀, the delayed wing development of *Chesias rufata*, the pupation of *Triphaena pronuba* after hibernation without feeding, the finding of the ova of *Spilosoma menthastris* on the shell of a living snail, and the occurrence of batches of ova of *Hadena pisi* on a small plum tree. Mr. Newman said that *A. hispidaria* readily pupated in two inches of soil, if the bottom of the cage was the concrete floor. **VARIETIES OF ARCTIA CAJA**.—Mr. R. Adkin, two varieties of *Arctia caja* from Yorkshire larvæ. One with whole of forewings dull smoky brown with very much diminished white markings, the hindwings black with only a dull yellow and some ill-defined patches; the other with a concentration of the lighter colour of the forewing towards the base, and of the darker colour towards the apex, while the hind wings were bright orange red with much reduced black markings. *April 13th*.—Miss Alderson, F.E.S., of Worksop, was elected a member. **SWISS COLEOPTERA**.—Mr. Ashdown exhibited about 100 species of conspicuous Coleoptera taken by him in Switzerland during July, 1910. **COLEOPTERA**.—Mr. Turner, living specimens of *Agapanthia asphodeli*, sent to him by Dr. Chapman from Hyères. **NORTHERN LEPIDOPTERA**.—Mr. Adkin, an undetermined Agrotid from the Isle of Lewis, a *Sciaphila* from Unst, probably referable to *S. colquhounana*, and a *Pyrameis cardui* in which the row of spots on the hindwings was developed into an irregular blotch. **BREEDING OF APHANTOPUS HYPERANTHUS**.—Mr. Newman, on behalf of Mr. Oliver, a bred series of *Aphantopus hyperanthus* which had emerged in January and February. The larvæ had fed all the winter on *Poa annua* until pupation. **RACES OF BRENTIS SELENE**.—Mr. Hemming, series of *Brenthis selene* from Warwick and Sussex; the former were a much larger race in both sexes. *April 27th*.—Mr. P. A. Buxton, of Tonbridge, was elected a member. **PUPA CASE OF ÆGERIA ANDRENEFORMIS**.—Mr. Tonge exhibited a pupa case of *Egeria andrenaeformis* as found *in situ* projecting from the burrow after the emergence of the imago. He had found four such cases in nature. Mr. Kaye, a similar exhibit with the living imago which had emerged in confinement. **A GYNANDROMORPH**.—Mr. R. Adkin, a remarkable gynandrous specimen of *Bombix quercus*, with left antenna and wings ♂ and right antenna and wings ♀, but of the ♂ colour. It was from the Capper collection. **AN ABERRANT LARVA**.—Mr. Newman, a larva of *Callimorpha dominula*, black in colour, without the yellow markings. **A RARE DIPTERON**.—Mr. Andrews, two examples of the recently identified Dipteron, *Hilaria æronetha*, from North Kent. **NORTH AMERICAN PAPILIONIDÆ**.—Messrs. Edwards and Turner, several species of *Papilio* from North America from the *machaon* and *glaucus* groups. *May 11th*.—**APLECTA NEBULOSA**.—Messrs. Harrison and Main exhibited a long series of *Aplecta nebulosa* and its

varieties, being a bred series from *robsoni* ♂ and *thompsoni* ♀, which did not conform to the anticipated Mendelian proportions; 26 per cent. were grey, 42 per cent. *robsoni*, and 32 per cent. *thompsoni*, i.e., *robsoni* is not hybrid, and the grey and *thompsoni* forms are not pure. HYBRID BISTON.—Messrs. R. Adkin, Harrison and Main, and L. W. Newman, hybrids of *Biston hirtaria* and *Nyssia zonaria*. It was stated that ♀s had not yet been obtained in the cross *B. hirtaria* ♂ and *N. zonaria* ♀. Mr. Adkin read detailed notes on the characteristics of the hybrid specimens shown by him. APHANTOPUS HYPERANTHUS VAR. ARETE.—Mr. Gough, specimens of the *arete* form of *Aphantopus hyperanthus* from Kent and Surrey, together with intermediate and type forms. May 25th.—LIVING SCORPION AND YOUNG.—Mr. Hugh Main exhibited a living ♀ Scorpion just received from the West Indies. It had two young on its back where, it was stated, the parent deposited them, and where they usually remained two or three weeks. REFERENCE COLLECTION OF COLEOPTERA.—Mr. W. West (Greenwich) called attention to the Society's collection of Coleoptera, which had now been completely reset and cleaned, and to which Messrs. Ashby and Ashdown had recently made numerous additions. ABERRANT NYSSIA ZONARIA.—Mr. R. Adkin, a bred series of *Nyssia zonaria* reared from Wallasey, and called attention to the laying over of numerous pupæ for two winters, and to the much paler general coloration of a number of the specimens. AN ANT MIMIC.—Mr. Blenkarn, the Coleopteron, *Myrmedonia funesta*, and the ant it cohabited with, *Formica fuliginosus*, from Sandown.

CITY OF LONDON ENTOMOLOGICAL SOCIETY.—April 4th.—RUSH BLOSSOM VERSUS "SUGAR."—Mr. H. M. Edelsten exhibited series of *Noctua baia* and *Cidaria immanata*, taken in Epping Forest in July, 1910, at rush blossom on an occasion when sugar failed to attract lepidoptera. April 18th, 1911.—ABRAXAS GROSSULARIATA ABS.—Mr. Huggins, two specimens with black nervures on hind wings, and *Eunomus alniaria* with melanic tendency. Mr. Huggins also exhibited a somewhat dark example of the latter species from Gravesend, and stated that it seemed to be getting gradually darker in this district. BOMBYX RUBI.—Mr. J. Riches, 15 bred specimens, all ♂s, being all that emerged out of a brood of about 40 larvæ. TRIPHENA COMES VARS.—Mr. V. E. Shaw, a long series bred August, 1903, from Findhorn ova, including vars. *clarkii*, *nigrescens*, *pallida*, *rufescens*, and *curtisii*, and also forms intermediate between *clarkii-nigrescens* and *pallida-rufescens*. May 2nd.—TRIPHAENA PRONUBA.—Mr. G. R. Baldock exhibited a series from Galley Hill, Essex, 1910, the dark forms predominating and many specimens showing almost unicolorous blackish brown superiors. Mr. P. H. Tautz, long series from Pinner, Studland Bay and Hampstead; those from Pinner included many with grey costal streak, while the Dorset specimens included many red examples and one with straw coloured inferiors. LEPIDOPTERA FROM EXMOOR.—Mr. J. E. Gardner, a number of Lepidoptera taken in August, 1910, including *Xylophasia scolopacina*, common at ragwort, *Toxocampa craccæ*, *Asthena blomeri*, *Abraxas sylvata* (*ulmata*), *Cidaria populata*, and a number of micros in which latter the district appeared to the exhibitor to be particularly rich. Mr. G. H. Heath, dark *Gnophos obscurata*, *Cleora glabraria*, and *Cidaria silaceata*, from Exmoor, 1910. HYBRID NYSSIA ZONARIA AND BISTON HISPIDIARIA.—Mr. L. W. Newman, a series of hybrids (♂s) ex *Nyssia zonaria* ♀ and *Biston hirtaria* ♂, also hybrid ♀ with narrow pointed wings, ex

Nyssia zonaria ♂ and *Biston hirtaria* ♀. SMERINTHUS POPULI, VAR. AND GYNANDROMORPH.—Mr. L. W. Newman, *S. populi* var. *pallida*, and a ♀ suffused with pink; also a fine gynandromorph, one side typical ♂ and the other pink form of ♀; the body showed both colours evenly divided, and the legs corresponded in colour to that side of the body on which they were situated. ANGERONA PRUNARIA LARVAE—RESPONSE TO ENVIRONMENT.—Mr. C. P. Pickett, pale larvæ fed under white muslin, darker reddish larvæ from pink muslin sleeves, and still darker forms from red sleeves. *May 16th*.—LUPERINA GUENEËI.—Mr. B. S. Williams exhibited two examples of the type and one of var. *murrayi*, from St. Adne's-on-Sea. RETARDED EMERGENCE OF ENDROMIS VERSICOLOR.—Mr. A. W. Mera, imagines that had gone through two winters in the pupal stage.

LANCASHIRE AND CHESHIRE ENTOMOLOGICAL SOCIETY.—*March 21st*.—PAPER.—Mr. G. H. Watson of Manchester gave a lecture on "The Saturniidae, a Group of Wild Silk Moths." After reviewing the classification of the group the lecturer detailed the work that is being done, by himself and others, in order to discover new sources of supply of silk, and also to strengthen the races of silk producing moths cultivated in Europe and Asia. The true silk moth is not known as a wild insect, although in China there are records of its cultivation for upwards of 4,000 years. Occasionally disease ravages the bred races of the insect, hence the necessity to introduce new blood. So far hybridisation has not been very successful, thus the efforts of practical entomologists are directed towards finding out and investigating new species of wild moths whose larvæ make a cocoon of serviceable silk. Mr. Watson showed the Japanese silk moth, *Antheraea yama-mai*, and also the Tussor, or Indian, silk moth, *A. mylitta*, as instances of wild insects capable of culture and yielding a large quantity of valuable silk; *Saturnia pyrautorum*, the moth whose larva yields the gut used for fishing lines, the production of which forms the staple industry in the Island of Hainan (China), also came in for attention. The lecture was illustrated by Mr. Watson's collection of twenty large drawers containing many very rare species arranged with the silk they produce, the whole forming an educational exhibit of exceeding interest. *April 9th*.—GRAPHOLITHA NÆVANA AND G. GEMINANA.—Mr. Wm. Mansbridge gave an address on *Grapholitha naevana* and *G. (? var.) geminana*, in which he dealt with the various forms of these insects in Lancashire and Yorkshire. He stated that in the West Riding the two species were in the imago state at the same time in localities near to one another, where the holly form (*naevana*) and the bilberry form (*geminana*) occurred. At Delamere, however, the bilberry feeder was worn at the time the holly feeder was beginning to emerge in the district round Liverpool. Although *naevana* from holly had a variation like *geminana*, it was never so pale as the latter, and the moth from bilberry was always smaller in size; *geminana* did not possess a black variation like *naevana*, but a very small percentage were unicolorous dark grey. Mr. F. N. Pierce then described the results of his examination of the genitalia of the two species; after critically comparing a long series of preparations of both males and females he had failed to distinguish any point of difference. In discussion by the members it was held that the negative character of Mr. Pierce's results was not sufficient, in this instance, to sink *geminana* to the level of a

variation of *naevana*. *SELENIA BILUNARIA* VAR.—Mr. Wm. Mansbridge exhibited a long series of *Selenia bilunaria* comprising very dark speckled forms and a new variation of a uniform dark ferruginous brown colour, for which he proposed the varietal name *brunnearia*. EXOTIC COCKROACH.—Mr. C. E. Stott shewed a specimen of *Panchlora nireca*, L., an exotic cockroach, taken on the wing at Trentham, N. Staffs., in October, 1910.

THE BIRMINGHAM NATURAL HISTORY AND PHILOSOPHICAL SOCIETY, ENTOMOLOGICAL SECTION.—*January 16th*.—Mr. G. T. Bethune-Baker referred to the great loss to entomological science by the death of Mr. J. W. Tutt. A vote of condolence with his family was passed, all members standing in their places. LEPIDOPTERA FROM WICKEN FEN.—Mr. Lloyd Chadwick exhibited many species, including *Meliana flammea*, *Lencania impudens*, *L. straminea*, *L. pallens* ab. *rufescens*, *Apamea gemina* ab. *remissa*, *Herminia cribralis*, *Tapinostola hellmanni*, *Collix sparsata*, *Nascia ciliialis*, *Aplecta advena*, and *Plusia festucae*. LEPIDOPTERA FROM CORNWALL AND DEVON.—Dr. Beckworth Whitehouse, numerous species, including *Polia nigrocincta*, *Dianthoeicia barrettii*, *Heliothis peltigera*, *Epunda lichenea*, *E. nigra*, and *Chariclea umbra*. LEPIDOPTERA FROM HENLEY-IN-ARDEN.—Mr. G. B. Manly, many species, including *Trochilium crabroniformis* (*bombeciformis*), *Drepana hamula*, *Apamea ophiogramma*, *Notodonta dromedarius*, *Cymatophora duplaris*, *Orthosia suspecta*, *Epunda lutulenta*, and *Aplecta herbida*. TERATOLOGICAL SPECIMENS.—Mr. G. T. Bethune-Baker exhibited the following:—*Erebia melampus*, with left hindwing short; *Melitaea athalia*, with right hindwing short; *Erebia ligea* var. *adyte*, with right hindwing about half size; *Erebia ceto*, without a head. The last specimen was swept off a flower, and possibly the head had been seized by a spider. The insect fluttered quite briskly nine hours afterwards. SCARCE COLEOPTERON.—Mr. H. Willoughby Ellis, specimens of the scarce beetle *Cathormiocerus socius*, from the Isle of Wight, May, 1910. *February 30th*.—HYBRIDS.—Mr. W. Bowater exhibited hybrids between *N. zonaria* × *B. hirtaria* bred from Yorkshire larvæ sent by Mr. J. W. Harrison. Those bred from *Zonaria* ♂ and *hirtaria* ♀ were fertile and those from *Zonaria* ♀ and *hirtaria* ♂ were infertile. The hybrid ♀s were semi-apterous. PIERINE BUTTERFLIES.—Sir G. H. Kenrick gave a lecture on the *Pierinae* group of butterflies and explained their classification. He described the various types of ova, larvæ, pupæ and imagines, and also discussed the food plants and the structure of the antennæ, as well as the special scales which occur in certain species. The peculiarities of Pierine distribution and migration were explained at considerable length. The lecture was illustrated by a long series of specimens.

THE ENTOMOLOGICAL SOCIETY OF LONDON.—*March 15th*.—The Rev. F. D. Morice, President, in the Chair.—QUEEN ANTS IN NESTS OF OTHER SPECIES.—Mr. H. Donisthorpe exhibited a nest of *Lasius umbratus*, Nyl., which had accepted a ♀ *L. fuliginosus*. On December 13th a dealated ♀ *L. fuliginosus* was put into a small plaster nest with a dozen of the *umbratus* ♀s; she was slightly attacked, but not in any way injured, and tried to conciliate the ♀s by stroking them with her antennæ; she protected her waist by crossing the back legs over it, and her neck by pressing the head back against the thorax. The *umbratus* ♂s were increased to over twenty, and on December 20th the *fuliginosus* ♀ and all the ♂s were introduced into the big nest.

She endeavoured to join the *umbratus* where they were most numerous and some of those that had previously been with her protected her when any of the others endeavoured to attack her. By December 21st she was accepted by the whole nest, and has been treated as their queen ever since. Only one or two ♂s occasionally threatened her with their jaws, though the first *fuliginosus* ♀ placed in the nest was killed. The ♂s killed most of their own virgin ♀s. Mr. W. C. Crawley also exhibited a case containing a colony of *Lasius umbratus* with a *L. fuliginosus* ♀ as queen, and a colony of *L. niger* with a *L. umbratus* queen. He mentioned that deilated ♀s do not always behave as if fertilised, the ♀ in this nest being restless, as the winged ♀s are before the marriage flight. Dr. Chapman began a discussion as to whether this form of "parasitism" was in the long run profitable to the parasitised species, by weeding out the weaker nests. TEMPERATURE EXPERIMENTS ON PUPÆ.—Mr. F. Merrifield exhibited 134 specimens of *Selenia bilunaria*, and read a short paper on the question whether temperature in the pupal stage may affect the size of the imago in some Heterocera. His experiments showed that in every case the imagines from the cooled pupæ are, on the average, larger than those from the forced, the difference ranging in the males from 1.3 to 20.8 per cent. (averaging 13.6 or 13.9), in the females from 0.7 to 9.5 per cent. (averaging 3.3 or 3.6). It seemed to him that the difference was too great and too diffused, embracing, as it does, each sex in five separate families, to be explained in any other way than this: that it is caused by something that, in consequence of the difference in temperature, happened to either those forced or those cooled, or both of them, in the pupal stage. STEREOSCOPIC PHOTOGRAPH.—Mr. H. Main exhibited a stereoscopic photograph of the cocoon of *Chrysopa flara*, opened to show the hibernating larva, and of the larva taken out of the cocoon to show how it lies coiled up with its tail over its head.—GIGANTIC PSYCHID CASES.—Mr. O. E. Janson exhibited larvæ and cases of a Psychid from Amboyna, the cases being beautifully constructed and closely covered on the exterior with small spines, intermixed with larger spines or thorns. The largest of the cases measured 9 ins. in length. PAPER.—Dr. Chapman read a paper on "The British and a few Continental Species of the Genus *Scoparia*," and showed photographs of the genitalia and a drawing to illustrate the neururation. April 5th.—The Rev. F. D. Morice, M.A., President, in the Chair. The following gentlemen were elected Fellows of the Society: Messrs. H. W. Davy, Geelong, Victoria; H. Boileau, Bois de Colombes, France; Rufus Mallinson, Oakland, Windermere. CANADIAN PIERIDS.—Mr. Robert Adkin exhibited, on behalf of Mr. Lachlan Gibb, of Montreal, Canada, three specimens (two males and one female) of a *Pieris* taken by Mr. Gibb at Lost River, Canada, in May 1910, together with series of *P. oleracea* and *P. rapae* from the same and other Canadian localities for comparison. Mr. Gibb asked the opinion of the fellows upon the three specimens, and suggested the possibility of their being the result of natural hybridisation between *P. oleracea* and *P. rapae*. Dr. Dixey was of opinion that the three specimens in question were certainly not hybrids, and even probably only a variety of *P. oleracea*; he pointed out that they differed less from the *P. oleracea* exhibited than did the series of *P. rapae* from one another. EARWIGS FROM HYÈRES.—Mr. W. J. Lucas showed three specimens of *Euborellia moesta*, Géné, received on April 3rd from Hyères, from Dr. Chapman,

with four others of the same species. Both sexes were shown. **BAT AND PARASITICAL DIPTERON.**—Mr. F. Muir exhibited two specimens of the bat *Miniopterus schreibersi*, with ♀ *Ascodipteron* embedded at the base of the ear. He also showed specimens and enlarged drawings of the ♂, ♀, winged and wingless, larva and puparium of the *Ascodipteron*, and read the following note:—"These all came from Amboyna (Dutch E. Indies). The male and winged female hatch out as normal imagines, the female, after finding her host, cuts her way under the skin at the base of the ear, and then casts her legs and wings; her abdomen develops to an enormous extent, and entirely envelopes her head and thorax so that she appears as a "bottle-shaped" grub without legs or head. The larvæ develop in the uterus in the usual pupiparous manner, and when full grown pass out through the vagina and fall to the ground, where they immediately pupate, hatching out as imagines in about thirty to thirty-one days. This species I have named *Ascodipteron speiserianum*, after Dr. Paul Speiser, the authority on this group of flies. I took another species in North Queensland, living on the same species of bat." **FORCED ENODIA HYPERANTHUS.**—Mr. L. W. Newman exhibited, on behalf of Mr. G. B. Oliver of Wolverhampton, a series of *E. hyperanthus* bred during January and February, 1911, from ova laid by a Leamington ♀ in July, 1910. The larvæ were fed in glass-topped metal boxes in a warm room (the fire being out at night). The specimens, though rather small, showed a great tendency to produce large spots both on the upper and under side. **LONGICORN BEETLE FROM HYÈRES.**—Mr. H. J. Turner exhibited living specimens of a Longicorn Beetle, *Agapanthia asphodeli*, sent by Dr. Chapman from Hyères. Commander Walker observed that he had found it in Malta (the only common Longicorn there), and also at Gibraltar in the early spring, and always on asphodel. **May 3rd.**—The death of two Fellows of the Society, the Rev. Canon Cruttwell and Mr. W. A. Rollason were announced. The President informed the Society that the authorities of the Science Museum had persuaded the Government to allow them to take a portion of the land belonging to the Natural History Museum, at South Kensington, for the purpose of erecting new buildings of their own, thereby precluding much-needed additions to the Natural History Museum, especially in the Entomological Department, and on the motion of Mr. G. T. Bethune-Baker, seconded by Dr. Dixey, the resolution which we printed on p. 156 was passed unanimously. Mr. L. O. Waterhouse and Rev. G. Wheeler having given further information as to the damage threatened to the Museum, Mr. H. Rowland-Brown moved that "If a deputation be appointed to wait on Mr. Runciman with regard to this matter, the Officers and Council of the Entomological Society desire to be represented on it." This was seconded by Mr. Bethune-Baker and carried unanimously. **A RARE BRITISH BEETLE.**—Commander J. J. Walker exhibited, on behalf of Mr. Geo. Brown, of Coatbridge, Lanarkshire, living specimens of *Helophorus tuberculatus*, Gyll., hitherto exceedingly rare as a British insect. These were taken by Mr. Brown at the end of April, walking about on bare dry peaty soil on the moors near Coatbridge. **ABNORMAL BEETLE.**—Mr. O. E. Janson exhibited a new and remarkable Lamellicorn beetle, belonging to the *Cremastochilides* group of the *Cetoniidae*, in which the anterior tarsi were unmistakably six-jointed. The specimen was received from Uganda. **VARIETIES OF APLECTA NEBULOSA.**—Mr. A. Harrison exhibited a drawer

of Delamere Forest *Aplecta nebulosa*, bred last year from var. *robsoni* ♂ and var. *thompsoni* ♀, by himself and Mr. H. Main. Only fifty moths were bred, 26 per cent. of the grey form, 42 per cent. of *robsoni*, and 32 per cent. of *thompsoni*. This result quite negatives the idea that the form *robsoni* was a heterozygote or hybrid (so called), and that the grey form and *thompsoni* were homozygotes, or pure.

FEMALES OF *LASIUS MIXTUS*.—Mr. Donisthorpe exhibited three ♀s of *Lasius mixtus*, Nyl., a race of *L. umbratus*, Nyl., and a ♀ of the latter for comparison. He remarked that there were only two records of its capture in Britain. One was taken at Weybridge last year, and another at Mickleham, when in company with Mr. Crawley, where they each took a specimen last month. The third was captured this year by Mr. Dollman in Richmond Park.

AGRIADES THETIS AB. COELESTIS.—Mr. H. Rowland-Brown brought for exhibition examples of *Agriades thetis* (*bellargus*) ab. ♀ *coelestis*, Obthr., taken last August at Dompierre-sur-Mer, Charente-Inférieure. He said that so far as is known at present, this brilliant form of the blue ♀ is confined in western Europe to the west and south-west of France; roughly speaking, between the valley of the Loire and the Gironde, where it occurs locally not unfrequently; the blue form of *A. coridon* ♀, var. *syngrapha*, also being found in the same calcareous region.

HYBERNIA MARGINARIA.—Mr. H. M. Edelsten exhibited three generations of *Hybernia marginaria*, being the result of a pairing between a dark ♂ and ♀ taken wild in Epping Forest in 1908. The 1909 brood did not vary much from the parents. The 1910 brood produced specimens with dark margins, and three unicolorous males. The 1911 brood produced specimens with lighter margins and dark inferiors, but no unicolorous specimens. The darkest males and females were paired in each case. These dark forms have only appeared in Epping Forest the last few years.

LIVING BEETLES.—Mr. G. C. Champion sent round living specimens of *Corymbites purpureus* and *Morimus lugubris*, taken by Dr. Chapman at Amélie-les-Bains, Pyrénées Orientales.

A WOOD-BORING LARVA.—Mr. L. W. Newman showed a stick of *Salix caprea* containing larvæ supposed to be those of the "Wood Wasp." He pointed out that the larvæ make caps like *Aegeria andrenaeformis*, that the cocoon is exactly like that of a "clear-wing," and that the workings resemble those of *Aegeria*.

ENGLISH HYLOICUS PINASTRI.—Mr. A. G. Scorer exhibited a specimen of *Hyloicus* (*Sphinx*) *pinastri*, of whose British origin he had no doubt. It was caught near Aldeburgh, and another specimen was taken at the same time.

GYNANDROMORPHIC SPECIMEN.—He also exhibited a gynandromorphic specimen of *Gonepteryx rhamni*, taken by himself at Salisbury, on September 2nd, 1894. It was evenly divided, the right side being ♀ and the left ♂.

EFFICIENT RELAXING BOXES.—Dr. K. Jordan exhibited some insects from India in one of Mr. Newman's relaxing boxes, which had remained throughout their journey as fresh as if just captured, and were in perfect condition for setting.

INTERESTING LEPIDOPTERA.—He also exhibited the Saturniid moth, *Dysdaemonia kadeni*, in its resting attitude. The hindwings are for the greater part concealed under the forewings, only the anal area and the tail projecting. The abdomen being bent towards the left side, the insect in this attitude resembles a crumpled dry leaf, and recalls the much smaller Bombycid—also exhibited—*Sorocaba anomala*, which, as is well known, assumes a similar attitude when at rest. He

further exhibited a species of *Cosmosoma*, Family *Syntomiidae*, partly covered with a white wool. According to the collector (A. H. Fassl), "the insect when touched ejects from a fold on the underside of the abdomen a white wool, which completely envelops the specimen." The hitherto unknown female of *Ogyris meeki*, Roths., a *Lycænid* from New Guinea, was likewise shown, together with the male, and several species of *Hypochrysoptis*.

O B I T U A R Y .

Pieter Cornelius Tobias Snellen.

The Entomological Society of London has lost its oldest Honorary Fellow by the death of the famous Dutch Lepidopterist P. C. T. Snellen, who was elected in 1885. This event took place on March 29th, at Rotterdam, which had been his home during the whole of his life, and where he had been in business for many years. He was 77 years of age and unmarried. He was one of the founders of the Entomological Society of the Netherlands and wrote much in the *Tijdschrift*, the organ of that body. His first paper "On the female of *Fidonia progemmaria*, Hübner," appearing in 1857. His fame rests principally however on his great work the "*Vlinders van Nederland*," the first volume of which, on the "Macro-Lepidoptera," appeared in 1867, and the second a much longer work on the "Micro-Lepidoptera" in 1887. This work is of great value, but being written in Dutch it is unfortunately a sealed book, not only to most Englishmen, but to the majority of continental Entomologists also.—G.W.

William Alfred Rollason.

We regret to have to announce the death of Mr. W. A. Rollason, which took place after only two days illness on April 23rd. So sudden and unexpected indeed was the event, that Mrs. Rollason, who had been called away to the sick bed of her father, only just returned in time to see her husband alive; to her and to her young children our most cordial sympathy is offered. Mr. Rollason, who was only 48 years of age, was elected a Fellow of the Entomological Society in 1909, and was known as a contributor to the Magazines; a list of the Cornish Hymenoptera-Aculeata appeared in the April number of the *Ent. Mo. Mag.*, and in the current (June) number of the *Entomologist* is a paper by him on the *Ichneumonidae* taken in Cornwall in 1910. The order however which claimed most of his attention was the Lepidoptera, and we understand that he had the intention of publishing a book on the British species with his own illustrations, many of which seem to have been already prepared. For Mr. Rollason was a man of many attainments and of wide and varied interests. He was first and foremost perhaps as an artist, and held the position of Art Master of the Central Technical Schools, Truro, and it was to his residence in that city for the past ten years that we owe his county lists of Cornish insects. He had previously won distinction in connection with the Birmingham School of Art, and was a contributor to many exhibitions, and a most efficient Secretary to the Cornwall Art Union. He was also an enthusiastic Freemason, and had occupied high positions in the Brotherhood. But even this does not exhaust the list of his attainments, for he was an accomplished musician and took part in the concerts both of the Truro Orchestral Society and the Philharmonic Society. He will be widely missed, for his death will cause a gap in many circles which no other one man can be expected to fill.—G.W.

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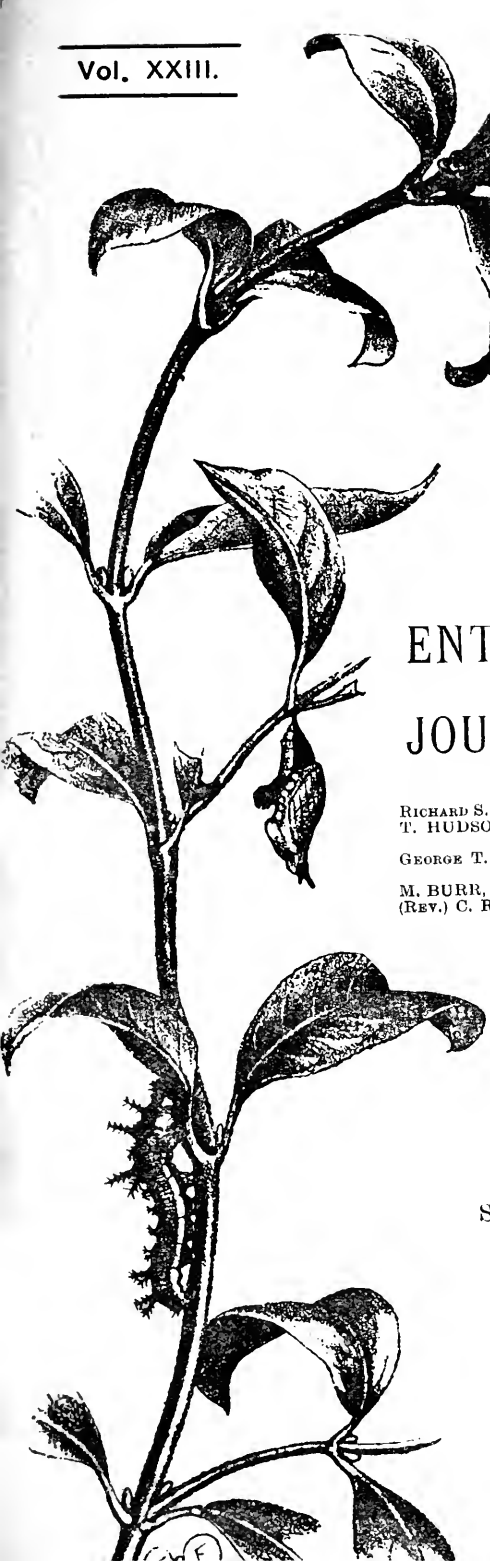
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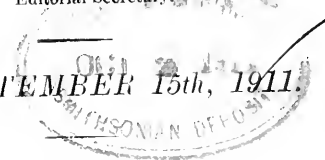
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Viviparous Butterflies.

By DR. T. A. CHAPMAN, F.Z.S., F.E.S.

In the last part of the *Horae Soc. Entomologicae Rossicae* is a paper by Herr N. J. Kusnezov, unfortunately in Russian, but with a copious explanatory note in English, in which the author records that fully-developed larvæ may be found in the bodies of female butterflies. The species he notes are 21 species of *Colias*, 7 of *Euchloë*, 1 of *Zegris*, and 1 of *Leptidia*.

The larvæ were not, however, found in the bodies of living butterflies, but by maceration of the bodies of preserved specimens. This is clearly a matter worth further investigation.

We are unacquainted with any record of a butterfly having "laid" a larva, or even an egg with a larva in any state of development contained in it.

There is, however, a fact often observed both by Mr. Tutt and myself, and I think reported somewhere by one or both of us, that many butterflies are found after death to have an egg ready to extrude in the ovipositor, and from such an egg more than once a larva has hatched under my observation. We have observed this most frequently in the genus *Erebia*, chiefly because *Erebias* are often difficult to induce to lay eggs, and often die without doing so, and an attempt to obtain an egg for examination from the dead butterfly has revealed the fact of one egg being ready for extrusion; very rarely is there another behind it. Everyone has observed how many moths after being killed, but with the abdomen still more or less active, will lay a number of eggs, without, of course, the usual incentives of foodplant under proper conditions, etc. These butterflies seem to be in much the same case. The desire to lay takes effect after the butterfly is dead, and when no proper control exists over the still living abdominal organs, and in these the result is not a complete result as in the moths cited, but the egg remains in the ovipositor. It has, however, passed the spermathecal orifice and is fertilised.

As an explanation of Herr Kusnezov's remarkable observation, I think it highly probable that in the species he has examined precisely the same process is gone through as in the *Erebias*. An egg is advanced past the spermathecal orifice and remains unextruded.

Herr Kusnezov gives drawings (and very good ones) of his preparations, showing one larva only in each instance, doubled up in what is almost certainty the eggshell, lying in the tube immediately behind the opening of ovipositor. Herr Kusnezov calls the place where it lies an "uterus," but clearly there is here no expansion of the tube, the egg fills it up precisely as it must do when it passes this spot in ordinary oviposition. The author does not note the egg-shell, but this is extremely transparent in these *Coliads*, etc., and would probably be invisible in his preparations.

The remarkable point, then, in Herr Kusnezov's observations is, that these fertilised, but just not-laid eggs, can undergo development in this incarcerated position, just as if they were external. It is not quite parallel with any case of actual viviparity, since no actual laying of the developed egg takes place. Nevertheless, it is not without some analogy with those *Muscidae* that are unable to retain the eggs in the oviduct, but pass them to a quite homologous place, to where these eggs

rest in the Coliads, here they may accumulate and even develop and hatch and be living larvæ when laid. Here, however, this is a natural process, not as with the butterflies, a pathological and almost a posthumous one.

It is very different from the case of the beetles I have observed (*Orina*), in which the eggs are fertilised in the ovarian tubes, even before they are of full size, and the resulting larvæ are ready to hatch at about the time they reach the common oviduct. In the butterflies, fertilisation does not occur till the eggs have passed the common oviduct.

Unfortunately we know nothing of the mechanism of the viviparity of the one or two *Tineæ* that are viviparous, so cannot institute any comparison with them.

Halticus saltator, Geoffr., an Addition to the List of British Hemiptera-Heteroptera.

By E. A. BUTLER, B.A., B.Sc., F.E.S.

This species superficially resembles our well-known *Halticus apterus*, but may be easily distinguished from it by the following characteristics:—The colour of the head is rufo-testaceous, with the sharply carinated vertex, the clypeus and the genæ, more or less piceous. The anterior and intermediate femora, as well as the anterior coxæ, are yellow. The hinder part of the pronotum is transversely strigose. In the brachypterous form, which is the only one I have seen as British, the strongly convex hemielytra are longer than in *H. apterus*, and almost entirely cover the abdomen. The insect is scantily clothed with rather long golden pubescence, which is easily abraded. The length is 2 $\frac{3}{4}$ mm.

Two examples of *H. saltator* were taken by Mr. H. Donisthorpe at Deal on September 6, 1907, and are now in the University Museum, Oxford. There is a long series of specimens of both sexes in the British portion of the Hope Collection at the same Museum, but Prof. Poulton informs me that nothing is known as to the locality from which they were obtained. The species is widely distributed on the Continent, where it has been found on *Althaea rosea* (a non-British species of marsh mallow) and on *Echium vulgare*. Kirschbaum records that in the former case it produces by its punctures a deformity of the leaves. I learn from Mr. Donisthorpe that his specimens were taken while he was sweeping *Mercurialis annua*, but of course this does not amount to proof positive that the *Mercurialis* was the food-plant.

Four days at Saas-Fée.

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

The break in the weather produced a marked impression at this altitude, the next day, though bright, being really cold, with the result that only sheltered spots produced anything. *Erebia goante* and *E. euryale*, with a few *E. tyndarus*, were the only species of the genus taken. *Colias phicomone* was the only Pierine seen. *Argynnis aglaja* and *Melitaea athalia* came as solitary examples of their respective genera, though the latter was quite *passé*. The following days proved somewhat warmer, but still by no means up to the average; however,

insects were commoner. *Anthroceræ loniceræ* and *A. transalpina* were fairly frequent. Among the Lycænidæ, *Plebeius argyrognomon* was really abundant in both sexes. Of *P. argus* I did not see a single specimen. *Agriades coridon* was common, evidently in the height of its emergence. Of *Polyommatus icarus* I took three specimens, two males and a female, which last was strongly suffused with blue, and with bright red marginal spots prominent on both wings. Of the two males, one was bright lustrous true blue, and the other very decidedly mauve in tone. *Aricia astrarche* was rare at this date, and *Aricia eumedon* turned up in a single specimen, which, however, I should think had only emerged the same day. *Heodes virgaureæ* was not common, but I took three beautifully fresh females of the var. *zermattensis*. Only one or two *Chrysophanus hippothœe* were seen. Near the Saas glacier *Brenthis pales* was still on the wing and in good condition, as was also *Melitæa parthenie* var. *varia* and *M. dictynna*. *Erebia melampus* was scarce and very small, but *E. lyca* var. *adyte* was not rare, being fine and large. *E. tyndarus* was abundant everywhere. The only *Parnassius* I saw or took was a single *P. delius* high up near the glacier among the saxifrage by the streams issuing from it. One afternoon I had been hunting the green Alps by the glacier for larvæ of *A. exulans* and other things, I found generally that the well-grown larvæ of *A. exulans* that are going to hibernate come up to the top of the clover heads and feed late in the afternoon. After searching for an hour or two, and having found sufficient for my needs, I returned homewards, i.e., hotelwards, and had just turned round a sharp bend of the mountain in a goat track, when I suddenly saw a marmot some hundred or more yards away sitting erect right in front of me. It did not move, so I concluded it was asleep, and I resolved to try and stalk it, even though I had my net flying. Fortunately the wind was in my favour, so on I went, absolutely rigid, step by step, until at about fifty yards it awoke, and became conscious of something uncanny. I, of course, stopped, and became perfectly immobile; then, after looking about a bit, it remained still erect. I again moved inch by inch rigidly forward, and succeeded in getting another, perhaps, twenty paces, when its confidence seemed shaken, and it dropped on all fours. Still, however, as it did not go away, I resumed my proceeding, and succeeded in getting within five yards of it, so that I could see quite distinctly the movement of its eyes, and I was wondering what would be my next proceeding, when the apparition so close was too much for its equilibrium, for suddenly it took a dive into its hole and was "lost to sight—though to memory dear." Never before, however, had a marmot given me such a chance of observing it, and it was quite a delightful little episode whereby to remember Saas Fée.

My last day was spent in the Mattmark end of the Saas Valley and by the lake itself, where in addition to the species mentioned I was able to add several others to my list. *Plebeius optilete* was not uncommon nearer Saas Fée than the top end of the valley, and as I approached the further end *Aricia donzelii* also put in an appearance among the larches. Further on *Laticornia orbitulus* became fairly common, and I caught a single specimen of *Chrysophanus hippothœe* var. *euribia*. *Brenthis pales* was flying commonly on the alp around the lake, with a female that I had not met with before, in which the

primaries assumed a pretty pinkish hue in marked contrast to the tawny colour of the secondaries; I took several quite fresh specimens. All the Saas-Fée *Erebias* were taken, and in addition, amidst the moraines near the lake, *E. gorge* still delighted to spread their wings to the sun on the hot stones; one or two were fresh, but the majority quite too worn to capture. The only *Heterocera* I took were an *Endrosa* (*Setina*) *aurita* and one or two *Epsilia* (*Agrotis*) *cuprea*. I took a comfortable walk from the Fée Alp to Stalden the following day, and from thence went on to Eclépens, an account of which place has already appeared in your journal, and thus ended my holiday for 1910. But the glaciated valley of Mattmark so filled me with interest that I felt I must try some time to spend a few days beside all that remains of the former lake, now so shrunk, narrow and shallow, that I was told I could walk through it almost anywhere.

Lasius mixtus, Nyl., in Britain.

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

There are only two records heretofore of *Lasius mixtus*, Nyl. (a race of *L. umbratus*, Nyl.), occurring in Britain. The first* record was by the late C. J. Bignell, who brought it forward as new to Britain on ♂s, ♀s and ♂s which he discovered at Bickleigh, near Plymouth. Subsequently Grimshaw† recorded it from the Isle of May, where he also took ♂s, ♀s and ♂s.

On examining my series of *L. umbratus* I found that I possessed a deilated ♀ which I had taken at Weybridge on March 7th, 1910. Recently Mr. Evans, of Edinburgh, sent me specimens to determine of ants which he had taken in the Isle of May. There were undoubtedly ♀s and ♂s of *L. mixtus* among them. On February 17th last my friend, Mr. Hereward Dollman, found a deilated ♀ of this race in Richmond Park, and on April 22nd my friend, Mr. Crawley, and I captured two deilated ♀s on the road near Mickleham. It is therefore probable that this race is widely distributed in Britain.

To enable British Hymenopterists to recognise this ant, I have translated the tables given by Professor Forel in his *Fourmis de la Suisse*.

WORKERS.

- | | |
|--|------------------------------------|
| <p>A. Size variable, generally small; l. 2mm.-4mm. In large specimens the abdomen and the head reddish. Scale low, a little broader at the base than at the apex, not or scarcely emarginate. Thorax and abdomen very hairy on the upper side. Tibiæ pubescent, without exserted hairs</p> | <i>L. flavus</i> , Fab. |
| <p>B. Size less variable, generally large; l. 3.5mm.-5mm. The whole body the same colour, clear yellow, sometimes a little reddish. Scale higher than in the preceding species, narrower at the apex than at the base</p> | <i>L. umbratus</i> . |
| <p>(a). Tibiæ with exserted hairs. Thorax and abdomen very hairy. Scale high, entire or very feebly emarginate at the top. l. 3.5mm.-4.5mm.</p> | <i>L. umbratus</i> , 1, spec. Nyl. |

* " *Lasius mixtus*, Nyl., an Ant new to Britain," *Entom.*, xiv., 1881, p. 262.

† *Ann. Scot. Nat. Hist.*, 1908, p. 89.

- (b). Tibiæ without exerted hairs. Head, thorax and abdomen with only short hairs. Scale less high than in *umbratus*, but higher than in *flavus*, often feebly emarginate at the top.
 l. 3·5mm.-4mm. Race *L. mixtus*, Nyl.

FEMALES.

- A. Head small, not as broad as the thorax, without distinct emargination behind. Thorax broad; abdomen much broader than the thorax. Size very large in comparison with the worker *L. flavus*, Fab.
 B. Head broader than the thorax, strongly emarginate at the hind border. Thorax fairly narrow. Wings clouded with brown as far as the middle. Abdomen only a little broader than the thorax. Size less large in comparison with the worker *L. umbratus*.
 (a) Tibiæ with exerted hairs. The upperside of the thorax and abdomen abundantly provided with short and flat hairs. Of a brown red; mouth, antennæ, and legs lighter. Scale generally emarginate. l. 7mm.-8mm. *L. umbratus*, 1, spec. Nyl.
 (b) Tibiæ without exerted hairs. Thorax nearly without hairs on the upperside. Abdomen with only a little short hair. Colour the same as in the preceding, but the underside of the head and thorax, as well as the metanotum and nearly the whole of the scale are reddish, clear. l. 6mm.-8mm. Race, *L. mixtus*, Nyl.

MALES.

- A. Terminal edge of the mandibles with one large tooth in front *L. flavus*, Fab.
 B. Terminal edge of the mandibles with five teeth. Brown-black. Frontal furrow always distinct. Wings clouded with brown as far as the middle. l. 4mm.-4·5mm. Head large *L. umbratus*.
 (a) Eyes distinctly hairy *L. umbratus*, 1 spec. Nyl.
 (b) Eyes almost without hair Race, *L. mixtus*, Nyl.

In 1897 Mons. Charles Janet published an admirable paper, *Sur le Lasius mixtus*, at Limoges. He gave a long account of the habits of this ant, and also of the Myrmecophiles he found with it. Most of the same species occur also with *L. umbratus*. I have found the following *Acari* with the latter in Britain, all of which Mons. Janet records with *L. mixtus* at Beauvais.

Tropoda oralis, Koch, fixed on the femora of the ants in a nest from Weybridge.

Ciliclavo comata, Berlese, on the larvæ of the ants in a nest at Woking.

Trachyropoda bostocki, Mich., in some numbers in a nest at Whitsand Bay.

Antennophorus uhlmanni, Haller, in large numbers on the ants in the nest at Woking. Only two specimens have ever been taken before in Britain; this was by Michael in Cornwall.

Sphaerolaelaps holothyroides, Berlese (*Neoberlesia* sp. ? of Mons. Janet's paper), in nests at Bewdley, Wellington College, Woking, Weybridge, Box Hill, etc.

Uropoda philoctena, Trouessart, fastened to the strigil of the ants in the nest from Weybridge. Mr. Crawley has also found it on his ants from the same nest. This species is new to Britain. There are

excellent figures of the first, second, fourth, and last of these species in Mons. Janet's paper.

Professor Wheeler, in a paper on the North American forms of *Lasius umbratus* (*Psyche*, xvii., no. 6, 1910, p. 240), points out that *L. umbratus*, Nyl., sub-sp. *mirvus*, Nyl. var. *aphidicolae*, Walsh, is the most common form of *umbratus* in North America.

In my paper in the *Trans. Leicester Lit. and Phil. Soc.*, 1908, xii., pt. ii., p. 231, I gave a list of the 30 previous notes and papers I had written as contributions to our knowledge on Myrmecophilous subjects. The present paper is no. 51, and I now give a list of the rest of my communications from no. 31 to no. 50.

No. 31.—“Ants Found in Great Britain,” *Trans. Leicester Lit. and Phil. Soc.*, 1908, vol. xii., pt. ii., pp. 221-233.

No. 32.—“A Few Notes on Myrmecophilous Spiders,” *The Zoologist*, 1908, pp. 419-425.

No. 33.—“Myrmecophilous Notes for 1908,” *Ent. Record*, 1908, pp. 281-284; 1909, pp. 17-20 (with plate).

No. 34.—“On the Origin and Ancestral Form of Myrmecophilous Coleoptera,” *Trans. Ent. Soc. Lond.*, 1909, pt. iii., pp. 397-411.

No. 35.—“On the Colonisation of New Nests of Ants by Myrmecophilous Coleoptera,” *Trans. Ent. Soc. Lond.*, 1909, pt. iii., pp. 413-429.

No. 36.—“Ants at Kew,” *Royal Botanic Gardens, Kew Bulletin*, 1909, ix., pp. 250-251 (with plate).

No. 37.—“*Pachyloma buccata*, Bréb., in the Isle of Wight,” *Ent. Mo. Mag.*, 1909, p. 238.

No. 38.—“*Formica sanguinea*, Ltr., at Bewdley, with an account of a Slave-raid, and description of two Gynandromorphs,” etc., *The Zoologist*, 1909, pp. 463-466 (with two wood-cuts).

No. 39.—“Some Experiments with Ants' Nests,” *Trans. Ent. Soc. Lond.*, 1910, pt. ii., pp. 142-150.

No. 40.—“Myrmecophilous Notes for 1909,” *Ent. Record*, 1909, pp. 257-259, 287-291; 1910, pp. 15-17.

No. 41 (=21a, omitted in previous list).—“*Lomechusa strumosa*, F., as a British Insect,” *Ent. Record*, 1906, p. 159.

No. 42.—“On the Founding of Nests by Ants; and a few Notes on Myrmecophiles,” *Ent. Record*, 1910, pp. 82-85.

No. 43.—“Hearing in Ants,” *Ent. Record*, 1910, p. 117.

No. 44.—“Fourmis et leurs hôtes,” *Trans. Ier. Congrès International d'Entomologie, Bruxelles, Août.*, 1910, pp. 199-208 (with plates).

No. 45.—“Further Observations on Temporary Social Parasitism and Slavery in Ants,” *Trans. Ent. Soc. Lond.*, 1911, pp. 175-183.

No. 46.—“Myrmecophilous Notes for 1910,” *Ent. Record*, 1911, pp. 10-15, 58-63.

No. 47.—“*Trichonyx sulcicollis*, Reich., and *Amauronyx märkeli*, Aubé, as Myrmecophilous Insects,” *Ent. Mo. Mag.*, 1911, p. 67.

No. 48.—“*Microdon eggeri*, Mik., in Nests of *Formica sanguinea*, Latr., in the Luxembourg,” *Ent. Mo. Mag.*, 1911, p. 43.

No. 49 (=9a, omitted in list in No. 31).—“Evolution of our Knowledge of Myrmecophilous Coleoptera,” *Ent. Record*, 1901, pp. 51-56.

No. 50.—“*Amphisbatis incongruella*, Stn., probably myrmecophilous in the larval stage, and a few Notes on some other Myrmecophiles,” *Ent. Record*, 1911, pp. 169-170.

Lepidopterology *—No description of a Species valid without a Figure.

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

This further portion of the *Lépidoptérologie comparée* has recently appeared. It contains nine pages on the "Relations of Lycaenids and Ants"; 170 pages, continuing the "Notes pour servir à établir la Faune française et algérienne des Lépidoptères," with the *Chelonides* (*Arctiidae*); certain supplements to previous "Notes," 16 pp.; 76 pp. "Documents concernant les *Somabrachys*"; and a dozen on "Subspecies et Morpha." Though there is perhaps less to specially interest the British Lepidopterist than in Part IV., all our British Arctias are fully discussed, with various items mentioned that are not familiar to insular collectors; the range of variation of *Euprepia cribraria* (*cribrum*), for example, of which most forms are illustrated in the beautiful pl. lxxx.

The plates, 27 in colour, drawn by Monsieur Culot, are up to his usual superb merit, and must be seen to be appreciated. Two of them are from drawings by Mr. H. Powell, of the early stages of *Somabrachys*, and there are four photographic plates of *Somabrachys* imagines, illustrating Mr. Powell's and M. Holl's most interesting account of this curious genus, of which about eighteen species are dealt with, largely the discoveries of Mr. Powell and M. Holl, only two being given in *Standinger's Catalogue* (1901). The volume presents much matter that we should like to transfer to these pages did space permit. It seems, however, more immediately important to discuss the point that M. Oberthür has insisted on for many years, and which he proposes to bring before the Entomological Congress at Oxford next year. He expresses the position thus: "Sans bonne figure à l'appui d'une description, pas de nom valable; dès lors la priorité du nom appartient au premier Iconographe plutôt qu'au premier Descripteur." This proposal ought to be well considered before the Congress assembles. M. Oberthür says that for his part he has already decided to treat descriptions without figures as of no account; he rejects them as mere lumber. Still he would not press the point absolutely, and so he proposes figuring those species of Guenée that are so far only descriptions.

Apart from their often indeterminate character, the time required to wade through a number of descriptions is in the present day almost prohibitive. The really strong point for accepting M. Oberthür's proposition is that figures can now be made so much more cheaply and accurately than not so many years ago. Still we are not all able to secure the assistance of a M. Culot, and a bad figure may be worse than none. It seems, therefore, that the minimum to be demanded is really a good photograph, which is by no means costly, and except colour, shows all that is really essential.

It seems necessary, also, to fix a date after which this law shall be absolute, such as, say, twelve months after the Proceedings of the Congress are published. The more difficult and knotty point is whether, and if so to what extent, the law shall be retrospective. It seems reasonable that where no doubt has been raised as to names,

* *Etudes de Lépidoptérologie comparée* par Charles Oberthür, Fasc. v. (1re Partie), pp. xxxvi., and 340, pl. 41.

retrospective action should not take place, but where any doubt arises, the name should lapse unless fortified by a figure within the next, say ten years. Without some such provisoes as these, and probably one or two others, to pass the law simply, would perhaps rather add to than clear away the confusion at present arising from the want of figures. To give plates of types hitherto unfigured, as M. Oberthür proposes, is extremely desirable, and should be done by all who possess such types, or even know where they are. An excellent example of this is Mr. Hamilton H. Druce's *Illustrations of African Lycaenidae from type specimens in the Berlin Museum*. (Still earlier Rothschild's and Jordan's *Revision of the Lepidopterous Family Sphingides*.—H. J. T.)

In Section V., the introduction of the terms "Subspecies" and "Morpha" is objected to, and we are entirely in agreement with Messrs. Oberthür and Alphéraky that as synonyms, of which we already suffer from a plethora, of "geographical race" (var.) and of "form" (forma) respectively, their use is to be sincerely deprecated. We may, however, say that we are almost pleased, as a proof that we are not entirely dominated by his superior personality, to find ourselves in disagreement with M. Oberthür as to one ground of objection to the term "subspecies." He objects because the word implies a theory. If a name be given to something not already supplied with one, we accept it as the name of that thing, without caring, or at least attaching serious value to the question, whether or no it suggests a theory, sound or unsound. As examples take *Ruralis betulae* or *Lacosopsis roboris*. Even astronomers talk of sunrise and sunset, though the mere man in the street knows that the theory they suggest is erroneous.

Some Moorland Thrips.

By RICHARD S. BAGNALL, F.L.S., F.E.S.

(Field President of the Natural History Society of Northumberland, Durham and Newcastle).

The Natural History Society of Northumberland, Durham and Newcastle-upon-Tyne held their week-end field meeting this year in the upper Coquet-dale, with headquarters at Harbottle, a charming village about ten miles from the nearest station, Rothbury. Thus an excellent opportunity was given me to study the Thysanoptera of the Northumberland moors.

It was rather early for the heath and the heather, which was only just breaking into blossom, but the somewhat isolated clumps were crowded with thrips and their larvæ, most conspicuous amongst them being the white-barred *Acolothrips fasciatus*, L., though the two smaller species, *Euthrips ericæ*, Hal., and *Oxythrips parviceps*, Uzel, were more numerous represented. But best of all was the capture of the minute and wingless *Amblythrips ericæ*, Bagnall, a genus and species described early this year from five Yorkshire specimens. By repeated search this insect was found to be of wide distribution, but scarce, less than 30 specimens being ultimately secured. *A. ericæ* is only a little more than half a millimetre in length, and is rather difficult to distinguish in the field from the larvæ of the larger forms. It has, however, an air of distinction, and, unlike the sluggish larvæ, moves about with some alertness and without the hesitation so evident in the former. In colour *Amblythrips* is tinged with reddish-brown,

whilst the larvæ of the *Euthrips* and *Orythrips* are clear yellow or orange-yellow, and the antennæ of our little friend, under a lens, have the definition usually attributed to a mature thrips. *A. ericæ* appears to prefer the large bell heather, *Erica tetralix*, from which plant I have more recently taken it on the moors near Riding Mill, Northumberland.

Hard work examining the junipers which grow so luxuriantly in the Holystone burn failed to produce the *Thrips juniperina*, L. (Bagn.), but special attention to the grasses and sedges in the neighbourhood of the Harbottle and Selby's Loughs brought to light single examples of four species not yet recorded from the British Isles, namely, the very distinct *Chirothrips hamatus*, Trybom (*dudae*, Uzel), ♀; and apparently the ♂ of *Bagnallia klapaleki*, Uzel, from sedge-like grasses on Harbottle Lough; ♀s of *Frankliniella tenuicornis*, Uzel, and what agrees well with Uzel's *Anophothrips ferrugineus*, from a soft pasture grass on the banks of Selby's Lough. Several examples of *Euthrips pallipennis*, Uzel, ♀s, a distinct species we have only recently recognised, occurred with the *Chirothrips*, and a mutilated ♂ of *Bagnallia dilatatus*, Uzel, another addition to the British fauna, was taken from the Marsh Red Rattle or Lousewort, *Pedicularis palustris*, growing in a marshy spot near Holystone. *Orythrips brevicollis*, Bagnall, was unsuccessfully searched for in *Sphagnum*, but as the insects usually found in *Sphagnum* were very scarce indeed, little time was spent in what appeared to be a thankless task. Most of the pines were too tall to examine easily, but by jumping up and tapping some of the lower branches over a paper, a few examples of *Orythrips brevistylis*, Trybom, were shaken from the flowers, together with its earlier stages, and a single example of *O. ajugæ*, Uzel. Uzel has also recorded the latter from *Pinus sylvestris*, as well as from the bugle (*Ajuga reptans*). *Acolothrips vittatus*, Haliday, which, in my experience, appears to be attached to the pine, was not seen. A good deal of thrips material, less typically moorland, were taken for study, and a little attention was paid to the Coleoptera.

Altogether, insects were scarce, probably due to the dryness of the season, and only one typical hill beetle was particularly noted, a single *Pterostichus vitreus*, but *Microglossa pulla* was found in a wren's nest, whilst several examples of what at first appeared to me to be a small and peculiar jumping Anobiid, were discovered boring into the trunk of a small mountain ash tree growing on the moors between Harbottle and Holystone. These proved to be referable to that puzzling little Anthribid, *Choragus sheppardi*, Kirb., an addition to the local fauna, and a beetle that might well prove to be a stumbling block to any one unacquainted with it.

A *Scolopendrella* from Alwinton was referable to a new species, which I have named *S. delicatula* in a "Synopsis of the British Symphyla," which I hope to publish shortly.

The Latest in Nomenclature.

By R. SHELFORD, M.A., F.Z.S., F.E.S.

In *Psyche*, vol. 18, p. 88 (1911), my friend Mr. A. N. Caudell, whose assiduity in raking up names from the decent obscurity of synonymy I cannot but deplore, states that *Steleopygia* must replace

Polyphaga (syn. *Heterogamia*). In other words, orthopterists having just grown accustomed to call the *Blatta aegyptiaca* of Linnæus, *Polyphaga aegyptiaca* instead of *Heterogamia aegyptiaca*, must now learn to call it *Steleopygga aegyptiaca*!

Mr. Caudell's line of argument is as follows:—

(1) In 1833, Fischer von Waldheim erected the genus *Steleopygga* for three species, *orientalis*, L., *americana*, L., and *trichoprocta*, sp. n.

(2) Latreille in 1810 selected *orientalis*, L., as the type of the genus *Blatta*, L.; *americana*, L., "has long been the designated type of *Periplaneta*"; therefore *trichoprocta* is the type of the genus *Steleopygga*.

(3) *Steleopygga trichoprocta*, Fisch., is identical with *Blatta aegyptiaca*, L.

(4) It was not till 1835 that Brullé instituted the genus *Polyphaga* for *Blatta aegyptiaca*, L.

(5) Therefore *Steleopygga* antedates *Polyphaga*.

It seems to me that there is a flaw in the argument. Granting that *orientalis*, L. is not available as the type of *Steleopygga*, the next species on the list, *americana*, becomes available. Mr. Caudell lightly skates over the awkward fact that it was not till 1838 that this species was made the type of the genus *Periplaneta*, Burm., since it was only in that year that the genus was established. Consequently, if we rigidly apply the law of elimination, *americana* is shewn to be the type of *Steleopygga*, and *Periplaneta* sinks as a synonym. But there is really no necessity for these bewildering changes. In the early part of the last century it was not the custom to designate the types of genera, *hinc illae lachrymae*. When Fischer von Waldheim described the genus *Steleopygga*, his object was to remove from the heterogeneous Linnean assemblage *Blatta*, those species which in the male sex bore two symmetrical styles at the apex of the abdomen, and he deliberately disregarded Latreille's designation of *orientalis* as the type of *Blatta*, or else he was unaware of it. Surely then *orientalis* may fairly enough be regarded as the type of *Steleopygga*, as it is the first of the three species described under this generic term, and *Steleopygga* therefore sinks as a synonym of *Blatta*. This is the line of argument that has been followed by a generation or so of orthopterists, and I must confess to thinking it good enough for me. It may also be noted that in 1846, *i.e.*, after the establishment of the genera *Periplaneta* and *Polyphaga*, Fischer von Waldheim redescribed *Steleopygga* under the emended name *Stylopygga*, placing in it the single species *orientalis*. This is not only an additional argument in favour of regarding *orientalis* as the true type of *Steleopygga*, but illustrates the absurdity to which Mr. Caudell's line of argument leads. If Mr. Caudell is to be followed, a generic name stands in one sub-family, and in an emended form sinks as a synonym in another. That is, *vide* Mr. Caudell, *Stylopygga* is not synonymous with *Steleopygga*, though the author of both genera made it so.

Both Mr. Caudell and Mr. Burr have drawn my attention to the error I have made in employing *Stylopygga* for species which are not congeneric with *Blatta orientalis*, L. I acknowledge my fault and suggest the new name *Neostylopygga* for all the species included under *Stylopygga* in the *Genera Insectorum*, *Blattidae*, sub-family, *Blattinae*: the type of the genus is *Blatta rhombifolia*, Stoll.

SCIENTIFIC NOTES AND OBSERVATIONS.

PUPAL DIMORPHISM OF LEOPTILUS TEPHRADACTYLA.—The pupal dimorphism of this and other *Plumes* is, or is supposed to be, well known, but I don't know that any observations have been put on record in this species showing that the dimorphism is exactly parallel with that of *Pieris rapae* and other butterflies of which many observers have written. On June 10th, 1911, I examined a pot of *Solidago virgaurea* on which I had a number of larvæ of *L. tephradactyla*, which I expected to find pupated. I found several score pupæ, of which 40 or 50 were on leaves of the plant, and these were without exception of a green colour. About a score were on dead or dying leaves of a brownish colour under the plant; some of these pupæ were green, and some grey, but the latter with usually some greenish tone. On the zinc cage were eleven pupæ; these were, without exception, grey, and none had any greenish tint. Both forms had the black markings characteristic of the pupa; these were weak, or practically wanting on most of the green ones; but very pronounced on the grey ones. The essential difference between the two forms is in the green or grey ground colour, but a quite strong secondary difference is in the strength of the dark markings, making the grey form much darker than is caused by the actual ground colour. Mentioning these circumstances to Mr. Tonge, he told me that he had two pupæ of the species fixed side by side, and that one was green and one grey, an occurrence which seemed subversive of any generalisation from my observations. These pupæ were produced, and assuredly one was green and one grey, and they were almost, if not quite, side by side. They were on the lid of a glass-topped round tin box; one under the rim was grey, the other beside it was on the glass, and no doubt took its colour stimulus from the leaves below it in the tin, the glass would have no effect, and the tin rim to the glass was of course a mere line from its position. This apparent exception, then, seemed fully to prove the rule, and shows the caution necessary in accepting reports of a casual observation, even by a good observer. These pupæ emerge after a very short time, so there is no question here of a dark form being related to hibernation. As in the case of *P. rapae* and others, the determining stimulus acts during the short period between selection of a pupal position and the actual moult to pupa.—Dr. T. A. CHAPMAN, Betula, Reigate.

MIGRATORY (?) FLIGHTS OF LIBELLULA DEPRESSA.—On Saturday, June 3rd, I saw one of the most wonderful sights it has ever been my lot to witness, *viz.*, a flight of dragonflies passing down the coast, all flying the same way, and never swerving out of their course, except when anyone attempted to strike at them; then they dodged (and they could dodge) and mounted into the air until nearly out of sight. Singly, and in twos or threes, every second or so, never an interval of a minute, did they pass, and as this was spread over a breadth of coast, say, 300 yards wide, you can imagine the numbers that must have passed during the morning. I first noticed them about 9.15 a.m., and went home to lunch about 12.30 p.m., when they were still passing on at the same rate. I had no net with me, but managed to obtain one of them, which Mr. Turner has identified as *Libellula depressa*. I returned in the afternoon, but the flight had ceased then, and I saw

only two, and since then have seen nothing more of them. A day or two after this I was told that a similar flight had been observed at Boulogne-sur-Mer on June 1st.—T. BAXTER, St. Anne's-on-Sea, Lancashire. *June 6th.* [This is a very interesting note. Lucas, in *British Dragonflies*, 1900, says, "I have no records for this species . . . north of Chester." He also refers to two recorded instances of migratory swarms of this species, although in neither is any information given as to the direction in which the flight was taking place. I understand that in the above record the flight was from south to north.—ED.]

IMMIGRANT LEPIDOPTERA.—*Plusia gamma* appeared at Valerian blossoms, with me, first on June 9th, and has swarmed since. *Ganessa atalanta* was seen on May 24th, but not again. A fine female *Manduca atropos* was captured in a pea field, neighbouring to a potato field, and brought to me on June 19th. I fed her (or did my best to supply her with a suitable food) and kept her warm. But she refused to lay, and died during the night of June 29th. The following morning I removed from the abdominal cavity 218 fully formed eggs, and also observed long series of eggs not filled out. Your readers will remember perhaps that our late Editor failed to find any published description of this egg. I am disappointed that my efforts to induce the insect to lay should have been unsuccessful.—(REV.) C. R. N. BURROWS, F.E.S., Mucking Vicarage. *June 30th*, 1911.

SHOWERS OF PEPPERCORN OAK-GALLS, ETC.—Under this title is a letter in the *Times* of August 9th, by Sir Jonathan Hutchinson, calling attention to the abundance of the galls of *Andricus ostryus*, Giraud. It so happened that I had noticed these galls forming quite a carpet to the roadside under oaks on the way from Dorking to Leith Hill on August 7th. Some trees had very few, but under most there were surprising quantities all over the road, and especially run together in little accumulations in all irregularities towards the borders of the road. These were, of course, the produce of only the portions of the trees over the road. An actual estimate is difficult, but possibly some trees would have supplied several pints if they could have been swept up. They are very beautiful little objects, spherical or ovoid, 2mm. to 2.5mm. in diameter, varying in colour according to age, regularly spotted, with pink on yellow or green, becoming nearly black or dark brown, and finally nearly quite black. There can be little doubt that these galls are more numerous than usual, but the appearance of great abundance is probably dependent on the exceptional weather, partly by early ripening, leading to the whole crop falling nearly together, but chiefly perhaps because the continuously dry roads and paths keep them in evidence, and enable them to drift together conspicuously, instead of their being rapidly lost in wet and mud and practically unseen, except on the trees or when actually falling. Cameron gives October as the period for the appearance of the imago, but they are already (August 30th) coming out abundantly.

I have had no opportunity for noting the effect of this remarkable season on variation in lepidoptera. We shall certainly miss Dr. Hodgson in this subject, but doubtless many interesting observations will be forthcoming. Prof. Muschamp tells me he has found some varieties of *Agriades coridon* unusually frequent. I have noticed in this neighbourhood that the abundant *Pieris rapae* presents an unusual

proportion of very small specimens, probably rather from want of time to appropriate than from deficiency of food.—T. A. CHAPMAN, Betula, Reigate. *August, 1911.*

LARVA OF CUPIDO MINIMUS.—In the Henthall, on the Bernina, when making various endeavours towards working out the early stages of *Albulina pheretes* on August 2nd, 1911, I met with a plant which I take to be *Phaca alpina*, with large bladdery seed-pods, and in these I found larvæ which proved to be those of *C. minimus*. On referring to Tutt's *British Lepidoptera*, vol. x., p. 120, I find Zeller quoted as finding this larva in seed-pods of different *Papilionaceæ*, including a tall herbaceous plant with pale yellow blossoms, in the neighbouring valley of Tnors on the Albula. The plant so referred to is almost certainly *Phaca alpina*. The point that most interested me was that some of the larvæ appeared to have entered the pods by a small hole, doubtless after leaving another one, but in other instances the larvæ, sometimes of considerable size (even in last instar), were in pods apparently intact, and must have entered the pods when they were so small as to make an inappreciable hole, and the pods so young and growing as to close this hole up as though it had never existed. The larvæ, except in making holes of entry and exit, did not appear to eat the pods, but only the contained seeds, though under the stress of captivity they did eat portions of the pods.—DR. T. A. CHAPMAN, Betula, Reigate. *August, 1911.*

SPARROW v. BUTTERFLY.—On July 16th of this year I saw a house-sparrow pursue and capture a *Pieris rapæ*: the bird, after mouching its prey, suddenly opened its beak and let the butterfly fly away apparently uninjured. A few minutes later the same bird caught, and instantly devoured, a *Chrysopa* which was slowly flapping along in the sunlight. These two facts are worthy of record, if only because they illustrate the enormous difficulty we must always find in determining the tastes of any insectivorous animal. A palate which can tolerate the vile-smelling *Chrysopa* and ejects a butterfly must be a curious one. Facile deductions of an insect's unpalatability from its possession of an odour nauseous to our senses, or from its power of excreting acrid juices, must always be accepted with a certain degree of caution. Both house-sparrows and *Pieris rapæ* abound in the garden in which I am unfortunately compelled to spend the greater part of my days, but I have, after four weeks fairly continuous observations, seen only this one example of a sparrow hawking the butterflies. The birds are constantly picking up or catching on the wing other insects too small to be identified, but with the exception noted, they entirely disregard the butterflies which often fly quite close to them.—R. SHELFORD (M.A., F.Z.S.), 14, Clarendon Road, Margate.

NOTES ON COLLECTING, Etc.

GLOUCESTERSHIRE LEPIDOPTERA.—Having met with the following species in the neighbourhood of Stroud, and as apparently they have not hitherto been recorded from Gloucestershire, I thought a note of them, might be of service in the compilation of any future list. *Diorgetria abietella*, bred June 30th, 1902, from larvæ mining shoot of *Pinus sylvestris*: *Penthina capraeana*, bred June 18th, 1904, from larvæ on *Salix capraea*: *Scricoris euphorbiana*, taken June 4th, 1906, flying in

the afternoon sunshine; *Phloeodes crenana*, bred August 21st, 1909, from larvæ tightly rolling leaves of alder (*teste* E. Meyrick); *Stigmonota roseticolana*, June 21st, 1910, *Dicrorampha consortana*, August 14th, 1908, and *Argyrolepia euicana*, July 3rd, 1905, all captured on the wing, evening; *Nemophora metaxella*, taken June 18th, 1902, at dusk; *Argyresthia arceuthina*, beaten May 31st, 1906, from juniper; *Gracilaria populutorum*, bred September 27th, 1905, from pupa in leaf of birch; *Ornix betulæ*, May 17th, 1909, and *O. torquilella*, May 24th, 1909, bred respectively from larvæ on birch and sloe; *Coleophora murinipennella*, taken May 27th, 1905, at rest on grass stem; *C. orbitella*, bred June 8th, 1910, from larva on birch; *Tischeria dodonæa*, beaten May 19th, 1903, from oak; *Nepticula luteella*, June 12th, 1910, and *N. plagicolella*, July 29th, 1908, bred from mixed leaves of birch and sloe; *Laverna raschkiella*, taken July 15th, 1909, at rest on *Epilobium angustifolium*; *L. decorella*, June 17th, 1910, and *L. sub-bistrigella*, August 24th, 1905, both captured flying, evening.—W. B. DAVIS, 3, Rosebank Villas, Churchfield Road, Stroud, Glos. July 3rd.

ALBINO OF *LOWEIA ALCIPHON*, VAR. *GORDIUS*.—At Varzo, near the southern entrance to the Simplon Tunnel, I caught, on June 21st, an albino specimen of *Loweia alciphron*, var. *gordius*, flying in company with several others of the ordinary form. The following is a description: ♂, 35mm. Upperside, both wings brilliant metallic lemon-yellow, black spots, marks and shading as in type. Underside forewing bright lemon-yellow, black spots; hindwing grey with yellow ante-marginal band; black spots in white rings.—C. B. WILKINSON (Lt.-Col.), Hôtel Bérissal.

OCCURRENCE (?) OF *L. GUENEEL*.—A QUERY.—In a paper read before the Dorset Natural History and Antiquarian Field Club by Mr. Nelson M. Richardson, and published in their *Proceedings*, vol. xi., p. 46, 1890, I find the following remark with reference to *Luperina testacea*: "I saw a beautiful, very distinctly, and delicately marked variety (*gueneei*) of this species taken by Colonel Partridge this year." Now that our *L. gueneei* has been proved as distinct from *L. testacea* and is identified with the continental *L. nickerlii*, one would like to know to which species the form referred to above belongs. Is it still in the possession of Colonel Partridge? And if so, can it be compared with undoubted English *L. nickerlii* var. *gueneei*? Have either Mr. Eustace Bankes or Mr. Nelson Richardson any further knowledge of this or other specimens taken in the neighbourhood of Portland?—H.J.T.

THE ABUNDANCE OF *PIERIS RAPAE*, ETC.—For the last ten days or so there has been excessive abundance of the "whites" everywhere. They are reported from the fields and lanes around London, in all the open spaces, dodging about the roads, even penetrating to the embankment, and the busy streets of the City. One has been seen investigating the Tube station at Piccadilly. They appear to be mostly *P. rapae*, although I have seen a few *P. brassicæ*, and an occasional *P. napi*, one of the last in my own garden at New Cross, where I obtained a pupa of the species last year. Dr. Chapman has remarked to me that the specimens of *P. rapae* struck him as being generally of small size. Those I have particularly noted in my garden have all been small. Mr. W. J. Kaye writes me that at Dieppe and neighbourhood there were "clouds" of *P. brassicæ* and *P. rapae*,

with only a few *napi*. Another abundant species of butterfly in this month of August has been *Punmia phlaeas*, which has been observable in numbers wherever flowers were obtainable. Mr. Kaye, writing from Surbiton, says that this species has appeared in his garden for the first time this year. A single specimen has been hovering about a clump of pink yarrow (*Achillea*) for quite ten days, and he notes how interesting a fact it is "as showing how attached this little butterfly can become to a flower that takes its fancy, or perhaps to a flower that tickles its palate."—H.J.T.

COLEOPTERA.

MYCETOPORUS FORTICORNIS, FAUV., IN THE OXFORD DISTRICT.—On July 3rd, 1904, I took a *Mycetoporus* at Tubney in the sand pit, which I have never been able to name with certainty. It has been suggested it was *M. clavicornis*, Steph., and even *M. angularis*, Muls., but I was always convinced it was nothing I either knew or possessed. Dr. Sharp has now kindly examined it, and he tells me it is *M. forticornis*, Fauv. In Canon Fowler's *British Coleoptera*, vol. ii., p. 217, he treats it as a var. of *M. clavicornis*, and states that Dr. Sharp has it from Inverness-shire, and that he has taken a specimen himself at Repton. In the *Ent. Record* for 1905, p. 270, Mr. H. Willoughby Ellis records that Mr. Blatch took it at Sutton Park, Hopwas Woods, and Bewdley, and that he himself had taken a specimen at Coleshill. Both the last European Catalogue and Ganglbauer treat it as a good species, and I see no reason why it should not be regarded as such.—HORACE DONISTHORPE (F.Z.S., F.E.S.), 58, Kensington Mansions, S.W.

NEURAPHES RUBICUNDUS, SCHM., AND PSEUDOPSIS SULCATA, NEWM., FROM THE NORTH OF ENGLAND IN WINTER.—On New Year's Eve, New Year's Day, and January 2nd, 1911, I spent a few hours examining a stack of old hay in a haugh on the Gibside Estate, at the foot of the ruins of Hollinside, on the south bank of the Derwent, and was much pleased to find *Neuraphes rubicundus* in some numbers. On January 1st and the day following the temperature was very low, and the stack refuse was covered with more than an inch of snow, yet the little *Neuraphes*, unlike the commoner "stack" beetles, was running about in a very wide-awake manner, so much so that, taking into consideration its appearance in moderate numbers, I am tempted to believe that it is a winter species. If so, then its hitherto rare occurrence is at once explained. Several friends to whom I have sent specimens confirm its identification. A nice series of *Pseudopsis sulcata*, also new to the Counties' fauna, and a single example of the curious and interesting *Encephalus complicans*, Westw., were also taken.—RICHARD S. BAGNALL, F.L.S., F.E.S., Penshaw Lodge, Penshaw, Co. Durham. July 17th, 1911.

PTENIDIUM LEVIGATUM, GILL., FROM THE NORTHUMBERLAND AND DURHAM AREA.—I have taken two specimens of this species, an addition to the local list, in a mole's nest at Bradbury, County Durham. It is apparently a widely distributed form. In working out my *Ptenidia* I have derived much assistance from Messrs. Britten and Newbery's recent paper on the genus (*Ent. Mo. Mag.*, vol. xlv., p. 178, etc.).—R. S. BAGNALL, F.L.S., F.E.S., Penshaw Lodge, Penshaw, Co. Durham. July 17th, 1911.

PTENIDIUM INTERMEDIUM, WANK., FROM THE NORTHUMBERLAND AND DURHAM DISTRICT.—Finding a mole's nest in a field near Tatfield, in March of this year, I examined it for insects, and found two specimens of *Ptenidium intermedium*, Wank., a species new to the local fauna, unless the specimens recorded by Bold as *wankowieszi* are referable to this form. They were identified by Mr. Bagnall. A pair of *Quedius talparum*, Deville (*exans*, Joy), occurred at the same time, which, although not yet recorded from Northumberland or Durham, had been previously taken by my friend, Mr. Bagnall, in numbers on the western borders of Northumberland, and at Bradbury, in the County of Durham.—WILLIAM HALL, Tatfield Hall, Tatfield, Co. Durham. July 17th, 1911.

U R R E N T N O T E S .

A meeting of the *Entomological Club* was held on July 10th, at the "Hand and Spear Hotel," Weybridge, under the Presidency of Mr. G. T. Porritt, F.L.S., F.E.S. There was comparatively only a small number of members and friends present, many of those invited having already begun their holidays. However, a very pleasant gathering took place, dinner was served at 7 o'clock, and subsequently the delightful weather permitted an adjournment to the comfortable grounds of the hotel, where the rest of the evening was spent discussing entomological problems and experiences under the soothing influence of "the weed," etc. Among those present were Messrs. B. Adkin, R. Adkin, J. Platt Barrett, J. E. Collin, A. H. Jones, J. Jäger, W. J. Kaye, W. J. Lucas, A. J. Scollick, A. Sich, R. South, and H. J. Turner.

The *Report on the Progress and Condition of the United States National Museum* for the year ending June, 1910, has just been issued. In a short summary of the inception and history of the institution, reference is made to the "large-minded design of Smithson," to whose munificence the founding of the Museum in 1846 was due. It is shown how, in its early stage, the Museum was maintained wholly from the Smithsonian income, but in time the government shared the expenses of maintenance, until during the past 30 years the whole of the upkeep expenses have been borne by the state, leaving the income arising from the Smithsonian and subsequent bequests to be applied solely for the "increase and diffusion of knowledge among men"; effectually carrying out the scope of the act of foundation passed by Congress to obtain "all objects of art and of foreign and curious research, and all objects of natural history, plants, and geological and mineralogical specimens belonging to the United States." It is expressly laid down that the "collections have not been held for the study of the staff nor for the scientific advancement of those belonging to the establishment. Most freely have they been put at the disposal of investigators connected with other institutions." Even if it is impossible for the investigator to go to the collections in Washington, "such collections as he needs are sent to him, whether he resides in this country (U.S.A.) or abroad." Thus the Museum and its practical methods are a conspicuous factor in the advancement of knowledge throughout the world. During the last few years new buildings have been in progress of construction, and the subsequent transfer and

rearrangement of the collections has been going on. In the Department of Biology, very large and important collections of insects have been transferred from the Department of Agriculture, including some 800,000 specimens, assembled in connection with the investigation on forest insects, and many collections of insects of all orders have been donated or obtained by exchange from more remote portions of the globe. Another branch of the Museum's work is to publish original matter on the basis of its collections, and among other works issued we note an important *Monograph on the Mosquitoes, Culicidae*, by Dr. Howard, Dr. Harrison Dyer, and Mr. Frederick Knab; a *Catalogue of Nearctic Spiders*, by Mr. Nathan Banks, and *Directions for Collecting and Preserving Insects*, by the same writer. Publishing original matter is one thing, but the distribution of the publications is quite another. The Museum authorities, however, carry out this important duty in no niggardly fashion, for we are informed that no less than 87,000 books and pamphlets were distributed to institutions and specialists throughout the world free of charge. The report is a worthy record of excellent, long-continued progress.

With much regret we have to announce that Mr. Albert Harrison, of "Delamere," South Woodford, passed away suddenly on the morning of Monday, August 28th. We were with him at the meeting of the South London Entomological Society on the previous Thursday evening, when he appeared in his usual health. An obituary will be given in our October issue.—H.J.T.

It is with the greatest pleasure that we are able to report that the Natural History Museum at South Kensington is to retain all the land allotted to it in 1899, and the boundary is not to be altered.—G.W.

From the Hertfordshire Natural History Society and Field Club we have received the *Guide to St. Albans*, which was compiled by various members of the Society "for use during the 16th Annual Congress of the South-Eastern Union of Scientific Societies, meeting at St. Albans from June 7th to 10th, 1911," and containing "an account of the Topography, Geology, Hydrology, Climate, Flora, Fauna, and Archæology of the district, with a Guide to the Hertfordshire County Museum." There are several views of the neighbourhood, and also maps of the area described. The book is issued as Part III. of vol. xiv. of the *Transactions of the Hertfordshire Natural History Society*, of which the Hon. Lionel Walter Rothschild, Ph.D., F.Z.S., F.L.S., F.E.S., is President, and Messrs. A. E. Gibbs, F.L.S., F.E.S., F.R.H.S., and Charles Oldham, F.Z.S., M.B.O.U., are the Honorary Secretaries. No attempt has been made to give complete lists of the Fauna and Flora of the district, as these have already been adequately dealt with in previous volumes of the *Transactions*. Turning to the section treating of the *Insecta*, for which Mr. A. E. Gibbs is personally responsible, we find a general description of the character of the district, short accounts of what has been done and what still remains to be done in the investigation of the different orders, and references to present workers, and to publications where more detailed and definite information is obtainable. In the restricted radius of five miles, St. Albans has recorded no less than 931 species of Lepidoptera out of 1,182 recorded for the whole country. For many years past

much of the entomological work done by this Society has been at the instigation of our friend, Mr. Gibbs, who latterly has been ably supported by Mr. P. J. Barraud. The report concludes with a short account of the Hertfordshire County Museum, which has been established at St. Albans. In local Museums one always expects a miserable show in the portion devoted to insects, but at St. Albans we personally were agreeably surprised to find that the strongest sections of the zoological collections were to be found in the entomological exhibits. But this, perhaps, was hardly to be wondered at when we found that the authorities were indebted to the generosity of Mr. Gibbs for the whole of this extensive and valuable collection (except coleoptera), and that since the foundation of the Museum he has made this section his especial care. It is only when collections of delicate and easily deteriorated objects, such as insects, are under the care of a specialist, that it is possible to adequately retain their usefulness for ready reference and for information. Even the more advanced questions which crop up in the study of entomology are illustrated in the exhibits, for the same gentleman has, besides furnishing a series of cases illustrating the general economy of insect life, prepared illustrations of "Protective Resemblance," "Mimicry," "Warning Coloration," etc. The other sections of the Guide Book are equally well-written by writers competent in their respective subjects, with the result that in the 48 pages a large mass of local information has been attractively and instructively arranged, forming a capital example for other societies in like circumstances.

The *Forty-First Annual Report of the Entomological Society of Ontario* has just been issued from the Bureau of the Department of Agriculture, Toronto, printed by order of the Legislative Assembly of Ontario. We note from the financial statement that Members' fees produced \$350, while the Government grant was \$1000 (!), and that there is a balance of \$730 to go on with. Comment is needless. A large part of the work of this Society, or as I understand it, Union of Societies, is to solidify the economic entomological work done in the various provinces, by a two days' annual meeting in November, at which reports on insects of the year are received from the Directors in their respective districts, the usual reports from Council and Officers are read, reports from the Branch Societies are presented, and a large number of exhibits are made illustrative of various original papers which are either read or communicated. Most of these last are of a very practical character, such as "Beetles found about Foliage," by F. J. A. Morris; "On the Practical Importance of the Study of Parasitic Insects," by C. Gordon Hewitt; "The Coccidæ of Canada," by T. D. Jarvis; "Some Insects of the Larch," by J. M. Swaine; "Basswood or Linden Insects," by Arthur Gibson; "The Migration of some Native Locusts," by Norman Criddle; "The Role of Insects in Water-Life," by J. G. Norman, etc. These papers are published more or less fully in the report, with a few illustrations including several plates illustrative of insect ravages on fruit in apple and cherry orchards. Much of the matter contained in this publication must needs be of infinite utility where so large an area of the land is occupied by agriculture and forest, with sparse population and extreme climatic conditions.

Mr. L. W. Newman of Bexley, has written us as follows:—"It has come to my knowledge that reports are circulating that Mr. G. B. Oliver is collecting on my account in Cornwall this season. I wish in fairness to us both to contradict this, and to say that Mr. Oliver has never spent a season anywhere collecting for me. He is an old friend, and we have had many pleasant exchanges, and some years ago, when I was very busy, he kindly came and helped me at Bexley for a few weeks."

We very much regret to hear from Mr. J. E. Collin that Mr. G. H. Verrall, of Newmarket, is seriously ill. We sincerely trust that he may speedily recover, to continue the study of the Diptera, on which order he for many years past has been one of the foremost European authorities.

In our advertisement columns is announced the sale of a further portion of the collection of our late Editor, to take place on Tuesday, September 16th. The two cabinets, both in very good condition, contain the remaining species of the *Noctuae* not comprised in the previous sale, together with the greater part of the *Geometridae*. Most of the series are long and extremely varied, and contain numerous races and broods referred to in various articles in the *Entomologist's Record* by Dr. Riding and others; for example, hybrid *Ephyra orbicularia* × *E. pendularia*, varieties produced by experiments with *Z. annulata* (*omicronaria*), a long series of the *Tephrosia* species obtained in a similar manner, etc., etc. Anyone interested in the potentiality of a species to produce local variation, will find abundant instances in the long series which are to be dispersed.

We understand that although the whole of the last number was passed for press before July 11th, and the printers delivered the magazine ready for issue on July 14th, by an unfortunate misunderstanding, copies were not distributed to the subscribers until more than a week after. Since the issue of the February number of the present year, the printers have been invariably to time in their delivery.

On page 159 of the present volume of our magazine we wrote a "Current Note" or two dealing with the publications issued by the various departments in foreign countries, which deal with experimental entomology from an agricultural point of view, and deplored the backwardness of the authorities in our own country to support work of a similar nature. We are now pleased to be informed that an initial step has at last been taken, that the Treasury have sanctioned the allocation of funds to be distributed by the Board of Agriculture and Fisheries for the promotion of agricultural research and local investigations in England and Wales. The total maximum yearly amount to be expended will be about £50,000. A scheme has been formulated in considerable detail, including not only researches into the systems of agriculture, the influence of local conditions, and the investigation of economical facts and figures, etc., etc., but is to include original experiments in plant physiology, pathology, etc., animal pathology, agricultural zoology, the influence of animals and plants on the soil and *vice-versa*, etc., etc. At the recent St. Albans Congress of the South-Eastern Union of Scientific Societies we had the pleasure of being conducted over the Rothamsted Laboratory and Experimental Agricultural Station by Mr. A. D. Hall, M.A., F.R.S., the director of the

experiments being carried out there. All who were privileged to be present were intensely interested by the practical nature of the work going on, and the methods and means of testing and recording the results at every point of any experiment, which was suspected as capable of giving useful information. All this, it must be understood, had been going on at the expense of the late Sir John Lawes, on his initiation, and under his personal care, for some sixty years, the institution having only recently received subsidies from various associations more or less interested in agriculture. The kind of work in progress at Rothamsted will, by the substantial encouragement announced above, be now carried on on a much more solid basis, and its practical utility will be brought more prominently forward under the direct state influence and support now forthcoming.

Mr. J. H. Keys, F.E.S., describes and figures (*Ent. Mo. Mag.*) a species of Coleoptera new to science, *Barypithes duplicatus*. He has differentiated it from *B. pellucidus* with which it has been confused hitherto. The species was taken in great numbers in July, 1886, near Margate, by the Rev. Theodore Wood, and also in June, 1898, at Blean Wood, by Commander Walker, R.N. Captain Sainte-Clair Deville reports that *duplicatus* appears to be confined to the Armorican peninsula and to Limousin. Mr. Keys adds an analytical table of the characters separating the British species of the genus *Barypithes*.

Mr. C. D. Butler, B.A., B.Sc., F.E.S., announces (*Ent. Mo. Mag.*) a species of Hemiptera, *Stenocephalus medius*, M. et R., as new to the British List. It has been taken by himself at Maidenhead (August 8th, 1893), by Mr. Champion at Darenth, by Mr. W. West at Darenth, by Commander Walker near Oxford, and by others.

Mr. J. E. Collin, F.E.S., continues (*Ent. Mo. Mag.*) his annotated list of additions and corrections to the *British List of Diptera, Muscidae-Acalyptratae*. The following species and forms are new to Britain:—*Psila nigromaculata*, from Nethy Bridge and Herefordshire; *P. humeralis*, from Nethy Bridge and Golspie; *Diptoloma approximatonensis*, from Nairn; *D. limbata (inconstans)*, from Chippenham Fen, Newmarket, etc.; *Chlorops planifrons*, from Herefordshire; *C. hypostigma (minuta)*, from many localities; *C. serena*, from Herefordshire and Suffolk; *C. triangularis*, from Lyndhurst; *C. interrupta (hirsuta)*, from Oxfordshire and Wells; *Chloropisca obscurella*, from Kent, Suffolk, Glamorgan, and Sutherland; *C. rufa*, odd specimens from Newmarket, Cambridge, and Walton-on-Naze; *Siphonella tristis*, from Walton-on-Naze, Suffolk, Gravesend, and Glamorgan; *S. longirostris*; *S. duiensis*, from Woodbridge, Walton-on-Naze, and Belvedere; *S. pumilionis*, from Abbot's Wood, there, and the New Forest; *Siphunculina aenea*, a ♂ from Herefordshire and a ♀ from Ringmer, Sussex; *Oscinis nitidissima*, from Suffolk; *O. cognata (gilvipes)*, from Brandon and Chippenham Fen; *O. laevifrons*, a ♂ from Nairn, July 6th, 1904; *O. sordidella*, a ♂ and ♀ from Orford, Suffolk, July, 1907, and a ♀ from Eynsham, July 3rd, 1910; *O. frontella*, from various localities; *O. (Notonaulax) lineella*, from Newmarket; *Dicraeus ragans*, from Cambridgeshire and Suffolk; *D. tibialis*, from Porthcawl, Glamorgan, June, 1906; *Elachyptera tuberculifera*, one ♀ from Crowborough, Sussex; *E. megaspis*, from several Southern and Midland Counties; *E. scrobiculata (trapezina)*, from Chippenham and Wicken Fens; *E. pubescens*, from Studland and Christchurch; *Gaurax ephip-*

pium, three ♀s from the New Forest; *Notiphila brunuipes* (*stagnicola*), from Ranworth; *Atissa durrenbergensis*, from Aldeburgh; *A. limosina*, from Arne, Dorset, and Suffolk; *Anthroglossa ordinata*, from Padstow, July, 1904; *Discocerina* (*Clasiopa*) *cinerella*, from Aviemore and Herefordshire; *D. (C.) plumosa*, from Herefordshire; *D. (C.) xanthocera*, from Tuddenham, Aldeburgh, and Herefordshire; *D. (C.) glaucella*, from Herefordshire; *Hydrellia grisea*: *H. mutata*, from Herefordshire and Suffolk; *H. flavicornis*, from Herefordshire and Porthcawl; *H. argyrogeuis*, from Newmarket; *H. maculiventris*, from Newmarket; *Philhygia vittipennis*, from the Suffolk Coast; *Hyadina humeralis*, from various localities; *Pelina nitens*, from many localities; *Parhydra obliqua*, from Snailwell (Cambs). the New Forest and Herefordshire; *P. nigritarsis*, from Scotland; from Scotland; *Philotelua nigripennis*, from the Suffolk coast and Gravesend; *Scatophila unicornis*, from Denmark Hill, London, February 9th, 1867, and Herefordshire; *S. cariceps*, from Norfolk, Suffolk, Essex, and Hants; *S. variegata*, from Walton-on-Naze; and *Cænina curricauda*, from Cambridgeshire, Suffolk, Norfolk, and Herefordshire.

Mr. F. B. Browne, F.Z.S., announces (*Ent. Mo. Mag.*) a species of Coleoptera, *Haliphus nomax*, as probably new to science. He differentiates it from *H. ruficollis*, and states that it occurs in lakes and canals throughout the British Islands.

Mr. Norman H. Joy, M.R.C.S., F.E.S., describes (*Ent. Mo. Mag.*) a species of Coleoptera, *Liodes* (*Anisotoma*) *stenocoryphe*, as new to science. It is closely related to *L. calcarata*, and comes from Forres, in Inverness-shire. Mr. Joy gives an analytical table of the British species of the genus *Liodes*, a table of male characters, and notes on all the species not absolutely common.

Mr. E. Ernest Green, F.E.S., adds (*Ent. Mo. Mag.*) a species of Coccid, *Ortheziola vejtdorskyi*, as new to Britain. It was obtained by Mr. Donisthorpe, at Porlock, from a nest of *Myrmica scabrinodis*, in April, 1911.

SOCIETIES.

THE SOUTH LONDON ENTOMOLOGICAL AND NATURAL HISTORY SOCIETY.—*June 8th.*—SYRPHIDÆ.—Mr. H. W. Andrews exhibited many species of the Dipterous family *Syrphidæ*, most of them being from Kent. ANARTA CORDIGERA.—Capt. P. A. Cardew, an example of *Anarta cordigera* from Ramnoeb, in which the hindmargin and base of the forewings were of an unusually pale grey. ISLE OF WIGHT COLEOPTERA.—Mr. S. Blenkarn, more than 150 species of coleoptera taken in the Isle of Wight from April 23rd to May 10th, mostly *Geodephaga*. Among them were *Tachyusa umbratica* and *Galerucella calvariensis*, new to the district. SETTING OF LEPIDOPTERA.—Mr. Gadge, a box of lepidoptera set so that the pin did not show above the thorax. THE GENUS CHARAXES.—Mr. Edwards, a box of the species comprising the genus *Charaxes*, and a larva of *Diloba caeruleocephala* feeding on laurel. CALLOPHRYS AVIS.—Dr. Chapman, living larva of *Callophrys aris* from the South of France. *July 15th, 1911.*—Mr. Percy Harris, of Streatham Hill, was elected a member. OVA OF MANDUCA ATROPOS.—Mr. Tonge, ova of *Manduca atropos* dissected from a captured ♀ by the Rev. C. R. N. Burrows. They were infertile, but an ovum laid

previously had produced a larva, which he now exhibited in the third instar. PUPÆ OF VANESSA 10.—Mr. Hy. J. Turner, some remarkably light coloured pupæ of *Vanessa io* from Clandon. PUPÆ GOING OVER THREE WINTERS.—Mr. R. Adkin, a series of *Biston hirtaria* that had remained for three winters in pupæ, and contributed notes. ASYMMETRICAL ABRAXAS GROSSULARIATA.—Mr. Blenkarn, a selection of *Abraxas grossulariata* bred from about 2,500 Gateshead larvæ. Two nice asymmetrical forms were perhaps the most striking of a scarcely more than ordinary series. EARLY EMERGENCE OF CALLIMORPHA HERA.—Mr. Jäger, a series of twelve *Callimorpha hera* bred on June 22nd of this year, quite a month earlier than he had ever bred the species before. ABERRATION OF MIMAS TILIÆ.—Mr. W. J. Kaye, a fine aberration of *Mimas tiliæ* with the usual transverse fascia of the forewings reduced to a very small elongated central spot.

REVIEWS AND NOTICES OF BOOKS.

LEPIDOPTERA OF LINCOLNSHIRE: part iv., by G. W. Mason.—It is much to be regretted that so few of our British lepidopterists pay any attention to those highly interesting members of our fauna, which go under the name of Micro-lepidoptera. Happily, however, there are signs which go to show that the smaller species are now coming more into favour, and it is indeed welcome news that we already have another local list of lepidoptera, which includes the smaller species. Through the kindness of the author I have just received part iv. of the *Lepidoptera of Lincolnshire*, by Mr. G. W. Mason, of Barton-on-Humber. This is one of a series of papers contained in the *Transactions of the Lincolnshire Naturalists' Union*. If this be a fair sample of what it publishes, the Union may be congratulated on the excellent work it has done. This part contains the Pyralidina, Tortricina, and Tineina. The 45 pages are well printed, and the names of the species stand out in bold type. The publication is, however, not dated. The proofs have been well seen through the press, but on page 20 we find *Paedisca ratzburghiana* for *ratzeburgiana*, and on page 23 *Carpocapsa splendidana* instead of *splendana*. With regard to *Carpocapsa pomonella*, the author makes a telling remark, he says: "Probably abundant everywhere in orchards . . . but I only have four distinct records." That is the same here, the larvæ are too common in fruit, but the moth is seldom seen, and the same is the case with *Grapholitha funebrana*, which, though not mentioned in Mr. Mason's list, probably attacks the plums in Lincolnshire as it does here. It is a pity that the classification adopted in this very useful list has not been modified to bring it more in accordance with modern thought. We find *Schreckensteinia festaliella* and *Orneodes heradactyla* included in the *Alucitides*, here called *Pterophori*. The two families, *Micropterygides* and *Eriocraniides*, are wedged in as one genus (*Micropteryx*) between the genera *Incurvaria* and *Nemophora*. The fact that over 500 species are here mentioned as occurring in the county shows that both time and energy have been expended in bringing these records so successfully together. As the localities where, and the actual dates when, the species were taken are usually given, this list will be a most admirable guide to any entomologist who collects in Lincolnshire. Mr. Mason hopes to publish a supplementary list, and no doubt this will, in a few years, be

necessary, as there must be a far larger number of species of Microlepidoptera in that county than is here recorded. In the meantime this list will form a most useful basis on which to work.—A.S.

(O) B I T U A R Y .

Dr. Samuel Hubbard Scudder.

The death of one of the most distinguished of the entomologists of the United States of America took place on May 17th, 1911, after years of gradually increasing bodily weakness and infirmity, which, however, left his mental powers unimpaired to the end. For most of the personal details of his life we are indebted to the kindly notice of him contributed to the *Canadian Entomologist* by its Editor Emeritus, the Rev. C. J. S. Bethune. Dr. Samuel Hubbard Scudder was a native of Boston, where he was born in the year 1837. He took his Science degree at Harvard University in 1857, and later in life received the honorary degrees of D.Sc. and L.L.D. from Williams and Pittsburgh Universities respectively. Dr. Bethune says of him: "A lover of Nature from his earliest years, he devoted his life to the study of the insect world, and at the same time did not neglect the refining cultivation of music and literature. His charm of manner, kindliness of thought, entire unselfishness, refinement and courtesy, attracted to him the friendship of the leaders in science, art, and literature in that centre of culture where he lived. He was always considerate and sympathetic with the poor and struggling students of nature and the aspiring entomologists, however uncouth they might be, winning their heart's devotion and life-long admiration and respect. A loveable man indeed, and a trusty friend to those who knew him well." Two bitter sorrows came to him, the death of his young wife a few years after his marriage, and later the loss of his only son, who had entered upon a physician's career with every prospect of attaining distinction, and who met with an untimely death, brought on by his over-devotion to the needs and calls of the sick in a time of severe epidemic in Boston. Dr. Bethune remarks what "a rare delight" it was "to spend an hour or two in the quaint little building behind his dwelling, where were stored his rich treasures of butterflies, locusts and fossils, and his library of scientific works." That his scientific reputation was high is abundantly evident when we find that at the time of his decease he was an honorary member of societies in London (to which he was elected in the year 1895), Vienna, St. Petersburg, Moscow, Brussels, the Hague, Geneva, Madrid, Argentina, as well as many in North America.

We are told that he spent fully twenty-five years in the study of the life-histories of butterflies and in the collection of information, before he produced his epoch-making work, *The Butterflies of the Eastern United States and Canada*, in 1888-9. This magnificent work consists of three quarto volumes, illustrated with a large number of excellent plates and maps, showing all species of butterflies found in the area, their various stages, details of structure, and specific and generic distribution. It is no exaggeration to note that without the example set by Dr. Scudder in this work, it is more than probable that the volumes of *British Lepidoptera* would not have taken the line they did. The late Mr. J. W. Tutt more than once remarked to me that it

was the exhaustiveness of minute detail and the thoroughness of treatment of every aspect of the life of each species, which Scudder was the first to use in dealing with entomological subjects, that led him (Mr. Tutt) to realise that if his work *The British Lepidoptera* was to leave the subject the better for its publication, and not be a mere reshuffling of what was hitherto known, it must be produced more or less on Scudder's lines, and be at least as high in its aims.

Even in early life Scudder was interested in fossil insects, for we find that in 1865 he contributed an article to the *American Journal of Science*, entitled "On the Fossil Insects from Illinois, the *Miamia* and *Hemeristia*." He continued his study of the subject, until in 1890 we get his splendid and classic work, *The Fossil Insects of North America*, in two volumes, with two smaller supplementary works, *A Classified and Annotated Bibliography of Fossil Insects*, and *The Index to the known Fossil Insects of the World*, in 1891. So that he might the more adequately deal with this palæontological side of his study, he for many years worked at the Orthoptera and Neuroptera, and published a number of articles and books of a systematic character on these orders. From time to time he published single small volumes on butterflies adapted to the needs of the ordinary collector, and leading on to scientific study, *The Life of a Butterfly*, and *A Brief Guide to the Commoner Butterflies of the Northern United States and Canada*, in 1893, that most delightful book *Frail Children of the Air* in 1895, and *Everyday Butterflies, a Group of Biographies* in 1899. The butterfly genus *Pieris* interested him much, for as far back as 1861 he contributed to the *Proceeding of the Boston Society of Natural History*, "A Notice on some North American Species of *Pieris*," and continued to make observations from time to time, particularly on the *Introduction and Spread of Pieris rapae in North America*. On the philosophical side of Entomology he contributed but little beyond the chapters that are found interpolated between the more descriptive sections of his great classic on the butterflies. He early saw the extreme importance of Hübner's first attempt at an arrangement of the Lepidoptera on natural lines, and in 1873 reprinted the *Tentamen* of that author, of which there was at that time only one known copy. For nearly half a century there has been a continuous output of well-grounded scientific work from his pen, and the only list of his writings which we have at hand at the present time, and which we know to be very imperfect, fills no less than eleven octavo pages. No doubt a complete bibliography of his writings will be published later.—H. J. T.

Alexander Henry Clarke.

Another of the older entomologists has recently passed away, Mr. Alexander Henry Clarke, of Earls Court, London. For more than fifty years he was a keen collector and student of entomology, some of his records being as far back as 1855. For many years he was a friend of the late Mr. Tutt, and frequently contributed notes and information to our paper, his last note was in January, 1906, when he made remarks and suggestions on the appearance and disappearance of various species of Lepidoptera. Latterly, however, growing age and infirmity prevented his active work in the field, although he showed the keenest interest in anything entomological, and busied himself with the care of his large collection. He had been a Fellow of the Entomological Society of London since the year 1867.—H. J. T.

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L. W. NEWMAN, F.E.S., Bexley, Kent.

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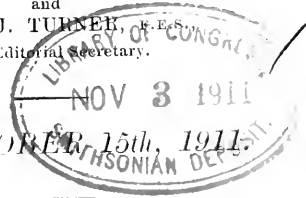
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Notes on the Lepidoptera of the Scottish Highlands.

By DOROTHY J. JACKSON.

Last year, 1910, I spent most of the fine days of spring and late summer collecting Lepidoptera in various localities in Ross-shire and Inverness-shire, and thus came across many species which seem to be worth recording for these counties. A few days of brilliant sunshine occurred in the end of March, and the first of these, the 29th, I spent in the birch woods at the Rogie Falls near Strathpeffer (Ross-shire). Here *Amphisa prodromana* was taken flitting about over heather and withered bracken, and several specimens of *Brephos parthenias* were noticed flying actively, and often at a considerable height, amongst the birch trees. This species (*A. prodromana*) appears to be quite common in these open heath-carpeted woods, for I took it again next day at Kilmorack, near Beauly. Here it was much attracted by the pools of water in the marshy places beneath the birch trees, pausing beside them for a few moments in its quick erratic flight. In both these localities *Semioscopis avellanella* was fairly common on the trunks of the birch trees; and *Peronea ferrugana* was readily disturbed by the beating stick, many of the specimens, though in perfect condition, having the ground colour white, the brown markings standing out strongly in contrast. On April 8th some scattered birch trees at Loch Ussie, Strathpeffer, yielded *Eriocrania semipurpurella*, in addition to the species already mentioned; and *Lita aethiops* was beaten from a gorse bush amongst the heather in the same locality.

The next noteworthy day was June 27th, when, at Kinerag, Invergordon, *Pyrodes rhediella* was beaten from a plum-tree, *Gracilaria alchimiella* from oak, and *Ornix scoticella* from mountain-ash. *Phylloporia bistrigella* was taken amongst some small birch bushes, *Lithocolletis emberizaepennella* was disturbed from honeysuckle, and *L. quinqueguttella* was locally common beside some low-growing willow [*Salix repens* (?)] amongst the heather and grass at the edge of a bog. Other *Lithocolletidae* occurring in the neighbourhood of Swordale (Evanton) were *L. caledoniella*, Sta., taken in a birch wood on June 26th; *L. pomifoliella*,* reared in May, 1910, from mines in hawthorn leaves collected the previous autumn; *L. kleemannella* and *L. froelichiella*, reared in 1911, from mines in alder leaves taken in October, 1910; and *L. spinolella*, which in early July (along with *Teleia notatella*) frequented some small bushes of *Salix caprea* growing on the banks of a moorland burn.

One of the most interesting localities in this neighbourhood is Nigg Sutor, a high rocky promontory at the north side of the entrance to the Cromarty Firth. Here, between the precipitous cliffs, are dry grassy slopes covered with *Helianthemum vulgare* and other low growing plants. These are the haunts of *Aricia astrarche* var. *arta.verses*, which I took in fair abundance flying over its foodplant on July 9th, a hot sunny day. The specimens were in good condition and exhibited considerable variation in the number and size of the marginal spots on the wings on the upper-surface, and in the presence or absence of a black central dot in the white spots on the underside of the wings. One ♂ specimen had the ground colour of the upper surface

* Most probably *L. oryzaeantae*, Frey. See *Ent. Mo. Mag.*, 1899, p. 250.—A.S.

of the wings a very dark brown, the white discal dot much reduced in size, the marginal spots absent on the forewings but present as four inconspicuous red crescents towards the anal angle on the hindwings. On the undersurface the white spots were centred with black. One very handsome ♀ specimen had the marginal dots on the upperside of the forewings reduced to four scarcely discernible dots of red, the white discal spot conspicuous, and a white shading (most noticeable at the apex of the forewings) all round the outer margin of the anterior and posterior wings. In this specimen the white spots on the underside were distinctly dark centred. (Later, on August 8th, I took a few worn specimens of *A. astrarche* var. *arta.cer.ves* at Tarbat Ness, also on *Helianthemum*-covered slopes by the sea.) Other species of interest taken at Nigg Sutor on July 9th, were *Scoparia dubitalis*, *Elachista argentella*, Clerk (*cygnipennella*, Hb.), *Micropteryx seppella*, *Lita marmorea*, and *L. leucomelauella*—the last beaten from a tuft of *Silene maritima* growing in a crevice in the rock. About six weeks later, on August 17th, *Gnophos obscurata* was fairly abundant in this locality. Two of the specimens captured were infested with about half a dozen small red parasites, larval *Trombidiidae*, whose head parts were buried amongst the scales of the moth's thorax. *Lita vicinella** was another interesting species taken on the same day amongst the herbage on the steep slopes by the sea.

Other *Gelechiidae* observed in Ross-shire last summer were: At Swordale, *Lita maculiferella*, resting on lichen-covered oak trunks on April 9th; *L. acuminatella*, taken on July 30th; *Bryotropha terrella*, abundant amongst grass during June and July; *Monochroa tenebrella*, beaten from herbage on a roadside on July 5th; *Brachycrossata cinerella*, taken amongst grass on July 28th; and in other localities, *Gelechia mulinella*, beaten from whin at Tarbat Ness on August 8th; and *Teleia dolecella*, beaten from Scotch fir near Strathpeffer on July 19th.

During July I spent one or two interesting days amongst the lepidoptera of the mountain districts. One of the more successful of these was the 3rd, when I made the ascent of a round topped mountain about 2,000 feet high, near Ben Wyvis. The marshy spots on the moor at a lower elevation were frequented by *Elachista rhynchosporella* (*albidella*) and *E. kilmunella*. The latter was very common and was observed on subsequent occasions up to the beginning of August. A short distance from the summit of the mountain, the bushy heather of the more sheltered slopes gave place to a dwarfed variety, which scarcely raised a shoot amongst the encircling moss and lichen, while the cloud-berry—*Rubus chamaemorus*—(on whose leaves the larvæ of *Heterogynomon* (*Tortrix*) *riburniana* were feeding) was supplanted by trailing shoots of *Arctostaphylos alpina*. Just here I netted a specimen of *Psodos coracina* that was flying low over the ground, and a little later, though the sun was clouded and a cold wind was blowing, a second specimen was noticed fluttering over the moss. A cold half-hour of unsuccessful search ensued; but at 5.30 the sun shone out again, and two more specimens made their appearance. Another interesting species taken in this neighbourhood was *Pachmobia hyperborea*, a beautiful specimen

* Banks (*Ent. Mo. Mag.*, 1909, p. 263) shews *L. vicinella* to be a pale ab. of *L. leucomelauella*.—A.S.

of which was observed on July 30th resting on the bare peat beneath an overhanging bank of heather, at the low elevation of about 1,700 ft. The forewings of this specimen are purplish grey, with the markings distinct in blackish brown, the reniform stigma tinged with chestnut brown. On the orbicular stigma and on the dorsal margin are blotches of greyish-white bloom. About ten days later (on July 14th) I again came across *Psodos coracina*, this time flying actively in the sunshine on the summit of Sgurr na Lappaich, a mountain 3,400 ft. high, near Loch Affric, Inverness-shire. Rising rather abruptly to nearly 3,000 ft. above the level of the Loch, this mountain afforded a variety of interesting collecting grounds—near the foot, long slopes of heather; higher up, steep grassy sides; and at the summit, a limited area of strong moss-grown ground. Therefore, on making its ascent, it was interesting to note the successive zones of Lepidopterous fauna—*Cidaria caesiata* and *Mirodia schulziana* being the only species observed, whose range extended from the foot to the summit. Thus, typical of the lower slopes were *Argynnis aglaia*, *A. seleno*, *Coenonympha typhon*, *Emmelesia minorata*, and *Crambus ericellus*, the two latter very common and readily disturbed from the heather on one's approach. At a higher elevation *Tortrix riburniana* appeared frequenting a stretch of boggy moorland. When the steep grassy slopes were reached, I captured several specimens of *Emmelesia adaequata* (*blandiata*), which appeared to take the place of *E. minorata* at this elevation. *Coenonympha typhon* still lingered in the marshy spots which were frequented also by *Scopula alpinalis*, a species that became increasingly abundant as the ascent was continued. Higher up, beneath a patch of quickly melting snow, *Crambus furcatellus* was trodden up from the grass, and from the *Vaccinium myrtillus*, that grew abundantly on the mountain side above the snow-drift, *Sericoris irriguana* was disturbed. After a further climb, during which a specimen of *Herbula cespitalis* was captured, I at length reached the cairn, and here *Mirodia schulziana*, *Sericoris irriguana*, *Crambus furcatellus*, *Scopula alpinalis*, and *Larentia caesiata* flitted about over the moss beneath a blazing sun.

Glen Affric also proved very prolific of Lepidoptera during these sunny days in early July. One of these, the 12th, I spent in the birch woods, carpeted with whortleberry, on the hills around Loch Benevian, and obtained, amongst other species, *Halía brunneata* and *Phoropteryx* (*Ancylis*) *uncana* (both in abundance), *Gelechia galbanella*, and *Coleophora nigricella*. Amongst the heather and rushes near the Loch, I took a worn specimen of *Diacrisia sanio* (*Nemophila russula*). Collecting on the grassy banks along the river Affric's side and amongst the birch trees which clothe the lower part of the Glen near Fasnakyle, I obtained the following species:—On July 8th, *Macaria notata*, *Olezia atrata*, and *Sericoris urticana*; on July 11th, *Penthina corticana* (*picana*), *Ephippiphora trigeminana*, *Grapholitha nigromaculana*, and *Leioptilus tephrodactyla*; on July 13th, *Phibalapteryx rittata* (*lignata*), and *Chrysorista schranckella*, the latter was taken again at Conon, Ross-shire, on August 3rd.

About this time I spent some interesting days amongst the birch woods of Ross-shire; the most noteworthy of these was July 20th, when I visited the Rogie Falls, near Strathpeffer. Here, amongst other species, *Penthina betulaetana*, *Paedisea bilunana*, *Grapholitha*

ramella, *Scoparia crataegella*, *S. ambigualis*, and *Argyresthia retinella* were taken resting on the trunks of the birch trees, their uniform tints of grey and white harmonising well with the colour of the bark. *Gelechia galbanella* and *Oecophora flavifrontella* were beaten from the branches; *Coleophora lutipennella* was taken in a small tract of oak wood, and *Halia brunneata* and *Phoropteryx unca* were disturbed from the *Vaccinium myrtillus*, which clothed the hillsides. Later on in this locality, on August 16th, *Argyresthia arceuthina* abounded amongst the juniper, *Batrachedra praeangusta* was beaten from the branches of some aspen trees, and *Tachyptilia populella* swarmed on the trunks. At Loch Achelty, also in this district, on August 1st, *Acidalia inornata* and *Tinea semifulvella* were captured; and later, on August 20th, *Paedisca ratzeburgiana* and *Coccyx ustomaculana* were obtained in this locality. Further west, at the Conon Falls, on August 12th, I beat three specimens of *Orthosia suspecta* from the birch trees. Their forewings had the ground colour of a uniform purplish brown, the transverse lines in grey, the reniform and orbicular stigmata distinct, and outlined in whitish grey.

Perhaps the most interesting insect I took last year was *Dioryctria splendidella*, a perfect specimen of which I noticed resting on the wall of a room at Swordale, on September 24th. It may either have entered at the window, near which some spruce fir trees were growing, or it may have been introduced along with some cones of the same tree taken in a neighbouring locality. Prof. J. J. F. X. King, F.E.S., has kindly confirmed its identification. My thanks are also due to him for his help in the naming of many of the other species mentioned in these notes.

Last autumn a number of moths were taken at the lantern at Tarbat Ness Lighthouse, amongst which were one specimen of *Agrotis cursoria* and one of *Agrotis lucerneae*. The former has the ground colour of the forewings yellow ochreous, the transverse lines and stigmata distinct, the orbicular and reniform ringed internally with pale ochreous, externally with brown. The latter is a rather light example of var. *renigera*, St., in which the first line is edged inside and the second line outside, with pale grey.

In conclusion I should like to mention *Zelleria hepariella*, beaten from ash near Inchindown, Ross-shire, on September 15th; and the following species all taken during 1910, in the neighbourhood of Swordale; *Tueniocampa pulvulentata (cruda)*, reared in the end of March; *Emmelesia taeniata*, beaten from bushes in a wooded valley on July 30th; *Diptyopteryx bergmanniana*, captured on July 28th; *Clepsis rusticana*, reared on June 14th from larvæ on mountain ash taken in October, 1909; *Retinia pinivorana*, beaten from some young pine trees on July 17th; *Trifurcula immundella*, taken on July 20th; *Scardia cloacella*, on August 15th; *Oecophora stipella*, L. (*similella*, Sta.), beaten from a pine tree on August 9th; *Elachista obscurella*, taken amongst grass on August 13th; and *Acompsia fuscescens*, an abundant insect about the house in the end of July and the beginning of August.

Two months among the Butterflies in Southern Spain.*

By ALBERT H. JONES, F.E.S.

Looking through my notes of a two months' sojourn in the south of Spain, from March 28th until May 28th last, I find but a record of a series of windy, wet, chilly, overcast days. At Malaga the weather reached a climax of badness, for it rained incessantly for three days, April 10th, 11th, and 12th. It would be but natural that there were intervals of fine weather, but ideal days for collecting were few and far between. Having in view the past brilliant summer it seems surprising that the weather during the earlier part of the year on the Mediterranean littoral should have been so unpropitious.

Mr. G. O. Sloper accompanied me to Gibraltar, and a stroll over the Neutral Ground—not a very likely locality for butterflies—only resulted in our seeing a few *Pararge aegeria*, and a worn *Pyrameis atalanta*. On March 30th we paid a visit to Europa Point, and on waste ground noticed several *Thestor ballus*, and an occasional *Euchloë (Anthocharis) belemia*. On the following day, accompanied by Captain J. J. Jacobs, R.E., I visited the lower slopes of the hills to the north; crossing the Neutral Ground and passing through the dirty town of La Linea de la Concepción, the route lay for about a mile and a half through a sandy waste partially under cultivation, the "allotments" being enclosed by cacti and prickly pear. The path, if you can so call it, was a sandy track most trying to walk over. *E. belemia* was soon seen and captured, but to keep your eye on this quick-flying butterfly and avoid the spiny points of the cacti, was no easy matter. It is a long lane which has no turning, and we eventually left the sand behind us and reached the grassy slopes we had in view. Here *Thestor ballus* was not uncommon, *Thais rumina* occurred at intervals, and on the extreme edge of a declivity *E. belemia* disported themselves after the fashion of the *Pieris (Pontia) callidice* we see in alpine regions. I took a fine but short series, but only a small number of those seen were captured.

Mr. Sloper and I, on April 1st, took the steamer to Tangiers. I cannot say that I had in view any entomological aspirations; indeed, the unsettled state of the country suggested only a visit to the town and back. In the afternoon we strolled round the outskirts, and although we found here and there likely little bits of good collecting ground, there was not a sign of lepidopterous life. In conversation at the hotel with a Moorish guide, who spoke English well, I was persuaded on the morrow to visit Cape Spartel, as he informed me that in the previous summer he had accompanied a German entomologist thither, and that he had there found numbers of butterflies. At an early hour on the following morning we started on foot, passing the Jews' River, and then by a lane worn with deep furrows by winter rains, to the plateau of Djebel Kebir (1070 feet). Along this road, endless were the mules and carriers I met conveying fire wood from the neighbourhood of Cape Spartel, a distance of about ten miles. Along this treeless track, covered chiefly with cistus and a species of heath, I saw but one butterfly, *E. belemia* ♀, which I succeeded in capturing. It was a relief after some hours' walking, to

* In this paper the author is responsible for the Nomenclature, which is that of Staudinger's Catalogue, 1901.

see the lighthouse at Cape Spartel some 500 feet below, and to find oneself among a luxurious vegetation. The scene seemed changed by magic. My guide was right in his prophecy, for here were butterflies in some numbers. *Gonepteryx cleopatra*, *P. aegeria*, and *T. ruminata* were not uncommon; *Euchloë eupheno* flitted along the path at intervals, and was by no means uncommon. My guide I found most useful, and as we approached our resting place he hurried off with the luncheon, which I found on my arrival spread out in the shade at a lovely spot overlooking the sea, *E. eupheno* tantalizingly flying round during the repast. The afternoon was now somewhat advanced, and I had to return and leave this enchanting spot.

On April 5th I left for Malaga and thence to Ronda and Grenada, but as I returned to Algeciras on May 22nd, and remained there until May 27th before sailing for England, I will complete my notes of that area and deal with the Grenada portion afterwards.

I found comfortable quarters at the Hotel Anglo España. On May 23rd Captain Jacobs came over from Gibraltar, and we started by an early train for the cork woods. Almoraima is the station and is in the midst of them; the paths diverge in every direction, and one might easily lose one's way, but under the guidance of Captain Jacobs we wandered many miles and fairly well found our way back to Almoraima. The woods were not very productive of lepidopterous life; that large and beautiful form of *Euchloë (Anthocharis) tajis* had long since disappeared, but the second brood of *E. belemia* var. *glauce* was met with occasionally, also here and there specimens of *Leptidia sinapis*, *Pieris daphnidice*, *Lampides (Raywardia) telicanns*, *Hesperia proto* and *Euchloë euphenoides*.

I hoped to find a locality for *Lycaena (Cupido) lorquini*, and worked in various directions the three following days. Along the Tarifa Road I walked for many miles, but without success: on this road the wild flowers presented a blaze of colour, chiefly a species of mallow, the fields in places being completely mauve in colour. Along the roadsides there was an abundance of flowering plants including thistles, which attracted crowds of freshly emerged specimens of *Pyrameis cardui*. *E. belemia* var. *glauce* occurred at intervals, but this species was more common on the hillsides near the coast where I took a beautiful series. Here also *Lampides boeticus* was not uncommon and *Colias edusa* most abundant; of the var. *helice* I took a beautiful short series. On the 28th May Captain Jacobs and I paid a visit to the hill slopes beyond Linea, where we had collected on March 31st, but the wind was so high that collecting was out of the question except in sheltered ravines, where, during intervals of sunshine, I took a few males of *Epinephle ida*. On our return journey through the sandy district among an abundance of flowering plants in a neglected allotment ground, amongst the cacti, we found quite an abundance of Lepidoptera including among others *H. proto*, *Adopaea (Thymelicus) acteon*, *Epinephle jurina* var. *hispulla*, *Deiopeia pulchella* and *Sterrhia sacraria*.

I remained at Malaga from April 5th until May 19th, at the Hacienda de Giro, which, in addition to its excellent cuisine, possesses a very beautiful garden, one of the best in the villa suburb of Caleta. I explored most of the valleys to the east as far as the little fishing village of Palo; the Limonar valley just beyond Caleta was fairly good collecting—a ravine with well-clothed hillsides being my chief hunting-

ground. *T. rumina*, a small form, was fairly numerous, one specimen captured was of considerable interest, being without any red markings on the upper surface of the forewings. *Lycaena (Polyommatus) icarus*, *P. daplidice* and *Epinephela pasiphaë*, were fairly numerous. Before reaching Palo there is a little stream, and I worked for some miles up both its banks, which were clothed with a luxuriant growth of the oleander. On the grassy slopes of the right bank *T. ballus* was very common. The left bank, the locality furnished me by Mr. Sheldon, was more productive, but a divergence was necessary to reach the lower slopes of the somewhat distant hills. Ascending about 1,000 feet cultivation was not so acute, flowering plants were more numerous growing among various trees and shrubs; butterfly life was here quite well represented. *Lycaena (Glaucopsyche) melanops*, a large and fine form, was common, but unfortunately had seen its best days; one specimen of *Lycaena (Agriades) bellargus (thetis)* var. *ceronus* was my best capture in this locality.

(To be continued.)

"The Latest in Nomenclature."

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

I think Mr. Shelford's article on the nomenclature of the genus *Steleopygna* is entirely met by the International Code on the subject.

The code would deal with the matter thus:—

- 1st. Fischer von Waldheim erected the genus for three species—*orientalis*, L., *americana*, L., and *trichoprocta*, sp. n. (1833). Latreille had already (1810) selected *orientalis*, L., as the type of the genus *Blatta*. Fischer von Waldheim's action in including that species was therefore *ultra vires*: *orientalis*, L., is consequently eliminated, leaving *americana*, L., and *trichoprocta*, F. v. W., only in the genus.
- 2nd. Brullé erected the genus *Polyphaga* for *aegyptiaca* (i.e., *trichoprocta*) (1835). This eliminates *trichoprocta (aegyptiaca)* and leaves *americana* as the type of *Steleopygna*, which cannot be altered.
- 3rd. *Americana* was made the type of *Periplaneta*, Burm, 1830. The species having already become the type of *Steleopygna* by elimination, *Periplaneta* sinks to that genus, as Mr. Shelford says.
- 4th. *Stylopygna* (1846), an amended name erected by Fischer von Waldheim for *orientalis* only.

This raises two points according to the International Code:—

- (a) An author having once published the name of a genus has no power to alter it.
- (b) In this case, whether the author intended to amend the original name is not the point, he definitely named *orientalis* as the type of *Stylopygna*, and therefore the name sinks to *Blatta*.

Descriptions or Figures?

By LOUIS B. PROUT, F.E.S.

The questions raised or suggested by Dr. Chapman's article (*antea*, p. 239) are by no means unimportant, and the ultimate issues of progress along the lines he has indicated would be more far-reaching than

appears on the surface. The title of my own comments has sacrificed accuracy to brevity; for I will concede at once that descriptions *plus* figures (not "*plus figure*"—the single drawing of wing-marking which M. Oberthür desiderates) furnish the ideal elucidation of a new species. But the question, as it is presented by M. Oberthür, really resolves itself into that of the *indispensability* of a figure; and one knows from his writings, as well as from correspondence with him, that he would consider a species more validly erected by a figure alone than by a description alone! And even without admitting that that extreme position is really arguable, it is evident that the case to be tried is mainly that of descriptions supplemented by a figure *versus* figures supplemented by a description.

Which is the more important, then, the description or the figure? I unhesitatingly affirm it is the former. This, as Mr. C. Davies Sherborn truly urges, is the author's own work; the figure generally has to be entrusted to another hand. Of course, it can be, and should be, supervised by the author; but there are countless opportunities for oversight or discrepancy. And, says Dr. Chapman, "a bad figure may be worse than none." So, too, M. Oberthür: "*Sans bonne figure*," etc.

Here is the first crucial point. The law which M. Oberthür advocates is *absolutely impracticable*. If a new rule is to be framed, we must leave out the word "*bonne*" and allow any rubbish in the way of illustration to do service in giving theoretical validity to a name. We have already found it is inevitable that this be done in the matter of descriptions, so that we shall be no worse off; but neither shall we be bettered, nor will M. Oberthür's aim have been secured. If we insist upon a "*good*" figure, whose is to be the standard? It is clear that the work of M. Culot will be safe for some generations to come; but most of Maassen's and Felder's Geometrid figures will have to go at once—at least, so far as I am concerned—and others will follow as standards of taste advance, nor will there at any period, present or future, be even approximate unanimity as to which are valid.

The second, and still more acute, "*crucial point*" is that which Dr. Chapman recognizes as "*difficult and knotty*": can the proposed law be made at all retrospective? If it can, then even M. Culot's superb work is doubtless tottering to its fall. Twenty years hence, at the present rate of progress, Dr. Chapman's "*minimum to be demanded*" (a good photograph) may be conceded, and another retrospective sweep will cancel the validity of all hand-work. Fifty years hence, the minimum demand will be a good photograph of each detail of external morphology; a hundred years hence, nothing less will satisfy than the addition of the internal anatomy; and every time, an almost entire nomenclature will be superseded, unless a few philanthropic millionaires come to the aid of Lepidopterology and supply the new detail to all the old descriptions before the thousand self-advertisers have had time to deal with their own collections under new names.

Personally, I have identified many more species with confidence from descriptions alone than from figures alone; and I have had my share of work to do in identification. Mr. Meyrick tells me he has had the same experience. I have made out very few of Felder's species without the aid of his "*types*"; the few of Maassen's which I have

identified are chiefly through the help of the text ; but I am constantly determining the unfigured species of Meyrick, Warren, Dognin, Turner, and others.

May I be permitted one paragraph more ? The illogicality of making validity depend on "a figure" (in the ordinary acceptation) is strikingly brought out by a glance at the genus *Thalassodes*, which I have recently been trying to revise. *One* good figure (of wing-markings, etc.) would serve for quite a number of the species, and the only *useful* requirement in the way of illustration would be enlarged drawings of palpi, hindleg, frons, etc., but the salient distinctions can be *best* brought out by a few simple words. I trust the Oxford Congress, while advocating the desirability of figures (especially of structural detail), will not attempt to fetter the science with a wholly unnecessary and almost impracticable rule.

A month in Switzerland and elsewhere.

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

(i.) SAMOUSSY.—Inspired by the example of Mr. Rowland-Brown and Mr. Warren, and having very little first-hand knowledge of the butterflies of France, I determined to stay for a few days on my way out to Switzerland (my first butterfly expedition there since it ceased to be my home), at the tiny village of Samoussy, a few kilometres out of Laon. Following the advice of my friends above-named, I had secured rooms at the only house resembling an inn which the village contains, in which, in spite of certain drawbacks, we were comfortably enough housed, and more than sufficiently fed, though the accommodation was not so enticingly cheap as I had been led to suppose. I saw by Mr. Rowland-Brown's paper in the *Entomologist* of November, 1910, that he had arrived there on June 23rd, and found himself late for several species, so as I arrived ten days earlier, I hoped to be in good time. I was, however, doomed to partial disappointment, for the sun only appeared from time to time during the three full days of my stay, and I was apparently already too late for some of the species I had hoped to find, and rather early for others. Only one species, *Coenonympha arcania*, could be described as abundant, but this occurred everywhere in the woods ; I did not, however, come across anything more than the merest trace of orange-brown in the hindwings of a single ♀, though Mr. Rowland-Brown speaks of them as displaying a "pronounced inclination" in this direction, and M. Chas. Oberthür regards the form as characteristic of the district. The next commonest species was certainly *Melitaea dictynna*, which occurred in the woods on both sides of the main road, but especially on the right. Indeed, the best general locality I found at all was reached by turning to the right on leaving the inn, and taking the cart track bearing to the right, which forks from the main road shortly after the turn (on the left) leading to the station. *M. dictynna* was not only common but very variable ; indeed, my whole collection from many localities scarcely exhibits a wider range of variation. (I do not however possess var. *vernetensis*, if this really is a form of *dictynna*). The other Melitaeae which I came across were :—*M. athalia*, looking very like English specimens, but neither fresh nor common ; *M. maturna*, which I had expected to find fresh and abundant, but of which I saw less than

half-a-dozen specimens, of which only one ♀, found dead in a spider's web, was in even fairly good condition; all that I saw were more heavily marked on the underside and had much broader light bands on the hindwing than my specimens from Freiburg in Baden; *M. cinria*, one ♂, rather small and somewhat heavily marked with black, on June 16th, but in better condition than could have been expected; and *M. aurinia*, one ♂ on the 15th, very small, very worn, and again somewhat heavily marked. Another species which was beginning to become common was *Pararge aethina*, but I saw no ♀s; the specimens appear to me indistinguishable from those of Switzerland. The same may be said in every respect of *Limenitis sibylla*. A single *L. populi* rose at my feet from one of the wood paths on the 15th, the only one I saw, and its capture was out of the question. *Argynnis aglaia* was fairly common at the privet blossom, which was fine and very abundant, the whole air being often laden with its perfume, and one *A. adippe*, a ♂, was taken at the same plant; the ♂s of the former were quite typical, the ♀s brighter than is usual either in England or Switzerland, and resembling rather Italian or (except for size) Spanish specimens; the single example of the latter species had no inclination towards var. *cleodora*, which I gather from Mr. Rowland-Brown's and Mr. Sheldon's papers is the usual form in these parts, on the contrary it was particularly well off for silver, though the androconia were both narrower and less black than usual. Not uncommonly one came upon *Brenthis selene*, rather light in colour on both sides, though this may have been due to deterioration, as they were mostly rather worn and frequently rubbed. The only other Brentid seen was *B. ino*, of which I took a typical specimen on each of the last two days of my visit. On the 16th *Dryas paphia* was seen for the first time—an early date, I think—and one of the specimens was taken; it was, of course, very fresh. *Coenonympha pamphilus* was fairly common, though far less so than *C. arcania*, and seemed unusually constant. The skippers were represented by *Augiades sylvanus* in fair abundance, and single specimens of *Erynnis alceae*, *Hesperia malvae* and *H. alveus*, the latter with very small spots, and also a single specimen of *Carterocephalus palaemon*, which I have not seen recorded for the district. Another species of which I have found no mention, but of which I took one very fresh example on the 16th, is *Melanargia galatea*, but I should think this is due to an oversight; the specimen has rather more black at the expense of the white than is usual in English examples. The Lycænids were very poorly represented. I saw no "copper" of any kind; of the "hair-streaks," *Callophrys rubi* was not very uncommon, but hopelessly *passé*, and I saw two specimens of *Strymon pruni*, but failed to catch either; a single ♂ *Glaucopteryx cyllarus*, very small, a very few *Aricia medon* (*astrarche*), with borders of orange spots as broad as in Italy, and some half-dozen *Polyommatus icarus*, all but one in rags, the ♀s without a trace of blue, were the sole representatives of the "blues." The larvæ of *Aglais urticae*, *Vanessa io*, and *Araschnia levana* were all common; the half-dozen of the first-named and the 20 of the last which I took all pupated, but from two of the *levana* chrysalises a dipterous parasite, *Compsilura concinnata*, Meig., was bred; of the *io* larvæ most succumbed to the fatigues of travel, and a larger dipterous parasite, *Sturmia vanessae*, R. des V.,* was bred from one of the few that managed to pupate.

* These Diptera were kindly identified by Mr. Austen.

None of the *urticae* larvæ had been attacked. The first of the *lerana* larvæ had already pupated when I left Samoussy on June 17th. I saw but little in the way of Heterocera, but the abundance of *Abraxas sylrata* (*ulmata*) was too noticeable to be passed over, I could have taken many scores of them had I been so disposed, and they were in the pink of condition. A single *Anthrocera* (*Zyggaena*) *nili-pendulae* represented the "burnets," and I did not see a single *Noctua*, except the Euclidiæ, *F. mi* having an unusually grey appearance. A Pyralid, too rubbed for recognition, I took as it was borne rapidly past by an Asilid, *Neoitamus cyanurus*, and a few Geometers of common sorts, together with a ♀ *Spilosoma menthastri*, were all that came under my observation.

(To be continued.)

New Hemitheinae (Geometrinae) from British and Dutch New Guinea.

By LOUIS B. PROUT, F.E.S.

The following new species and subspecies were described by me in the Spring, for publication in "*Genera Insectorum, Subfam. Hemitheinae*," now in the press; but as it seems likely that there will be still some delay before that *Fascicule* can appear, it is desirable to give brief diagnoses to avoid the risk of multiplication of synonymy in the meanwhile.

Agathia diversilinea, s.sp. *ampla*, nov. subsp.—Larger than typical *diversilinea* (Warren, *Norit. Zool.*, iii., p. 284) from Fergusson Island, etc., all the dark markings ampler, the yellow-green subterminal spot below R³ more separated from the subapical green patch. Fak-Fak, British New Guinea.

Anisozygga polyleucotes, nov. sp.—♂, 38mm. Group of *fascians* (Lucas, *Proc. Linn. Soc. N.S.W.* (2), viii., p. 138), the white on upper surface very much extended, forming a very broad postmedian band on forewing (with a projection basewards between R³ and SM¹) and covering nearly the whole of hindwing excepting a half band from mid-costa, a narrow, interrupted distal band, and some dots on veins. Fak-Fak, Dutch New Guinea.

Anisozygga diazeuris, nov. sp.—Extremely like *callistieta* (Turner, *Trans. Roy. Soc. S. Austral.*, xxviii., p. 222), but with the white spots somewhat extended and more definitely connected so as to form the principal lines. Abnormal in the genus in having R³ and M¹ of hindwing well separated at their origin. Fak-Fak, Dutch New Guinea.

Gelasma atrapophanes, nov. sp.—Closely similar to *cumicis* (Prout, *Entom.*, xlv., p. 27, as *Thalassodes*), but with termen of hindwing more weakly angled at R³, postmedian green band of forewing almost straight, traversed near its distal edge by a very fine, nearly straight whitish line, hindwing with a similar line on postmedian band, forming teeth from R³ to inner margin, nearly as in *Thalassodes*. Mount Kebea, British New Guinea.

Dioscore homocotes, nov. sp.—Superficially almost indistinguishable from *meehi* (Warren, *Norit. Zool.*, x., p. 359), but with termen of both wings more rounded, ♂ antennal pectinations much shorter and not reaching so far (about 24 as against about 36 in *meehi*). Ninay Valley, Dutch New Guinea.

Hibernation of *Cataclysta lemmalis*, L.

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

My observations on this species, made in 1904, and reported in the *Entomologist* for 1905, dealt with the history of this insect in the summer and in captivity. They showed that under such conditions the species is really double-brooded, and lent much probability to the idea that it is so naturally. Buckler's observations do not show in what instars he had the larvæ, but he had them in winter from November 10th onward. He also says, that a larva figured in November was $\frac{2}{3}$ of an inch long, and must therefore have been in the 3rd instar. He also says that they shut themselves in their cases and hibernated from early in December until the beginning of March. This implies that they hibernated in the third instar.

This winter, somewhere about the end of December, I brought home some duckweed with no thought of *C. lemmalis*, but after a week or two some cases amongst it attracted my attention, and were seen to be those of *C. lemmalis*. Unfortunately I paid no particular attention to them, and they are now (February 25th) well grown, some in the last instar (indoors).

I have just brought home some more duckweed in hopes it may not be too late to ascertain the hibernating stage. The larvæ found at this date had, however, been active and feeding, as seen by fresh fronds of *Lemna* on their cases, and green contents in their *primæ viæ*. One of these larvæ appears to be in the second instar, the remainder are in the third. This winter has been a very open one, green duckweed was present all the winter. It often in a hard winter practically disappears. The *C. lemmalis* has probably been able, therefore, to feed a little all the winter. Along with them were certain smaller cases, old and empty. I am inclined to think that these have been abandoned by larvæ that hibernated in them in the second instar, and left them to make new cases on entering the third stage.

Having left it till late before noting the larval stage, I am unable to say positively what is the hibernating instar, it may be apparently the second, or perchance the third, I rather incline to the former view, or it may be either as the season determines. One thing is clear, that in an open winter, with plenty of good duckweed obtainable all the time, the larvæ begin to feed in February, and probably do a little feeding all winter. The dead cases observed may of course not be abandoned by larvæ that have made new ones, but the cases of larvæ that have died, been eaten by enemies, etc. I have not seen a larva make a totally new case in captivity, but they sometimes do what is much the same, the larger case is made by lengthening the old one and a portion of the smaller diameter sometimes becomes detached. The empty cases found were, however, the whole case not such a detached portion.

A portion of duckweed brought home in December, or later, enough to float over the surface of a small basin, affords from half a dozen to a dozen cases, so there should be no difficulty in finding out in another season which is really the hibernating stage of the species. Of course, it must be from a pond where *C. lemmalis* occurs, and it is of course more certainly productive when the total amount of weed is reduced to a twentieth of its final autumnal area, so that the larvæ are no doubt concentrated. What becomes of the larvæ in a severe winter when the *Lemna* is apparently annihilated is another question also worth looking into.

The readiness with which larvæ brought in in midwinter at once become active and begin feeding, makes it highly probable that the larvæ do feed during the winter if weather allows, and therefore also probably may be found in open winters in more than one instar, that, in fact, they do not hibernate in so strict a sense as do those species that cannot be "forced," till a fair experience of winter has affected them.

Luperina (?) (*Apamea*) *gueneei*, Doubleday, as a species, and as a British species.

By F. N. PIERCE, F.E.S.

I have been exceedingly interested in reading Mr. H. J. Turner's paper with the above title. I cannot yet say that I fully agree with the conclusions he has drawn. Knowing the great difficulty with which Mr. South and I secured the five specimens of *L. nickerlii*, and the source from which they came, I feel that I should wish to know before making up my mind, from whence Dr. Chapman procured the four specimens of "undoubted" *L. nickerlii* which Mr. Turner mentions. Dr. Chapman states that "these four not only appear to agree with the description and figure of *L. nickerlii*, but are quite distinct from *L. testacea*." One would like to know how it is, if Freyer's published description and figure of *L. nickerlii* agree with *L. gueneei*, that in all these years, this fact has not been recognised. Further, a provincial like myself is surprised that long before this, experts examining the series in the National Museum, have never been struck during the discussion as to the identity of *L. gueneei*, with the close resemblance between the series of *L. nickerlii* and the single type specimen of *L. gueneei* in the same collection, which appears to be so very evident to Mr. Turner. When Mr. South and I worked to procure specimens of *L. nickerlii* from the continent, we were confronted with the statement that *L. nickerlii* had been extinct for some 50 years, therefore, when we obtained specimens from an old collection labelled *L. nickerlii* and presumed to have been taken by Herr Nickerl himself, the greatest care was taken to record this fact (*Entomologist*, vol. xlii., December 1909, p. 292). Now the reader of the *Entomologist's Record* is asked to accept the statement that the four unauthenticated (so far as is stated in the paper in question) specimens of *L. nickerlii* without locality, data, etc., of Mr. Turner's prove that Freyer in 1845 described and figured specimens of *L. gueneei* as *L. nickerlii*, "the figure of which is wooden in the extreme, perfectly useless for the purpose of identification, and absolutely unlike the real moth" (Turner, *Ent. Rec. loc. cit.* p. 172), when he had only specimens of *L. testacea* before him!

What real moth? why the mysterious four "undoubted" specimens of *L. gueneei* which Mr. Turner asks us to believe are *L. nickerlii*? Mr. Turner notes in the National Collection that not a single *L. testacea* has the same shape of wing as *L. gueneei*, but states that South's figures (*Entomologist*, vol. xlii., plate vii., figs. 1 and 2) of *L. nickerlii* seem to be that species, i.e., *L. nickerlii*, yet Dr. Chapman (*Ent. Rec., loc. cit.*, p. 202) states that "the best figures I know of *L. nickerlii* are in Mr. Turner's plate (*Ent. Rec.*, vol. xxiii., pl. iii., figs. 1 and 2)." Now I ask anyone to compare by tracing on a piece of tissue paper the shape of the wings in the two figures, when it will be seen that they

are utterly unlike. Turner's *L. nickerlii* = *L. gueneei* in shape, South's *L. nickerlii* is identical with *L. testacea* in shape.

To sum up, we have (a) Five old authenticated specimens of an apparently extinct species with a certain amount of history, the genitalia nearly agreeing with *L. testacea*: (b) four unauthenticated specimens without history, the genitalia agreeing with *L. gueneei*. If the five specimens of *L. nickerlii* are only *L. testacea*, why are not Mr. Turner's four specimens only *L. gueneei*?

Until we can get further information I am afraid most of us will continue to call Mr. Baxter's St. Anne's specimens *Luperina gueneei*, Dbd.

[Mr. Pierce asks where my specimens of *nickerlii* came from. I got them from Herr Max Bartel, and they are obviously rather old specimens. So far as their source bears on the question I should not place the certainty of their being *nickerlii* at a higher or lower level than that of Mr. Pierce's specimens. Another question Mr. Pierce asks is, why in all these years did no one see that *gueneei* = *nickerlii*? The material of both was very meagre, and few troubled themselves, but those who did, e.g., Tutt and Hampson (*Cat. Lep. Phal.*, vol. vii., p. 471), were sure that *gueneei* was *testacea*, in which Mr. Pierce agrees they were wrong. I only add that this error, which Mr. Pierce admits, consisted in not seeing that *gueneei* was *nickerlii*. Nevertheless, Mr. South (*Ent.*, vol. xlii., p. 269) does identify *nickerlii* with *gueneei*. He admits as probable that both (not one only) are *testacea*, but obviously rather in deference to general opinion than as his own conclusion. It seems certain that both my specimens and Mr. Pierce's had been accepted as *nickerlii* for many years. It is also probable that specimens of *testacea* did do duty as *nickerlii* from an early period of its history, which may account for Staudinger querying the right of *nickerlii* to be distinct, though he does not go beyond the query, yet he makes *gueneei* = *testacea*. Old series of *nickerlii*, then, probably were diluted with some *testacea*; such I take to be the history of Mr. Pierce's specimens, unless, perchance, his are true *nickerlii* that in the damages and repairs involved in the vicissitudes of half a century have had *testacea* bodies substituted for their own.

If, on the other hand, mine are the substituted specimens, then we have *gueneei* as a continental species for many years, and get it mixed with not *testacea* simply, but with a form believed to be a distinct species, and called *nickerlii*. It requires vastly less confidence than I have, in the keenness and discrimination of continental lepidopterists, to believe that *gueneei* (being, by Mr. Pierce's hypothesis, distinct from any other species they knew) could thus have eluded detection. I think no one will be prepared to say that Freyer's original figure, and others quoted, are figures of *testacea*: they may be good or bad, but *testacea* they are not. They are the species called *nickerlii* in the British Museum Collection, with which Mr. Turner finds that my specimens agree, and if so, are, like my specimens, identical with *gueneei*.

The point in dispute is not whether our determination of our specimens by their genitalia is correct, a point on which Mr. Pierce is *facile princeps*, but as to which of our specimens (if either) agree with *nickerlii*. On this I, at least, am very inexperienced. It would be very desirable if some actual authority in such matters, say Mr. Banks, would pronounce on this, the real question on which I differ from Mr. Pierce.—T.A.C.]

Lepidopterology.

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

We are always interested in anything that comes from the pen of Monsieur Charles Oberthür, and when one of his theories receives the additional support of Dr. Chapman, even though that support is somewhat guarded, it behoves us to look well into the subject. I refer to the matter of describing insects without figuring them, M. Oberthür intimating that he proposes to deal with such descriptions as if they were "non est." If the suggestion were to be generally adopted, what would be the result? It would mean that none but the rich could then describe anything except perchance in single or odd cases. I am by no means a republican, but I must raise a protest against such a course of action simply on that ground. But there are other reasons as well; Dr. Chapman himself raises one, *viz.*, that we have not time to wade through such descriptions—we are accustomed to labour-saving machines, and to everything being done to make life easy and to save us trouble. I ask at this point, is science to be brought to this level also? To suggest that we have not time to read is to my mind the sure road to bringing science to confusion, for we must remember that many authors intersperse their descriptions with observations of various kinds, many of which are valuable additions to knowledge, and bear strongly on theories of others, going far often to prove or disprove them. Irrespective of this, however, it is rarely that I am unable to identify an insect from recent descriptions. Again, what is to become of the thousands of descriptions that have already been written and are going on at the present moment? To put them into the waste paper basket is out of the question. This point raises another of even greater moment; if such action were to be generally accepted, it would bring into chaos the whole literature and the whole nomenclature of our portion of Zoology—The Law of Priority is now generally acknowledged. Such a proposal as this before us would throw that Law to the winds. At this period of the World's history it appears to me a serious thing, and a thing to be deprecated, that every man should be a law unto himself. Great though a man may be, he cannot take a course of action such as this without dislocating everything that has gone before, and if he continues his action against the consensus of general opinion and of international agreement he will add greatly to the amount of literature to be referred to and to the difficulty in dealing with species, to say nothing of the unnecessary addition to synonymy.

SCIENTIFIC NOTES AND OBSERVATIONS.

HYMENOPTERA OCCUPYING OLD BURROWS OF *TROCHILIMUM ANDRENAEFORMIS*.
 —Though it is well known that many of the solitary wasps will use existing holes for their nests in preference to making new ones, I think the following note may be of some interest. Two years ago, in a Gloucestershire locality, I found two old borings of *Trochilium (Sesia) andrenaeformis*, of which the entrances had been closed with mud, and bred from them two specimens of *Crabro elongatulus*, V. de Lind. This year I found several stems of *Viburnum lantana*, in which the old workings of the clearwing had been similarly occupied by fossors. From one

of these a specimen of *Passalacæus monilicornis*, Dhlb., emerged. For identifying them I am indebted to the Rev. F. D. Morice, who tells me he is sure of the genera and does not feel much doubt about the species, though they suffered somewhat owing to his absence in Algeria. It will be remembered that in the April number Mr. Baynes published a note of an ant *Leptothorax neylanderi* using an old burrow of this clearwing.—E. A. COCKAYNE, F.E.S., 16, Cambridge Square, London, W. *September 10th, 1911.*

PIERIS RAPÆ FEEDING WHILE PAIRED.—The other day while watching some Pierids enjoying the flowers of a tea tree (*Lycium chinense*) I noticed a male *Pieris rapæ*, carrying a female, flitting from flower to flower and thrusting its tongue into the blossoms just as the other unencumbered specimens were doing. It behaved in this way for some little time but at last settled down on a leaf where the pair remained at rest as long as my observation lasted. During the flights the female kept her wings closed but opened them once or twice after the male had finally settled on the leaf. Of course she had no chance of taking any refreshment.—ALFRED SICH, F.E.S., Corney House, Chiswick, W. *August 30th, 1911.*

A VARIETY OF EUCILOË EUPHENOIDES.—Some years ago, to be exact 1904, when in the company of Mr. Raine, at Carqueiranne, I captured a very fine variety of this insect; the outer border of the secondaries was orange, the colour of the apical patch, which extended to a variable distance up the nervures. Mr. Raine was unacquainted with this variety, but on looking over my captures on my return to England I found that six out of fourteen taken in the Hyères district had more or less orange scaling on the secondaries but nothing to the extent of the one shown to Mr. Raine. Some time afterwards I obtained the following information, which I may tabulate as follows:—

COLLECTION.	NO. OF SPECIMENS.	WITH MORE OR LESS ORANGE ON HINDWING.
Nat. Hist. Museum ..	20	0
Rowland-Brown ..	20	0
Chapman	27	5
My own	14	6
Tutt	182	37
	263	48

Mr. Tutt's localities are as follows:—

LOCALITIES.	NO. OF SPECIMENS.	WITH MORE OR LESS ORANGE ON HINDWING.
Carqueiranne ..	46	11
Costebelle		
Cannes		
Auribeau	40	14
Remoulins	17	1
Agay	31	9
La Valette	9	1
Draguignan	37	1
Digne	1	0
Montreux Monar?..	1	0

He notes "one or two strongly marked from Auribeau." What I wish to ascertain is whether this variety is, as I suspect, induced by climate;

the material at present available is too small for any safe decision, which can be arrived at by one of two ways—preferably both. The first is by those numerous entomologists who have collected this butterfly, recording their localities and dates of capture in the *Record*, and subsequently going over the meteorological statistics of the localities, and secondly by some resident entomologist breeding the butterfly and subjecting its earlier stages to various (artificial) meteorological conditions. I think it will be found that the orange colour can be produced by dry heat in the early days of pupal life. In the Natural History Museum collection there are twenty-two ♂s of *P. eupheno*, there is orange on the fringe of two or three and very indistinctly on the wing of one specimen. Of twenty-five ♂s of *P. damone* there is distinct orange on the hindwing of one but this is much suffused with orange on the forewing and may be merely an aberration. I have not named this variety of *P. euphenoïdes* and scarcely think it necessary to do so, at any rate at present. Those who think otherwise have here an opportunity of making themselves entomologically immortal.—LIEUT.-COL. N. MANDERS, R.A.M.C., F.E.S., Colombo, Ceylon. August 17th, 1911.

THE ABUNDANCE OF *PIERIS RAPÆ*, ETC.—I note in the September number, p. 244, that Dr. Chapman speaks of the size and number of *P. rapæ*, and Mr. Turner makes a similar note on p. 246. Here at Stäfa there was a veritable plague of “whites” lasting through the better part of August and September. My poor gardener, at his wits’ end, was obliged to call for help to rid the vegetables of larvæ, and there was a daily battle in which the caterpillars for some time proved victorious, till I sent him fresh auxiliaries in the shape of my four little boys armed with balloon nets, and by getting thus to the root of the evil and preventing the mobilisation of fresh squads, we were able to prove to them that ‘les armes sont journalières.’ Their numbers, however, were not so interesting to me as their diminutive size; only *P. brassicæ* was of normal dimension, both *P. rapæ* and *P. napi* were veritable dwarfs, not all of them of course, but a good fifty per cent. could not have been more than 35mm. or 36mm. from tip to tip. I went out myself to help in the massacre on the afternoon of August 30th and brought the smallest specimens back with me for examination and setting. The *P. rapæ* were not so remarkably small, none of them being much smaller than *ab. minor* (Costa), *i.e.*, from 37mm. to 39mm. but the *P. napi* were far more worthy of note, three dwarfs taken in a few minutes measured 29mm. 30mm. and 31mm. apiece. These tiny butterflies do not at all conform with the description of *nana* (Röber) which are very small (how small?), with yellowish forewings, and with the black markings far paler; they are simply dwarfs varying as the typical insect varies, and I accordingly propose for them, *i.e.*, for all *P. napi* size less than 34mm. the name *minima* (new *ab.*), the name that Verity gives to the form of *manni* *ca.* 32mm. Now there was certainly an abundance of food, so these small specimens could not have been simply half starved insects, as were probably the *Vanessids*, also very small—I noted that the nettles in many places here were leafless sticks. Not all the *P. napi* were small, many were normal, and I even took one in the garden with a span of 57mm., but by far the greater part were decidedly small. I do not think more than 5% came up to the normal 45mm. Let me turn to another white

Leptidia sinapis. The normal size of *L. sinapis* is 38mm. There were fewer than usual of these delicate little fairies fluttering about on the Stäfa bogs, though their food plants were very richly represented there, the clumps being taller and finer than the year before. No underfeeding was possible. Nevertheless I found that the majority were rather small, e.g., I took on July 16th a *L. sinapis* measuring 30mm., on the 17th one measuring 29mm., and on the 19th one measuring 30mm. These three I have placed in my drawer of *L. sinapis*, with the name *minor* (n. ab.). By no means all the *L. sinapis* were small, for on the 19th, passing through the woods on the way to the bogs, I picked up a freshly emerged male having the fine wing development of 43mm.

Another point worthy of notice is the insufficient colour supply. Cases of albinism or partial albinism were comparatively common. I found several kinds of *Erebia* with white hindwings, and one with all wings very pale. The genus *Colias* frequently gave me pale forms, not only in the mountains, where we are used to finding weak colouring in certain Rhodocerids, but also in the plains. Here at Stäfa last year *C. edusa* was a very brightly coloured insect, this year the colouring was dull, and the abs. *helice* and *pallida* were fairly common (until this year I have not seen a single specimen of these abs. here). In *C. hyale* the predominating form was ab. *obsoleta*, weakly spotted on underside, and in two cases (I only examined about thirty) having the discoidal spot of upper wing largely centred with *dirty* white, the white which shows a want in colour supply. A far larger percentage of blues than usual were deficient in spots, and this was particularly noticeable in places that were well exposed to the sun. As I mentioned to Dr. Chapman (p. 244), on the hot slopes at the foot of the Mühlebach Thal (canton Glarus) the form *obsoleta* of *Ayriades coridon* was very common, being 40% of the whole number netted. Last year I think I may state that the average number of *A. coridon* ab. *obsoleta* taken in the same canton did not surpass $\frac{1}{4}$ %.

Should other collectors have made similar observations as myself this year, we may perhaps draw some conclusions as to how far the extraordinary heat is responsible for the hurried evolution, that is shown in the dwarf and weakly coloured or spotted forms.—P. A. H. MUSCHAMP, F.E.S., Stäfa. September, 1911.

THE WORM AND THE BUTTERFLY.—A friend of mine, Mr. Crickmay, noticed one day this summer a white butterfly, which had settled on the lawn, to be in difficulties. Being of an enquiring turn of mind he made investigations to ascertain the cause of the trouble. He discovered that an earthworm had seized the butterfly by the hindwings and was attempting to drag it down into its burrow. I imagine that the lawn had been sprinkled and the wet grass had attracted to its surface the butterfly from above and worm from beneath. The latter taking the closed hindwings of the butterfly for a leaf, had attempted to gain possession. I have not previously heard of such an occurrence.—ALFRED SICH, F.E.S., Corney House, Chiswick, W. August 30th, 1911.

NOTES ON COLLECTING, Etc.

ABERRATIONS OF *POLYOMMATUS ICARUS* AND *RUMICIA PHLEAS*.—I have just returned from a fortnight's collecting in the neighbourhood of Little Missenden, Bucks, and have paid special attention to the

variation of the smaller Butterflies, the overhauling of these being an occupation that can be carried on without very much exertion, and being, therefore, one of the most congenial methods of collecting in the daytime during the phenomenally hot weather of the last month. *Polyommatus icarus* and *Rumicia phlaeas* were the insects to which the greater part of my time was devoted, and interesting series of both were obtained. Of *P. icarus* the forms known as *icarinus*, *caudiope*, *mirta*, *melanotoxa* and *semiarciata* were, as usual, fairly numerous, but a more interesting fact was the occurrence of several examples of the form in which the 1st submedian spot is united by a black streak to the 1st marginal chevron, of the hindwings. In one of these the mark is complete on the left wing, and incomplete on the right, while in two others, the mark appears on one wing only, one of these latter being further remarkable in that the normal hindwing, though perfectly formed, is only about $\frac{2}{3}$ the size of the other.

Among other interesting *P. icarus* I might mention one of the *glomerata* form, in which the spots on both fore- and hindwings are closely clustered round the discoidal, and which also exhibits the characters of ab. *melanotoxa* (forewing) and ab. *costajuncta* (hindwing), the streaks in both cases being very short, owing to the approximation of the spots.

On August 18th I captured a very fine underside *obsoleta* variety of *P. icarus*, a freshly emerged ♂, which may be described briefly as follows:—Discoidals and marginal lunules present on all wings. Forewings: basal spots absent, 4 only of the submedian spots present, and these well out against the margin. Hindwings: basal spots represented by 2 white specks containing traces of black (with a lens). 6th submedian spot present, the remainder of the submedian series absent, or represented by white dots not clearly distinguishable from the ground colour.

The *Rumicia phlaeas* are, if anything, more interesting than the *P. icarus*. On August 12th I had the good fortune to take a fine male specimen of the ab. *alba*, Tutt, commonly known as ab. *schmidtii*, and on the same day a specimen with pear shaped spots in the forewings. Three or four of the "brassy" form known as ab. *intermedia*, Tutt, were also taken.

A very noticeable feature of this year's *R. phlaeas* has been the large number of suffused forms, due, no doubt, to the heat. Quite a large proportion of my captures have been of the form described by Tutt as ab. *initia*, and one or two distinctly ab. *suffusa*. These extreme suffused forms are not tailed as in ab. *eleus*, though many typical *R. phlaeas* and ab. *initia*, with pronounced tails, were taken. In size my specimens vary from 24mm. to 36mm. (ab. *major*, Tutt). The spots are minute in one or two, but in the majority well-marked and in a few very large and prominent. An interesting capture was a specimen of the ab. *basalipuncta*, Tutt, with an extra spot in the discal cell towards the base. Several others have extra spots in the forewings:—(1) between the outer discal spot and the two normal spots beyond it; (2) between the last-mentioned spots and the margin; (3) one has traces of a spot between the inner discal spot and the inner margin. This last form does not appear to be mentioned by Tutt, and I would suggest the varietal name *aldenda* for it. In one specimen these extra spots appear on the underside and are united with the spots

in the outer series, this giving the latter a long, pointed shape. In several specimens the copper band on the hindwings is restricted, and in one almost obsolete. In a curious asymmetrical specimen taken on August 9th, the left forewing is normal, but on the right forewing both discal spots are enlarged and extended towards the base, thus almost touching each other. It may be of interest to mention that, with one or two exceptions, all these insects were taken in one small field, on a chalky slope, overgrown with ragwort, marjoram, St John's wort, and other flowers.—HAROLD B. WILLIAMS, 82, Filey Avenue, Stoke Newington, N. *September 4th, 1911.*

COLIAS EDUSA, ETC.—I have pleasure to record the capture of a fine ♂ *C. edusa* in pink of condition by myself near Bexley on September 16th. Although a thorough search was made in lucerne and other fields all around the neighbourhood on the same and following days, no more were met with. *Hadena pisi*, ♂ in perfect condition was taken at sugar on September 15th. This was possibly a second-brood specimen, as most larvae of this species pupated about this date. On September 16th I took three larvae of *Aretia caja*, wild, in their last skin.—L. W. NEWMAN, F.E.S., Bexley, Kent. *September 18th.*

COLIAS HYALE AND *C. EDUSA* IN 1911.—As there appears to have been a fairly considerable immigration of *C. hyale* this year, it may be as well to put on record my experience with both species. On August 9th I saw a specimen of *C. edusa* flying on the railway bank between Strood and Maidstone, in Kent. There were probably others, but this one was seen while the train was standing in a local station. On September 3rd I took my first specimen of *C. hyale*, worn, and three more, also worn, on the 4th. On the 8th I captured four, two worn and two fresh out. From this time to September 23rd nearly the whole of my captures were fresh out or nearly so. I took altogether 87 *C. hyale*, six of which were released, not worn but badly chipped. Females were emerging well in the last week. The worn males taken at first appeared to belong to another brood, as the freshly emerged ones I took later were generally smaller. On September 8th I missed a freshly emerged *C. edusa*, and on September 11th took a male, also fresh out, the only further specimen of *C. edusa* seen during my three weeks' stay. It seems remarkable that there were no others, and I can only account for it by the fact that all the farmers were cutting lucerne as fast as they could, and it is probable the pupæ of this species were located in a large field of lucerne, which was cut by machine in two days. On most of the days I collected there was bright sunshine, with intervals of cloud, and a strong wind, which, during my stay, blew from all points of the compass. During cloudy intervals, the males settled on the bare earth and the females in the lucerne, where they clung to the plant just out of sight. I marked one down, and it refused to move, allowing me to pillbox it quite easily. Unlike the males, the flight of the females, when undisturbed, was very leisurely, and generally close to the ground, and they could be easily mistaken for worn *Pieris rapae* or *P. brassicae* from a short distance. When disturbed, however, there was no mistaking them, but again, unlike the males, they had a weaker flight, and always flew with the wind, as long as one gave chase, whereas the males dodged and doubled, and seemed equally at home against the wind. On one

occasion I saw a male toying with a female in the air, both going round in circles, the male beneath. Thinking to make a double capture I cautiously approached, but when within striking distance they just rose out of reach, kept up their evolutions, sailed with the wind to a safe distance, and came down nearer the earth, but did not settle. I approached again and again with the same result, and after following them over three fields I had to admit myself beaten. *Pieris rapae* and *Polyommatus icarus (alexis)* proved themselves absolute pests, for as soon as a *C. hyale* settled on a flower, one or other of them drove it off. On many occasions, however, there is no doubt, by the action of male *P. rapae*, that they mistook the *C. hyale* for a female *P. rapae* on account of its yellow colour, and vice-versa, I have seen a male *C. hyale* when hunting for a female, hover and dart down at a settled *P. rapae*. There was one large patch of lucerne a mass of flower, and strange to say during the whole of my stay I did not see a single *C. hyale* visit it. They preferred instead to fly over ground where it had been cut, or where it was only partly grown, and almost invariably settled on dandelion flowers to feed. I have always found *C. edusa* feeding on lucerne, whenever it has been available.—C. W. COLTHURP, 127, Barry Road, East Dulwich. October 3rd, 1911.

CURRENT NOTES.

The *Entomological News* for July has two valuable lepidopterological papers—one by J. R. Haskin and F. Gwinnell, junr., on *Thecla (?) clytie*, *T. leda*, and *T. ines*—giving a careful comparative summary of the descriptions of the three species, going critically into the details of each, and finally coming to the conclusion that they are only slight variations of the same species, a conclusion with which we are heartily in agreement.—G. T. B-B.

In the same Magazine, Dr. J. B. Smith has a most useful paper on the N. American species of the genus *Acronycta*, wherein he modifies some of the views he expressed in his Monograph of 1898, though he by no means altogether approves of Hampson's conclusions in his catalogue of 1909.—G. T. B-B.

From the advertisement pages of the August number of the *Zeitschrift für wissenschaftliche Insektenbiologie*, we extract the following very interesting item in the distribution of one of our British species of Rhopalocera:—" *Papilio machaon*, Puppen aus Schottland, schöne dunkelgelbe Falter ergebend, 1 Stück 0,70 Mk.—A. M. SCHMIDT, 109, Whipps Cross Road, Leytonstone, N.E. (England)."

Mr. Eustace R. Banks, having been ordered complete rest by his doctors, in consequence of a severe nervous breakdown, hopes that his correspondents will kindly refrain from writing to him, or sending him insects for identification, etc.

REVIEWS AND NOTICES OF BOOKS.

SYNOPSIS, CATALOGUE AND BIBLIOGRAPHY OF NORTH AMERICAN THYSANOPTERA, WITH DESCRIPTIONS OF NEW SPECIES; 56 pp. and pl. i.-vi., by Dudley Moulton.—This useful paper forms Technical Series No. 21 of the publication of the United States Department of Agriculture, Bureau of Entomology, and is published for the guidance not

only of systematists, but of economic workers, on account of the decided economic interest attached to most thrips. Brief hints are given for the collection and preservation of specimens, followed by keys of the North American genera and species. The catalogue gives references, habitats and foodplants where known, of 112 species (or including subspecies, 118), falling into 40 genera, and includes description of two genera, ten species, and one variety. *Limothrips arenae*, Hinds, is recognised as the older *cevalium* of Haliday, but the grass thrips, *Anaphothrips striatus*, Osborn, which we have shown to be synonymous with the European form *obscurus*, Müll., is retained under the American name. A genus and species, *Rhaphothrips peculiaris*, Crawford, must be deleted, having been erected on the strength of a single example, which is evidently the larval form of an Idoiothripid (!), whilst of the new forms, *Euthrips parvus*, Moulton, becomes a synonym of *Euthrips longipennis*, Bagnall.

The bibliography is a small one, dealing with notes on North American forms, and dating from 1902. A useful index concludes the catalogue, and the figures, comprised in six plates, are well executed, and characteristic of Mr. Moulton's work.

Briefly, this publication is a helpful one, and not only does credit to the author and the growing group of North American Thysanopterists, but is an excellent illustration of the activity and of the up-to-date methods of the Entomological Bureau of the United States Department of Agriculture—methods which might profitably be more energetically followed up or adopted by the old country in the control of her insect pests.—R. S. B.

PROCEEDINGS OF THE SOUTH LONDON ENTOMOLOGICAL AND NATURAL HISTORY SOCIETY, 1910-11 (*with nine plates*.) Price 4s. 6d.—The present volume shows no signs of a falling away from the high standard this Society has maintained for some years. It is, indeed, remarkable that any purely local Society with a small membership should be able to publish so full and valuable a record of its year's work. The solution of the mystery is to be found in the fact that in addition to good workers for science, the membership includes men who are willing to supplement their subscriptions by generous donations to the Publication Fund, and others who give their time to the worthy production of the volume. In addition to a full record of the meetings and the exhibits made thereat, there are several papers of considerable interest printed *in extenso* with admirable illustrative plates where necessary. The Presidential Address, by Mr. W. J. Kaye, F.E.S., is concerned mainly with a discussion of the classificatory value of the various systems of neurulation in Lepidoptera. Mr. W. J. Lucas, B.A., F.E.S., tells how and why the old order Neuroptera has been broken up, and deals more fully with all the families of the order as at present restricted. A couple of fine plates give typical examples of the ten Families into which it is divided. Dr. Chapman contributes a valuable paper on Insect Teratology, also with two plates, and describes a number of interesting experiments tending to throw light on various aberrations from the normal. Mr. R. Adkin, F.E.S., gives the record, kept during a great number of years, of the Lepidoptera affecting one London garden; and also has an extended note on *Heptolus humuli* and its Shetland forms. Mr. A. Sich, F.E.S., furnishes papers on larval legs and the Middlesex home of *Clausilia*

biplicata : whilst Mr. R. A. R. Priske, F.E.S., writes a brief life-history of the Glow-worm *Lampyrus noctiluca*, in connection with two plates by Mr. Hugh Main, F.E.S., who has photographed its complete life-history in detail. The thoroughness with which Mr. Main works out these pictorial records is to be highly commended—and copied. It is interesting to note how free a local Society can be from parochialism or even insularity. No fewer than three of the papers deal with the Lepidoptera of other lands:—Mr. H. J. Turner, F.E.S., describes a few days with the Butterflies of Zermatt; Mr. J. Platt Barrett, F.E.S., with the Butterflies of Sicily; and the President, going further afield, tells of an Entomological trip to South Brazil. Altogether the South London Society may be warmly congratulated upon a most interesting and useful volume.—E. S.

SOCIETIES.

THE SOUTH LONDON ENTOMOLOGICAL AND NATURAL HISTORY SOCIETY.—*July 27th, 1911.*—Mr. Kenneth J. Blair, of Highgate, N., was elected a member. NEW FOREST COLEOPTERA, HEMIPTERA, ETC.—Mr. West, numerous interesting captures in the New Forest, including *Egeria spheciiformis*, a suffused specimen of *Anthrocerus trifolii*, a short series of *Cicadetta montana*, including the rarely met with ♀, and the rare Heteropteron *Eysarcoris aeneus*. EXOTIC LYCENIDS.—Mr. Stanley Edwards, the very brilliant Lycænid *Stalactis erolina* and several beautiful species of the genus *Mesosemia* (*Lemoniinae*). ENDROMIS VERSICOLOR THREE YEARS IN PUPA.—Mr. R. Adkin, a pair of *Endromis versicolor* reared this year from ova deposited in 1908, thus living three years in the pupal stage. A TERATOLOGICAL SPECIMEN, ETC.—Mr. Blenkarn, a teratological example of *Carabus nemoralis*, in which the tibia of the right foreleg was divided into three, each terminating in perfect tarsi and claws; two specimens of the rare *Helophorus tuberculatus* and *Galerucella fergussoni* from Lanarkshire; and the curious Hemipteron *Ledra aurita* from W. Wickham on oak. A NEMATOID WORM FROM A LARVA.—Mr. Jäger, a Nematoid worm which had emerged from the larva of a *Cucullia*. ABERRATIONS OF LEPIDOPTERA.—Mr. Sperring, a number of aberrations of lepidoptera, including a smoky suffused specimen of *Cosmotriche potatoaria* from Benfleet, a seven-spotted *Anthrocerus filipendulae*, a *Callimorpha dominula* with very dark hindwings and ill-developed scaling on the forewings, two specimens of *Arctia caja*, one having asymmetrical markings and the other with yellow hindwings, and a number of *Abraeus grossulariata* considerably darker than normal specimens, many having the black massed mainly towards the outer margin. He called attention to the fact that most of the bred aberrations were either early or late emergences of the brood. *August 10th.*—AN EXOTIC SPIDER.—Mr. Jäger exhibited a specimen of the large spider, *Mygale aricularia*, sent to him from India, and communicated notes on its habits. He also showed a specimen of a scorpion from the Asiatic shore of the Bosphorus and described its habits. RARE COLEOPTERA AND HEMIPTERA.—Mr. West (Greenwich), a series of *Asemum striatum* and var. *agreste* from the New Forest, a ♂ and two ♀s of the very rare *Monochamus sartor* from Deptford, *Acocephalus tricinctus*, a recent addition to the British List, from Great Yarmouth, with *Plagiognathus albipennis*, obtained from *Artemisia*

maritima, *Aroespus pulchellus* and *Chlorina glaucescens*, all from the same place. A RARE COLEOPTERON AND A VARIETY OF NOCTUA RUBI.—Mr. Blenkarn, *Quedius talparum (rexcans)*, recently new to science from moles' nests in the Isle of Wight, and a double banded form of *Noctua rubi* from Beckenham. LIVING SATURNIID LARVÆ.—Mr. Dods, living larvæ of *Samia cecropia*, a large American silk-producing Saturniid. THE GENUS LIBYTHEA.—Mr. Edwards, a box containing several species of the genus *Libythea*, and contributed notes on the singular distribution of the few known species.—August 24th 1911.—ABERRATIONS ON BRITISH LEPIDOPTERA.—Mr. Jäger, the following forms and aberrations of British Lepidoptera, very dark *Argynnis aglais*, *Pieris napi*, and *Venusia cambrica*, *Rumicia phlaeas*, with wedge-shaped spots replacing the band, a very silvery ♀ of *Celastrina argiolus*, two very curious dark forms of *Acidalia marginipunctata*, and a very aberrantly marked form of *Hydriomena ruberata*. ABERRATIONS OF PAPILIO PODALIRIUS.—Mr. Turner, forms of *Papilio podalirius*, including var. *feisthamelii* ab. *ornata*, and two examples partaking of the ab. *undecimlineatus* and ab. *nigrescens* forms. VARIETIES OF HESPERIA MALVÆ AND APLECTA OCCULTA.—Mr. R. Adkin, forms of *Hesperia malvæ* closely approaching var. *taras* from Sussex, and an intermediate example of *Aplecta occulta* from Rannock where the species is usually very dark. UNUSUAL APPEARANCES.—Mr. Morford, *Cotias hyale* and a second brood specimen of *Nisoniades tages* from Mickleham, taken on August 20th. LOCAL SPECIES OF DIPTERA.—Mr. West (Greenwich), two local Diptera *Coroxys pictus* and *C. omissus* from Great Yarmouth salt marshes. VARIOUS EXOTIC INSECTS EXHIBITED.—Mr. Edwards, *Papilio codrus* and allied species. Mr. Blenkarn, several living stick insects, *Dicrippus morosus*, from India. Mr. Kaye, a specimen of the extremely rare Spingid *Uholus typhon* from Mexico. LARVÆ OF THREE HIGH-LEVEL LYCENIDS.—Dr. Chapman, living larvæ of the high-level Lycenids, *Latorina orbitulus*, *Vacciniina optilete*, and *Albula pheretes*, from the Alps.

THE ENTOMOLOGICAL SOCIETY OF LONDON.—June 7th.—Commander J. J. Walker exhibited specimens of *Barypithes pellucidus*, Bob., from Oxford, Enfield, and Tavistock, and for comparison, *B. duplicatus*, Keys, from the Blean Woods and Birebington, Kent. Also a series of specimens illustrating the life-history of *Cyclotorna*, Meyrick, a genus of Myrmecophilous Lepidoptera, from Queensland. MYRMECOPHILOUS ACARI.—Mr. Donisthorpe exhibited live specimens of *Antennophorus uhmanni*, Haller, on the ♂s from a nest of *Lasius umbratus* at Woking. Only two specimens have been taken before in Britain, by Michael, in an ants' nest at the Lands End. Also *Uropoda philoctena* fastened on the strigil of a ♂ of the same ant from the same locality. This species is new to Britain. A NEW SPECIES OF MYMAR.—Mr. F. Enock exhibited a photomicrograph of a new species of *Mymar*, with definite hindwings, which he has named *M. regalis*, accompanied by one of *M. pulchellus* for comparison. It was taken by him on June 3rd, 1911, at Burnham Beeches. Mr. C. O. Waterhouse commented on the extreme interest of this discovery, remarking that the *Mymaridae* have very small hindwings, in *Mymar* they are reduced to a mere bristle; the gap between this and *Stephanodes*, for example, which is very great, is partially bridged by Mr. Enock's discovery, and possibly other links may be found in the future. AFRICAN CHARAXES.—Mr. H. Rowland-Brown

exhibited some drawers of Miss Fountaine's bred series of African *Charaxes*. Professor Poulton commented on these, regretting that the parent had not been preserved with the corresponding offspring in each case. A POMPILID MIMICKED BY A REDUVIID BUG.—Dr. Chapman exhibited a box of insects from the Riviera to illustrate a case of mimicry. He said that in March and April, both at Hyères and at Amélie-les-Bains, his attention was attracted to a Reduviid bug, *Pirates hybridus*, Scop. He followed up one or two on the wing, taking them for Pompilid Hymenoptera, and when they settled on the ground their movements were precisely those of *Pompilus* when hunting on the ground—sharp, active, jerky, and taking wing at once if alarmed. The red colouring on the elytra was, when running, much like the red of a Pompilid body between or under the wings. On picking up the bug, it often occurred that one was stung, about as sharply as many Pompilids do, and some are fairly proficient therein. The sting was of course the thrust of the beak or proboscis, of which not a few Reduviid bugs can make effective weapons of defence. AN UNEXPLAINED ASSOCIATION.—Dr. Chapman also read the following note on a nest of *Polistes gallica*: “At Hyères, on March 29th, 1911, at 10.30 a.m., with a gale from the east (Sirocco), sky overcast and a few drops of rain, I found, on turning over a stone, under its edge a small nest of *Polistes (gallica)*. The nest consisted of eight small cells, in each of five of which was one egg. It could not have been founded very long. Under it (above it before the stone was turned over) there rested not one ♀ but two ♀s side by side. The advancement of the nest showed that it was impossible for one of these to be a worker reared in the nest. Were they working together, or was one only a casual visitor, taking shelter during the inclement weather? In the latter case would it not have been regarded and treated as an enemy, instead of both resting together in a thoroughly friendly way?”

LIVING LARVAE OF CALLOPHRYS AVIS.—Dr. Chapman also exhibited some well-grown larvae of *Callophrys avis* from the Riviera. HEMIPTEROUS MIMICS OF HYMENOPTERA.—Prof. Poulton exhibited on behalf of Mr. A. H. Hamm, assistant in the Hope Dept. of the Oxford University Museum, a case of insects illustrative of certain associations of mimetic British Hemiptera-Heteroptera, with their Hymenopterous models, and communicated a paper from him. A NEW FEMALE FORM, LEIGHI, OF PAPILIO DARDANUS.—Prof. Poulton exhibited the *trophonius* parent and the fifty-five offspring reared from her eggs by Mr. G. F. Leigh, F.E.S., of Durban. She was captured by Mr. Leigh on June 26th, 1910, at Pinetown, Natal (about 1,000 ft.), and laid sixty-two eggs on June 27th-28th. The parent is a typical *trophonius*, the offspring consisting of 25 males, 22 *cenea* females, 4 *trophonius* females, 2 *hippocoon* females, and 2 *leighi* females. There can be no doubt that this variety, bred in Natal by Mr. Leigh six times in 1910, and also captured twice in Natal, possesses sufficient stability to rank as one of the female forms of *dardanus*. Further convincing evidence of its stability as a form is seen in the fact that it also occurs almost unchanged so far away from Natal as the N.E. corner of the Victoria Nyanza. EURALIA ANTHEDON, DOUBL., AND E. DUBIA, BEAUV.—Prof. Poulton exhibited a female parent of the *dubia* form captured on March 19th, 1911, at Omi, 70 miles E. of Lagos, by Mr. W. A. Lamborn, together with a selection from the offspring reared from its

ova. The offspring included both *dubia* and *anthonon*. Thus Mr. Lamborn had been able to verify the suggestion that the forms *Euralia anthonon* and *E. dubia* are the dimorphic forms of a single species. INSTANCES OF MIMICRY.—Mr. W. A. Lamborn had intended to show at this meeting the cases which he had exhibited at the *Converazione*, but, owing to a misunderstanding, they had not arrived. He mentioned, however, that he recently took at one sweep of his net two butterflies, an *Amauris psytalea*, Plötz, and a *Euralia dubia*, which were flying round and round each other in a manner suggestive of courtship, and it seemed evident that the one must have been deceived by the mimetic resemblance to its own species exhibited by the other. He further said: "In the exhibit which I had hoped to bring to your notice is a West African Hypsid moth determined by Prof. Poulton as *Deilemera*, probably *antiorii*, Oberth., with the cocoon from which it emerged. The cocoon bears a large number of creamy white semi-transparent frothy spheres which bear a very strong resemblance to the cocoons of Braconid parasites. They doubtless have a protective function. A bird, for instance, would soon learn that a cocoon bearing the Braconid cocoons does not contain a pupa worth eating, and it is reasonable to suppose that it would likewise pass by a cocoon bearing structures which mimic them in such a remarkable way."

BITUARY.

Albert Harrison.

In the early morning of Monday, August 28th, there passed away suddenly, from hæmorrhage on the brain, Albert Harrison, of Delamere, S. Woodford, Essex. He was born in 1860 at the New Pale Farm, near Frodsham, in Cheshire, close to Delamere Forest. After being educated at the Liverpool Institute, in 1875 he entered the Laboratory of Henry Tate and Sons' Sugar Refinery in Liverpool, and was in 1878 transferred to the London branch, of which he rose to be Manager, and much of the success of which was due to his business aptitude and attention. As a practical chemist he had great skill and knowledge, and on several occasions had been sent abroad by the firm to study new machinery and methods. He was greatly respected by everyone, from the late Sir Henry Tate and the Directors of the Firm to the lowest employé with whom he came in contact. We in London knew him as an active member and frequenter of our various Natural History Societies. He loved the country from his earliest days. He was brought up in the confines of the great Delamere Forest, and he chose the neighbourhood of Epping Forest as the nearest available reminder of his boyhood's days for his southern home. Besides being a Fellow of the Chemical Society, Member of the Society of Chemical Industry, and other associations connected with his professional career, he was a Member of the Society of Arts, a Fellow of the Linnæan Society, the Zoological Society, the Royal Microscopical Society, and the Entomological Society of London, a Member of the South London Entomological and Nat. Hist. Society, the City of London Entomological Society, the Lancashire and Cheshire Entomological Society, the Essex Field Club, the Quekett Club, and the Ray Society. From 1908 to 1910 he was on the Council of the Entomological Society of London, and on several

occasions had served on the Council of the South London Entomological Society, and in 1899 was its President.

He was chiefly interested in British Lepidoptera, and with his most intimate friend, who afterwards became his brother-in-law, Mr. Hugh Main, formed a joint collection, largely composed of insects they had obtained by breeding from the earlier stages. One of his studies was that of local variation in common species, and he took much interest in experiments bearing on heredity. He had given considerable thought to Mendel's Law, and much of his breeding of Lepidoptera bore on this subject. Most of us will recall the very fine exhibits made by him at our Societies' meetings of *Aplecta nebulosa*, and its forms *thompsoni* and *robsoni*, *Amphidasis betularia*, with a fine set of gynandromorphs, and the magnificent specimens produced by various crossings of *Pieris napi* races and var. *bryoniae*. It was one of the pleasures of our life to pay an occasional visit to his breeding-houses, fitted up with everything needed for the rearing of the larvæ which he always had in large numbers, and to which he and his devoted brother-in-law early and late gave their skill and care.

Unfortunately he wrote but little, and that little more or less statistical accounts of the results of his breeding experiments.

He was a great student of literature of a wide and varied character, literary as well as scientific, and had formed a fine library, mainly of modern books, relating to his many and varied tastes. He was a most voluminous reader, and somehow, in spite of his busy professional life, the time he spent in his breeding experiments, and the active part he took in so many societies, he yet found opportunity to keep himself quite *au fait* with all that was being discussed, not only in Lepidopterology, but in other branches of Natural History, and in general Literature.

A portion of his holiday time was each year spent in his old Cheshire home and Delamere Forest, but he had of late years begun to spend a few weeks in the Bernese Oberland, and had commenced to extend his investigations to the continental Lepidoptera, e.g., *P. napi* var. *bryoniae*.

It has been our custom to meet Mr. Harrison at one or other of our London Meetings almost every week, to meet him in the field, and to be his guest, and we can truly say that as a personal friend, as a fellow member, as a host, and as a man, he was everything that one could wish. A quiet, unassuming man, full of knowledge, and with the will and the power to help others in their study of the life around them, an influence strong, but not obtrusive, our beloved study loses much by his unlooked for sudden demise.

He leaves a widow and two children, to whom we offer our sincere sympathies and whose loss we with sorrow share.

The funeral took place at Alvanley near his old home where his father and mother and many relatives lie, and near the scene of his youthful rambles. It was attended by representatives of the Directors of Henry Tate and Sons, fellow members of the staff of the London and Liverpool branches, representatives of several Societies, among whom was Mr. Hugh Main, besides many relatives and Cheshire friends. The bearers were the old servants of the New Pale Farm.

—H. J. T.

George Henry Verrall.

Mr. George Henry Verrall, so well known in entomological circles for the annual "gathering of the clans" he so generously held at the Holborn Restaurant, as well as for his valuable work on one of the so-called "neglected orders," the Diptera, passed away on Saturday, September 16th, after a long illness. He was in his sixty-fourth year, having been born at Lewes in Sussex, in the year 1848. For many years he had been officially connected with various race-courses as clerk of the course, manager, auctioneer, etc., and was a keen supporter of coursing and cricket. He long took an active interest in politics, and in 1910 he represented the Newmarket Division in the House of Commons. At the time of his death he was Vice-chairman of the Cambridgeshire County Council and senior member of the Newmarket Urban District Council.

As a boy he was attracted to the study of insects, and sought every opportunity as he grew older of collecting in the various parts of the British Isles to which his professional duties led him. By the time he was twenty years of age he decided to turn his attention entirely to the *Diptera*, at that time one of the least known orders of insects, and one in which new discoveries were both possible and probable, and where original work and enterprise were much needed. As a result of his early work in "Dipterology," as he termed it, he published in 1888 a *List of British Diptera*. This was entirely his own compilation, and issued as a basis for his own and others' work to attract and help forward students of the order. In 1901 a second edition of the List was issued, and this time Mr. Verrall acknowledged that numbers of students had come forward to aid him in correcting and adding to the previous more or less tentative list. He discovered large numbers of new species of flies, and got into touch not only with British workers on the Diptera, but was in friendly communication with the "Dipterologists" of the continent. His increasing knowledge gave him the desire to commence a most ambitious work,—*British Flies*—of which two volumes have appeared, and he had accumulated a large amount of MS. for the compilation of other volumes.

As early as 1866 he joined the Entomological Society of London, and some years later was its Hon. Secretary for a time. On several occasions he was made a Vice-President, and in 1899-1900 he had the honour of filling the office of President. He was also a member of the South London Entomological Society, which he joined in 1887.

Not only was he a keen entomologist, but he was a botanist of considerable experience, in fact all forms of nature study had an attraction for him, and in each he attained sufficient knowledge to speak with authority. He was proud of the fact that in his own neighbourhood he had rediscovered plants which, for a generation at least, had been thought to be extinct. Some years ago, when there was a prospect of the total disappearance of Wicken Fen with its peculiar flora and fauna, he used his utmost influence to prevent it, on several occasions purchasing portions of the unreclaimed fen to preserve it in its wild state for entomological and botanical purposes. It was mainly through his active influence and care that the ancient and exclusive Entomological Club was brought into modern prominence.

His body was cremated at Golder's Green Cemetery, and the ashes were buried at Newmarket in the presence of a very large number of his professional and scientific friends.—H. J. T.

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Several communications are unavoidably held over from want of space.

The next number will contain two plates to illustrate a paper by Dr. Chapman.

We trust that our correspondents will not send us communications identical with those they are communicating to other magazines. This month we have had to omit a "collecting note" which was in type, owing to its appearing in two other magazines.

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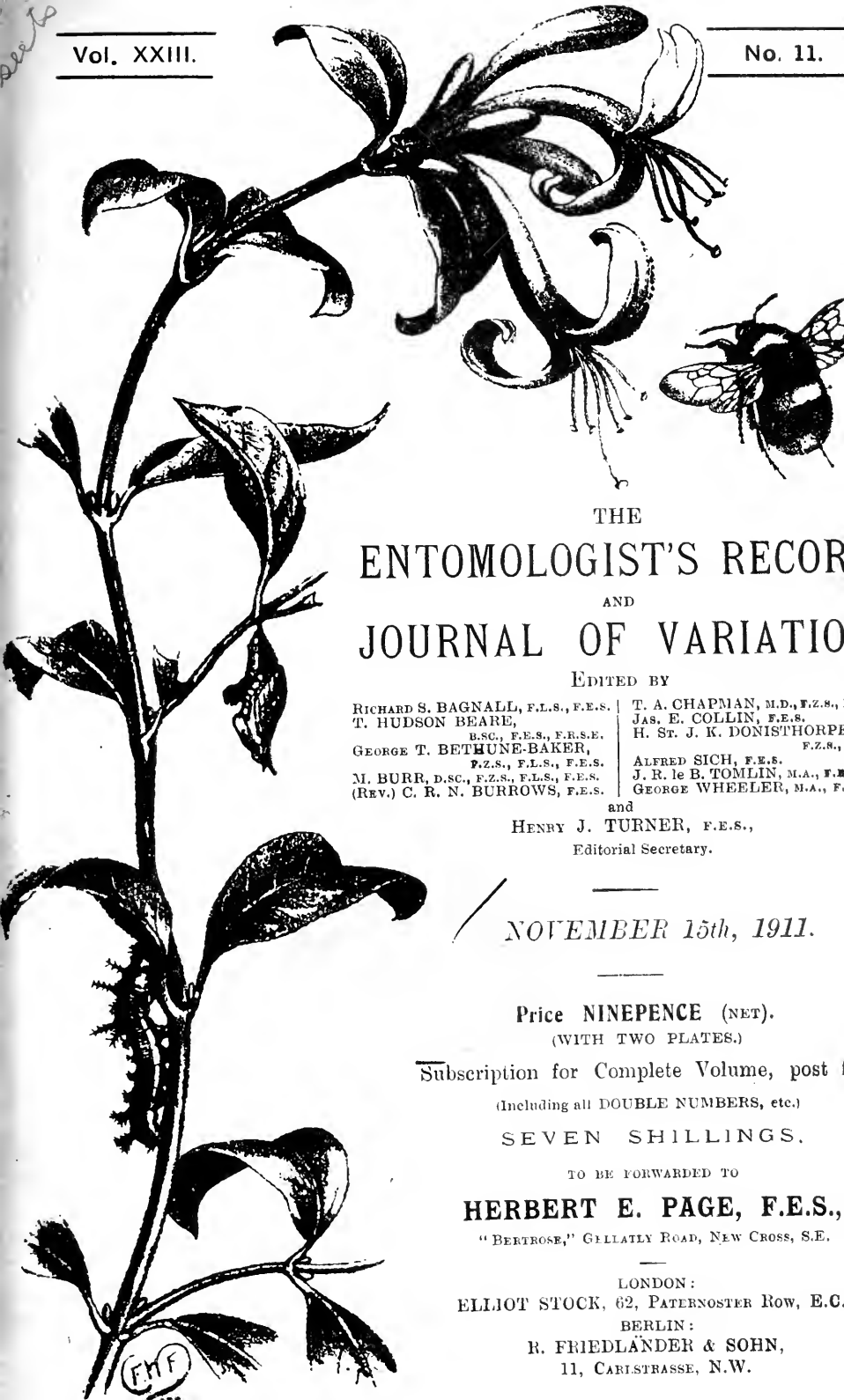
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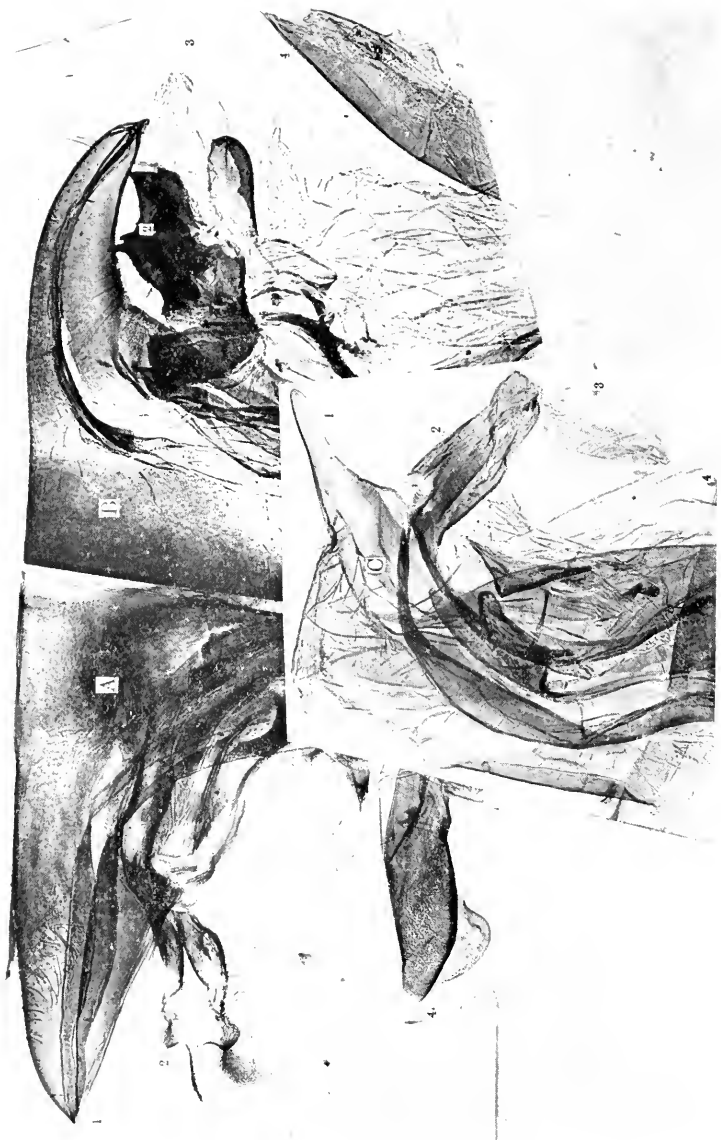
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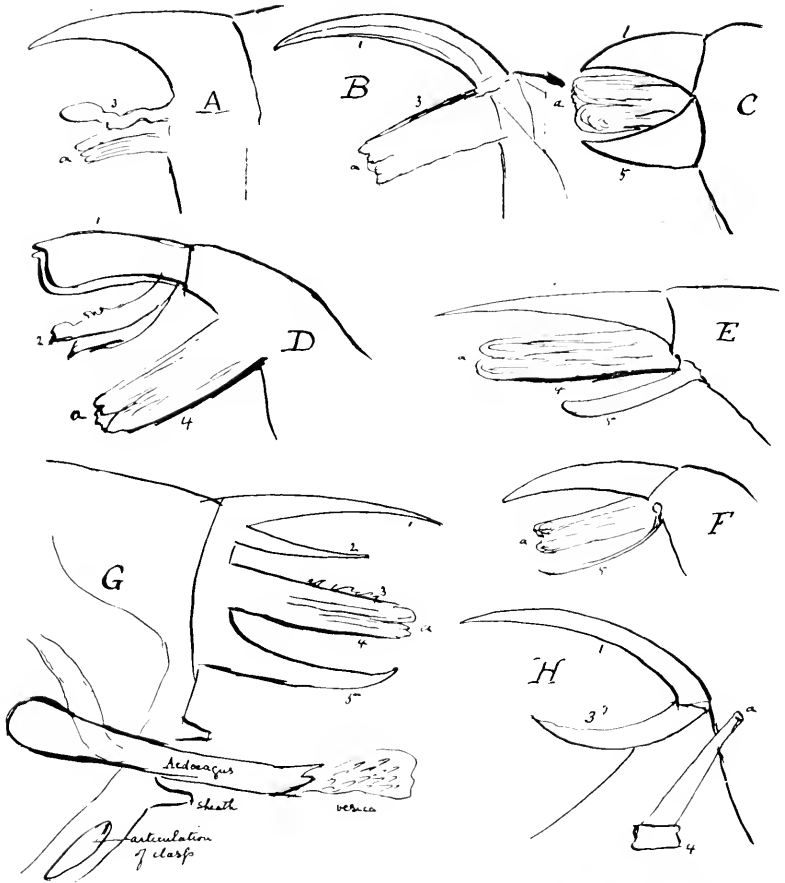
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[Photo. F. Noad Clark.]



[Del. T. A. Chapman.]

DIAGRAMS TO SHOW SCAPHIUMS AND PARTS THAT HAVE BEEN CONFUSED WITH IT.

On the Scaphium of Gosse.

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

The name *Scaphium*, for a certain portion of the male genital armature of lepidoptera, was given by Gosse* to a process whose exact position has not apparently been understood clearly by subsequent writers. At any rate, trying to understand Gosse, and to agree with the interpretations usually placed on his descriptions, I have to confess, that in common with various authorities, I have fallen into error, and confounded the *Scaphium* with the sternite (ventral plate) of the 10th abdominal segment.

Mr. Pierce is, I believe, the only authority of any note who has applied the name correctly.

I desire to confess my error in the matter, and, if possible, to make it manifest to those with whom I have been misled.

In the genus *Papilio* the scaphium is a highly-developed and complicated mass between the uncus (dorsal portion or tergite of 10th abdominal segment) and the ædæagus; in all other groups it is much more simple or wanting.

The point on which I went astray was in regarding the *scaphium* as being *subanal*. This was the result of depending on Gosse's critical remarks instead of on my own observations.

Gosse, in his latest remarks on *Ornithoptera remus*, which he makes in an appendix, but which agree with sundry other passages elsewhere in his papers, distinctly asserts that the anal opening is between the uncus and scaphium. He says: "In both *O. remus* and *O. haliphron*, I have demonstrated the presence of an orifice leading from the abdominal cavity between the uncus and the scaphium, and I have passed a fine needle through it—though from the extreme minuteness of the parts and their dry condition, the demonstration was not quite so satisfactory as I could wish. Still I can find no anal orifice possible anywhere else than here." (*Trans. Linn. Soc., Zool.*, 2nd series, vol. ii., p. 336.) Gosse does not seem to have really observed the anus at all.

My error, then, consisted in accepting Gosse's description without checking it for myself in *Papilio*, for the organ has no very prominent existence in the other groups which I have examined, and I felt no doubt that a well-developed process between the uncus and the ædæagus must be the scaphium.

The organ I have called the scaphium is really the sternite of the 10th abdominal segment. It is well-developed in the *Sphingidae* and various other families.

Mr. Pierce and Mr. Burrows both place the scaphium where it really is, *above* the anus, and have more than once remonstrated with me for placing it below (where Gosse says it is). I don't know whether they are familiar with groups in which the 10th sternite is marked.

I have now examined several *Papilionidae* with Mr. Burrows' admonitions on the one hand, and Gosse's text and figures on the other.

The position of the anus in *Papilio* appears to be at a point close

* *Trans. Linnean Soc.*, 2nd series, vol. ii., Zoology, p. 275, 1883.

to the end of the scaphium, but beneath it. There is no definite 10th sternite. (See Plate x.)

I have not tried to make any exhaustive search, but the few continental authorities I have looked into seem to have taken the same view that I did, that the *scaphium* was a sub-anal process, as, for instance, Spuler's *Hofmann*, not itself an authority, but to a great extent a summary of authorities. One of the exceptions is apparently really more in error than the others, *viz.*, Hermann Stitz, "Genitalapparat der Mikrolepidopteren," in the *Zoologische Jahrbuch* 1900, who makes the supra-anal "*stuck*" the scaphium, but unfortunately calls the sub-anal "*stuck*" the uncus. In fact he still places the uncus and scaphium one above and one below the anus, but reverses the names. Pierce very accurately describes the position of the *scaphium* (*Genitalia of the Noctuidae*, p. 13): "Attached to the anus on the upper surface is a process present in some only of the *Noctuidae*, which is *The Scaphium* (of Gosse)."

This is a marked instance of description being better than a figure; the description is accurate and complete; the figure shows the scaphium as entirely apart from the anal tube, and in fact similarly situated to an unnamed process present in some *Notodontidae*. (See Plate xi.)

The anal opening is usually on the level of the floor of the cavity; the usual exception is when a scaphium is present; in that case there is a projecting anal tube, as Pierce shows. The projection is maintained by the scaphium being a solid chitinous rod or plate along its dorsal surface. In *Acronycta tridens*, for example, it is a simple, slight, straight rod. In *Papilio* its upper surface is variously developed in complicated fashion, and there often appears to be a development beyond the point to which it is attached to the anal tube, the anal opening being then some way from the extremity. I have not, however, examined species enough to have satisfied myself of anything beyond the general fact, that the scaphium in *Papilio* is more or less attached to the upper surface of the anal tube.

There is another case in which the anus is at the extremity of a projecting anal tube. Here the supporting chitinous piece is not on the dorsal surface of the tube as the scaphium is, but beneath it, and would be entitled to Pierce's name of *subscaphium*. This structure occurs in *Hydrocampa nympharata*, *Ptilodontis palpina*, etc. I believe all other cases of a projecting anal tube, *i.e.*, without chitinous support, are temporary if in the living animal, the result of pressure if in preparations.

It is perhaps merely the result of the few specimens I have examined, perhaps of a defect of memory, but I do not remember to have seen a well-developed scaphium in any species in which the 10th abdominal sternite was well in evidence. These two structures being therefore certainly rarely, possibly never, associated, no doubt accounts for the name scaphium having been so generally applied to the 10th sternite.

The scaphium is indeed not a very common structure, it occurs in some *Noctuae*, as for example *Acronycta tridens*, where it is a very simple, delicate, straight rod along the dorsal aspect of the anal tube, in *Mamestra persicariae* it is notably developed; the 10th sternite, if ever present in *Noctuae*, is very rare, though the scaphium is not often very distinct.

In looking to find some other group besides *Papilio* with a pronounced scaphium, one turns at first naturally to the *Hesperidae*. Here in *Syrichthys* one finds at once a process very like the Papilionid scaphium, a process below the uncus and with very varied armament. On examination, however, one finds that it is below, and quite separate from, the anus, and is neither scaphium or subscaphium, but the ventral plate (sternite) of the 10th abdominal segment.

In the *Nymphalidae* the two plates of the 10th segment are often well developed, but neither scaphium nor subscaphium is present.

In the *Sphingidae* the condition is much the same, but usually in the *Nymphalidae* the two plates are small, simple, and articulated together, and when open they just give room for the anus. In the *Sphingidae* they are more frequently long and curved, looking, on lateral view, something like the opened beak of a raptorial bird. In a few cases the uncus is bifurcate and even the sternite also, and the anus centrally between them.

In some *Notodontidae* we find four similar pieces, each one, however, rather more independent of the others than in the *Sphingidae*. Here one says, at first, is something to support those who see a close relationship between the *Sphingidae* and the *Notodontidae*. It is, however, not so. All four processes belong to the 10th tergite, the anus being well below them. Then, of course, one would suppose the two lower are scaphium. No, there is an anal tube projecting, but it is perfectly free from these dorsal processes, and is supported by a slight subscaphium. (Noted from *Ptilodontis palpina*, others seem to be fairly identical.) This piece may be called the "subuncus" (Plate xi).

The name "scaphium," as used erroneously, is sometimes perhaps applied to the "subscaphium," but more usually to the 10th abdominal sternite, and this piece, if one objects to "tenth abdominal sternite" as being a description and not a name, is in want of a short name. If so, I would call it the "gnathus" (*γνάθος*), anglicised "gnath," in allusion to its so often resembling a lower jaw, as in the *Nymphalidae*, *Pyralidae*, etc., where, with the uncus, the resemblance to a beak is often very strong.

P.S.—Since writing this note I have seen Dr. McDunnough's paper in the *Canadian Entomologist* for June, 1911, and observe that he has, like so many others, fallen into the same error as myself, and which I have here corrected, *viz.*, regarding the "scaphium" of Gosse as sub-anal, whereas it is really supra-anal. It may be noted that the "tegumen" of Buchanan-White is the whole circle of the 9th abdominal segment, though he refers to the lower portion as a ring [*Trans. Linn. Soc.*, 2nd Ser., vol. i., p. 358, 1878(76)]. The restriction of the term "tegumen" to the dorsal portion, and giving the name "ring" to the remainder, is thus possibly correct.

EXPLANATION OF PLATE X.

Fig. A.—Portion of appendages of *Papilio erithonius* (side view).

Fig. B.—Portion of appendages of *P. merops* (side view).

Fig. C.—Portion of appendages of *P. nireus* (side view).

In each case the numbers refer to :—

- 1.—Uncus.
- 2.—Scaphium.
- 3.—Anus.

- 4.—Portion of *Ædæagus*. (I use the word *Ædæagus* in the sense of *Ædæagus* + *Vesica* = *Penis*.)
 Though they come out well in the photographs, the anal tubes are so transparent that the process reproductions are less satisfactory than is desirable, especially in Fig. A.

EXPLANATION OF PLATE XI.

Diagrams of several developments of the 10th abdominal segment (side view):—

- A.—As in *PAPILIO* (*machaon*). 3. Scaphium of Gosse attached to upper surface of anal tube.
 B.—As in *ACRONYCTA* (*tridentis*). 3. Scaphium quite homologous with Gosse's scaphium in *Papilio*.
 C.—As in *NYMPHALIDS*, *SPHINGES*, *PYRALES*, etc. Dorsal and ventral plates only.
 D.—As in *NOTODONTIDS* (*P. palpina*). 2. Appendages to uncus. 4. Subscaphium.
 E.—As in *HYDROCAMPA* and some other *Pyrales*. 4. Subscaphium.
 F.—As in *SCOPARIA* and some other *Pyrales*, essentially the same as Fig. C.
 G.—Showing all processes as if present. Actually only two or at most three are present together—(1) uncus, (2) process of uncus, subuncus, (3) scaphium, (4) anus, (5) subscaphium, (6) 10th sternite (ventral plate of 10th abdominal segment) gnath (*gnathus*).
 H.—From Pierce's figure. 3. Scaphium shown right away from anal tube (4). In the *NOCTUÆ* it is always placed as in Fig. B.
 (The numbers in each case as in Fig. G.)

A Month in Switzerland and elsewhere.

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

(Continued from page 267).

(ii.) FAIDO, REAZZINO, AND MENDRISIO.—A pouring wet night and a hopelessly dull day greatly lessened my regret in leaving Samoussy; the day-service of trains not being so good as the night-service, the whole of the 17th was expended in getting to Bâle. I had intended going up to Hinterzarten, in the Black Forest, but we arrived in pouring rain, which continued all night and the next day, so we pressed on in the afternoon to Faido, on the south of the St. Gothard Pass. The next day was no better, so I went down to Bellinzona and on to Cadenazzo in hopes of finding better weather there—as we had taken “abonnement général” tickets for a month at Bâle, distance was no object—but the only difference was that the rain was warmer and more of a drizzle, so there was nothing to be done but come straight back. The following day there were gleams of sun in the morning, and I crossed the river in hopes of finding *Brenthis thore*, but quite without success. *Pararge maera* was fresh and fine in both sexes, and *Coenonympha arcania* of a size generally verging towards *insubrica*, but in markings more approaching *darwiniana*, was not scarce. I found also a few nice *Brenthis selene*, quite freshly emerged, and equally fresh *Aporia crataegi*, *Pararge egeria*, and *Cyaniris semiargus*. *Venilia maculata* was in great abundance, mostly of the deepest orange in colour though a few pale specimens occurred among them; *Ginophria rubricollis* was also in evidence, and one very fresh ♂ of *Euchelia dominula*. The afternoon, though dry, was absolutely sunless, and neither at Airolo, nor walking down the splendid gorge between Rodi and Faido, did I see anything but a few *P. maera*.

The next day, the 21st, being fine, I went down to my old hunting-ground at Reazzino, hoping to find ♀s of the first brood of *Melitæa*

britomartis, and to discover the food-plant by watching their egg-laying. I was, however, doomed to complete disappointment. In this generally teeming locality nothing was abundant except *Epinephele jurtina*; this species swarmed, and I took two nice examples of ab. *semi-alba*. The Pierids, particularly *P. napi*, were not uncommon, and I saw besides a couple of *Papilio machaon*, a few *Argiades sylvanus*, two *Scolitantides orion*, a few *Melitaea athalia*, a few worn-out *Polyommatus icarus*, and one specimen each of *Gonepteryx rhamni*, *Plebeius aegon*, *Lycæna arion*, *Heodes virgaureæ* ♀, and *Rumicia phlaeas*. *M. britomartis* was present it is true, but very few, and mostly quite worn; such ♀s as I saw I watched carefully, but seeing no sign of oviposition I took them all three back, and with them portions of all the plants I had seen them frequent, but I think their eggs were already laid, for they were in advanced old age, and at any rate they did not oblige. On this day the last of the Samoussy larvæ of *Araschnia levana* pupated.

If Reazzino was a disappointment, Mendrisio the next day was a greater one. I hesitated between this and the Val Maggia, but the matter was decided by the time-table, which made the latter impossible. My quarry at Mendrisio was *Neptis lucilla*, and during some hours of watching I saw two only, both of which I captured. *E. jurtina* was again very abundant, and *Melanargia galatea*, of course of the *procida* form, fairly so; the three Pierids, *Coenonympha pamphilus* and *Argiades sylvanus* also appeared, and a worn-out ♀ *Melitaea didyma*, a single ♂ of *Ereres argiades* and a ♀ of *Nordmannia ilicis* would have completed the list, had I not taken for the first time in this locality a worn ♀ of *M. britomartis*. Altogether very few butterflies were to be seen, and in truth Mendrisio is rather a dull locality except for *E. argiades* and *N. lucilla* (the latter of which can equally well be taken in the far more prolific Val Maggia), even though my only Swiss *Layrardia telicæus* was taken here.

Friday the 23rd was again dull—too dull indeed in the morning to be worth while going out—in the afternoon however I went up behind the village by the watercourse, through what must be in good weather magnificent hunting-ground. Sitting on the grass-heads were numbers of “blues,” *Plebeius aegon*, *Polyommatus hylas*, *P. icarus*, *Aricia medon*, *Cyaniris semiargus*, and *Lycæna arion* var. *obscura*: these were all rain-soaked and spoilt, except some of the *P. icarus* and *A. medon*, and the same was the case with several *Paruassius apollo* and *Aporia crataegi*, all in fact that I saw; *Argynnis aglaia* alone seemed able to retain its condition, or indeed its spirits, the others had a hopelessly draggled appearance. In the hollow of the torrent-bed, however, *P. aegon* and *C. semiargus* were in much better condition, both being very fresh, and at the north side of the stream along a path on a steep hill-side a few *Leptosia sinapis* and a single *Euchloë cardamines* were in good condition. *Euchelia dominula* again appeared, another very fresh specimen, but my most interesting capture was a form of *Euclidia mi*, in which the forewings are tinted with purplish and all the white markings are of a deepish orange, the underside being as deeply coloured as that of *E. glyphica*. This form is described, though not named, in Spuler's edition of Hoffmann, but as no mention of it is made in Tutt's "*British Noctuae and their Varieties*," I presume it is unknown in England. I took two specimens, one of which unluckily escaped.

That evening we left Faido at 6 o'clock *en route* for Olten on our way to Geneva. Our hotel had been the Hôtel Suisse, which is conveniently close to the station, very comfortable and not expensive. For those to whom it is of interest I may add that the young Proprietor speaks English; his mother speaks Italian only—and likes to speak it; it is the ordinary language of the valley from Airolo downwards.

(To be continued).

Notes on the Butterflies of Surrey and Sussex in 1911.

By T. H. L. GROSVENOR.

After the very unusual summer that we have experienced this season, a few notes on the emergence dates, and the variation of the butterflies may be of interest. My observations have been entirely confined this year to Surrey and Sussex.

Pieris brassicae.—Moderately common but nothing unusual.

P. rapae.—First seen April 14th. A batch of ova from a Westmoreland ♀ laid on May 12th emerged from June 13th to 25th making only 32 days for the complete metamorphosis. A third emergence of this species has been very abundant. At the time of writing this there are nearly full fed larvae, so that there may be, if the hot weather continues, a partial fourth emergence. At the Farncombe (Surrey) Allotment Association's show, prizes were awarded for the greatest number of dead specimens of cabbage whites. The first prize was awarded for 2,974 specimens, the second for 1,726, and the third for 700. (*vide* Press).

P. napi.—First seen May 5th, second emergence July 5th, and partial third on August 20th, a few are still coming out but are very scarce. On collecting the first brood assiduously, I found considerable variation.

- (a) Male with female markings.
- (b) Gynandromorph, right wings ♂, left ♀.
- (c) Female with entire failure of black pigment, on upper and under sides of wings, the places where the black should have been are yellowish and have a semi-transparent appearance; this is more apparent than real, as it appears to be fully scaled, the specimen if normal would have been of the ordinary dark spring form with rather heavy markings on the nervures on underside.
- (d) Male entirely without apical blotch, the black nervures run out to the margin without any increase in width.
- (e) Male with discal spot large on right primary and small on left.
- (f) Male with marking on nervures on underside of secondaries suddenly broadened out, thus forming a narrow green band round the outer margin.

Also several with very broad nentral markings on underside of secondaries both male and female.

In the second emergence little variation was noticed, with the exception of a female with large black spot in disc of secondaries,* and several very small examples; in the third emergence no variation except in size; a bred ♀ of this emergence is by far the largest in

* *ab. posteromaculata*, Rev. (*Bull. Soc. Lép. Genève*, ii., p. 46, pl. ii., fig. 11).—G.W.

my series; all others noted were undersized, and one wild ♀ the smallest in my series. In some Irish *P. napi* that I was breeding, out of close on 300 pupæ, only 47 ♂ s and 3 ♀ s emerged, whereas from close on 500 Surrey pupæ kept under the same conditions all emerged with the exception of 14.

Euchloë cardamines.—First seen April 24th, afterwards extremely abundant, but little or no variation observed although hundreds were examined.

Gonepteryx rhamni.—Fairly common, first seen July 21st.

Colias hyale.—First seen on August 26th, since when I have taken 9, all in the worst possible condition. Before releasing them I specially marked them to make sure that they were not taken again, the sexes were 8 males and 1 female; the latter was kept for ova, but dull weather intervening, she died without laying.

Colias edusa.—Two were reported as being seen in the garden, but by a non-entomological observer, and although he knows the insect quite well, this record must be taken with caution.

Dryas paphia.—One seen at Clandon. I have never before seen this insect there.

Argynnis adalaia.—Very abundant on the North and South Downs, especially the latter, but nearly over by July 15th; by this date it was almost impossible to get respectable specimens, so variation was out of the question.

Argynnis adippe.—A few were observed, but it was also over at a very early date.

Brenthis euphrosyne.—Fully out both ♂ and ♀ on May 25th; on which date I took a ♀ with complete black band on fore and hind wings.

Brenthis selene.—Fully out on June 1st, and very abundant, but no variation worth mentioning.

Aglais urticae.—Rather scarce.

Vanessa io.—Very abundant in the garden on Scabious blooms; it would have been possible to have taken a dozen or so every visit, between August 15th and 28th, after which they ceased to appear.

Vanessa atalanta.—The same remarks as for *V. io*, but not quite so common and still appearing, September 9th.

Pyrameis cardui.—Two seen on September 3rd.

Melanargia galatea.—Almost over by July 15th.

Pararge megera.—One taken at Reigate. I have never seen the insect before in the district. Clandon is the nearest I have met with it, and always rare there.

Satyrus semele.—Common near Guildford, but beginning to get wasted by July 24th.

Epinephela jurtina (janira).—As common as usual. I took one on June 28th with right secondary bleached.

Epinephela tithonus. First seen July 6th, afterwards very abundant but no variation.

Aphantopus hyperanthus.—First seen June 27th, the same remarks apply as to *E. tithonus*.

Coenonympha pamphilus.—First seen May 18th. The second emergence was very abundant and very variable, several ♀ s having a very decided black border to secondaries, three far more so than any taken in previous years. In two specimens there were several

interneural black spots within the black border. Males also had the same characteristic; in a few instances, with very deep black borders with black suffusion to disc.

Pumilia phlaeas.—Perhaps the most noteworthy occurrence this year, at least to my mind, is the utmost profusion of this species. They are at the time of writing absolutely in hundreds; in my garden, where I have never seen this insect before, I can go out and take between 40 and 50 in about half an hour. I have seen quantities flying in Redhill town. I took in July a ♂ without orange band to secondaries, and a ♂ with spots striate on upperside of primaries.

Plebeius argus (aegeon).—Common, but no aberrations were noticed.

Aricia astrache.—Ditto.

Agriades thetis.—First emergence scarce, first seen May 28th, second emergence more abundant, first noted August 7th. I did not find any variation, the females in both emergences being conspicuous for the lack of blue, and orange marginal crescents weak.

Agriades coridon.—Very abundant, first appearance July 15th, and at time of writing there are still plenty of both sexes on the wing, but in the last stages of senile decay. I was fortunate in taking several very fair aberrations of this species.

(a) Female, with left primary cream colour, fringe quite white, left secondary same colour but striped with normal colour (not crippled in any way).

(b) Male with quite large orange crescents on secondaries I also noticed several of the more usual named forms such as (upperside), edged internally with black as in the female (*suavis*).

arcuata, *basijuncta*, and also a ♂ very closely approaching *forleri*, but each of the white spots had a small black spot in the centre.

Polyommatus icarus.—Very abundant but invariable, ♀s characterised by absence of blue, all very dull brown. I took a very interesting underside ♂, the spots are all brownish yellow including discoidals, and the orange crescents are not edged internally with black, giving the insect a most peculiar appearance.

A third emergence has been observed by several entomologists, and it might perhaps be of interest, if any of your readers could give precise data as to records of such an occurrence in previous years. I cannot find any references among my own notes on this species during the past fourteen years. This however does not go back far enough, as perhaps the phenomenal season of 1893 might show similar records. In the present year the last example of the second emergence, was noticed on September 14th, a female, in the last stages of senile decay. The first example of the third emergence, a male was seen on September 21st, and two days later both sexes were noticed. A few examples were noticed in various localities on the North Downs, between Caterham and Guildford, but in a small lucerne field at the foot of Colley Hill, Reigate, they were in hundreds. Whether it bred here or was attracted by the lucerne, one cannot say, but one is inclined to think this a favoured spot for breeding. In this small area of perhaps two acres this third emergence was certainly far more abundant than either the first or second, and perhaps showed more variation than any given emergence, during my experience. The males on the upperside did not show any great deviation from the type, the majority being of a deep lilac-blue, some specimens being perhaps a little deeper

or paler in colour; the females, however, showed a very wide range of variation from almost entirely blue in varying shades, to deep brown without a trace of blue coloration even at the base of the wings. Perhaps the most noteworthy variation was the comparative abundance of the ab. *basijuncta* (Tutt), *i.e.*, with the penultimate spot of the submedian series of secondaries united to the penultimate basal spot; of this form I have taken six good examples, five females and one male, and at least 20% of the entire female emergence showed a tendency to this form by the two spots in question being slightly drawn to one another. One would in a general way consider this a rather scarce form, as during the time I have assiduously worked this species, I have only found two examples, and in every case this has been combined with ab. *melanotoxa*, which is practically the same variation as *basijuncta*, but on the forewings. Only one example of ab. *icarinus* was observed, and no example of ab. *melanotoxa* simple, although this latter form is usually fairly abundant in the female. The following are descriptions of a few of the more interesting aberrations taken:—

(1) Female of the bright blue form, with a stripe of male colour running along the costa of left primary from base to outer margin, the costa also is white in places as in the males.

(2) Female entirely without blue, and with full series of orange lunules, six on primaries and six on secondaries, giving the insect the appearance of *A. astrarche*.

(3) Female, of the fuscous form, with blue at base of wings extending to disc, and entirely without orange lunules. A strong glass fails to show any orange scales.

(4) Two examples of ab. *rufina* (Obth.), *i.e.*, with orange rays from the disc to outer margin of primaries, both examples are of a fuscous colour.

(5) Female underside with orange lunules very much enlarged.

To sum up, there has been throughout the emergence perhaps a tendency to increase of size of spots, and bold markings on the underside of both sexes. On the uppersides, the males show rather a brilliant tint, although the females range from the brightest blue to brown, the latter form predominates by about 50 of the latter to one of the former. Generally the orange lunules are perhaps more pronounced than usual. I omitted to say that a rather curious fact, was the rapidity with which the emergence ended. By October 2nd it was almost impossible to find a single example in respectable condition, and the species was already becoming scarce. In conclusion one could not find any tendency to dwarfing or malformation. It will perhaps not be out of place to mention that whilst working for *P. icarus*, I took a female *Colias edusa*, in a lucerne field at Caterham on September 26th, and a male at Reigate on the following day, both apparently freshly emerged. The former I kept for ova, and although kept alive nearly three weeks, I failed to obtain a single ovum.

Celastrina argiolus.—This species was first observed on April 24th, and second emergence on July 15th. The larvæ from these have been most abundant; in two or three instances I have found wild larvæ eaten by one another. The larva is treated in exactly the same way as an ivy bud—a round hole is eaten into which the larva pushes its

head. No resistance appears to be made by the victim. It occurred to me as they were such cannibals, and having a good quantity of larvæ, to see whether they could be fed on larvæ of the same species. What occurred was, that although they fed on this food with avidity, they appeared to get no nourishment, for out of 30 larvæ with which I experimented only three pupated, and one of these was subsequently eaten, the two remaining, therefore, accounted for 28 larvæ, which were half fed when I commenced. The two pupæ are very much undersized; the larvæ appear to prefer their cannibalistic feasts to a natural one of ivy if more than one is kept in each cage.

Hesperia malvae.—Common, but invariable.

Nisoniades tages.—Common. I took a ♂ with the ground of a cream colour, with the usual dark-coloured markings.

Argiales sylvanus.—Fairly common; invariable.

Urbicula comma.—Very abundant; first appearance July 23rd; several of the females were very dark, and two males were taken approaching the form *clara*.

Adopara flava (linea).—Abundant, and showing little variation.

In conclusion, I think one may say that the past season has been very favourable for, at any rate, the Rhopalocera. Other orders I cannot give any opinion on, as I have given them no attention. Every species that I have had anything to do with has been far more numerous than for many seasons past, although the mild winter may have been one of the chief factors in this.

Two Months among the Butterflies in Southern Spain.

By ALBERT H. JONES, F.E.S.

(Continued from page 263.)

The weather (April 18th) was still most unsettled at Malaga, and I hesitated before starting for the higher ground of Ronda and Granada, especially as the reports from these districts were most discouraging. However, a letter from Mr. Sloper stating that *Euchloë tages* was well out in the cork woods settled matters, and on April 19th I left for Ronda, stopping at the Station Hotel. The following morning I started along the cliffs, the locality indicated by Mr. Sheldon, and when I reached the spot, a mile and a half from Ronda, where the cliffs are intersected by a path leading to the River Quadalevin below, butterflies were quite numerous flying along the edge of the precipice. Of *E. tages* I secured a few, also of *E. belemia* and *E. belia*. The following morning I visited the same locality, but owing probably to a change of wind, not one was to be seen. Beyond the path there is a fir wood of some extent; through this I walked, and very soon came upon the Quadalevin again, which takes a sharp turn at this point. The river lay 500 feet below, and the banks, too steep for cultivation, were covered with a luxuriant vegetation. This appeared to be the home of all the butterflies in the neighbourhood—*E. belia* in point of numbers outrivalling all. The gently flying *E. tages* was easily detected and caught. *E. belemia* occurred, but was not quite so common. *Papilio machaon*, *P. podalirius* var. *feisthamelii*, *Gonepteryx cleopatra*, and *Thais rumina* (a fine form, not uncommon), were in plenty, with solitary specimens of both *E. euphenoides* and *Melanargia ines*, and many other species. Curiously enough there was not a representative of either the

Melitaea or *Argynnis* groups. It was very interesting collecting—but the sand-flies! They were most persistent in their attacks. One day I worked among the more cultivated ground to the high road to Granada, but scarcely saw a butterfly.

Shady walks in the Alameda, the pleasant climate and the good collecting, make Granada an agreeable place for a prolonged stay. At Miss Laird's Pension near the Alhambra Palace I found most comfortable quarters, and remained there from April 27th until May 27th. During this period I had the pleasurable companionship of Mr. Sloper, and many were the excursions we made. My collecting was chiefly confined to the Genil Valley, about an hour's walk beyond the Cemetery. This valley was most unproductive, until a field of peas in full bloom was reached, and here butterflies were in some numbers. On certain occasions *Zegris eupheme* var. *meridionalis* was fairly numerous, but on others scarcely one was to be seen. This magnificent butterfly was somewhat difficult to capture, and pursuit was useless. Along the edge of the precipitous slope overlooking the Darro valley, at an elevation of about 3,000 feet among lavender, butterflies were very numerous, principally *P. machaon*, *P. podalirius* var. *feisthamelii*, *Melitaea phoebe* var. *occitanica*, and *Callophrys rubi*. A little way down the hillside on the way towards the Cemetery, *M. syllius* occurred occasionally, and on the lower slopes *M. ines*. Blues were in abundance, principally *Lycarna (Scotitantides) baton* var. *panoptes*, *L. (Glancopsyche) melanops*, a few *L. (Polymmatus) icarus*, commonly, *L. bellargus (Agriades thetis)* and *L. (Aricia) astrarche*, both occasionally. *M. phoebe* var. *occitanica* appeared in the open country, but *M. dejone* var. *neradensis* was quite confined to the ravines, which intersect the hills in many directions. The best collecting ground seemed to be in these ravines sheltered from the wind, but very hot during sunshine. Here the flies were very troublesome, but not so bad as the sandflies at Ronda.

Whilst I remained at Granada the weather was by no means good for collecting, dull, overcast, wet, and windy days were numerous, and cold nights always prevailed; the snow-covered Sierra Nevada at no great distance off, being, no doubt, the cause of these atmospheric changes and low temperature.

LIST OF SPECIES OBSERVED.

Papilio podalirius var. *feisthamelii*, Dup.—First seen on April 20th, at Ronda; occasional specimens taken there up to the 27th. At Granada frequently met with at flowers of lavender on the plateau overlooking the Darro Valley—April 28th to May 20th.

P. machaon, Esp.—First seen at Malaga on April 17th, fairly common both at Ronda and Granada during the whole of my stay.

Thais rumina.—Two specimens at Cape Spartel April 2nd. Occurred at Linea, but by April 9th the species was getting worn at Malaga, where only occasional specimens were met with. The form was a small one compared with the Ronda specimens, a variety I took here was without any red markings on the upper surface of the forewings. Worn specimens were met with at Granada on April 29th.

T. rumina var. *canteneri*, Stg.—One specimen at Malaga, the dark ochreous ground colour being very pronounced.

Pieris brassicae, Esp., and *P. rapa* Esp.—Common throughout

near gardens. *P. daphidice*, Esp., was a very abundant butterfly in most localities visited.

Euchloë belemia, Hb.—March 31st I took a fine but short series at Linea.—One ♀ on the road at Cape Spartel April 2nd. Several at Ronda April 20th and one or two at Granada quite beginning of May. Not met with at Malaga.

E. belemia var. *glance*, Hb.—This summer brood was in perfect condition and fairly common at Algeciras in the fields along the coast line to the west of the town on May 26th. Two in the cork woods, May 23rd.

E. belia, Esp.—A most abundant species at Ronda and on the higher plateau at Granada. The form was quite a small one compared with the Riviera specimens. Not met with either in the Gibraltar area or at Malaga.

E. belia var. *ansonis*.—Occurred at Granada at end of May.

E. tagis, Esp.—A beautiful series at Ronda, from April 20th to 26th. The specimens are about the size of var. *bellezina*, and not nearly so large as the cork wood specimens.

E. eupheno, Stgr.—Two ♀s and three ♂s Cape Spartel, and saw others, April 2nd.

E. euphenoides, Stgr.—Occasional specimens at Ronda and Granada (in ravines).

Zegris eupheme, Esp. var. *meridionalis*.—Granada. The first was taken on May 1st, and occurred until the 7th in very beautiful order. Owing perhaps to climatic conditions, I did not meet with it again until May 21st, when I took a very fine specimen. This grand species is very quick on the wing, but is attracted by flowers (the wild mustard being a favourite plant), when it may with care be captured.

Leptidia sinapis var. *lathyri*, Hb.—A solitary specimen in the cork woods, May 23rd.

Colias hyale, God.—Granada. One very worn specimen on May 3rd, the only example seen during the whole of my stay.

C. edusa, God.—A very common butterfly throughout; of ab. *helice* Hb., several fine examples were taken at Algeciras, May 26th.

Gionepteryx cleopatra, Esp.—Hibernated specimens occurred at Malaga and Ronda.

Pyrameis atalanta, Esp.—Gibraltar specimens were worn on March 29th.

P. cardui, Esp.—A solitary worn specimen was seen day after day at the same spot at Granada. At Algeciras on May 24th the summer brood was just emerging, and the species was in the greatest profusion, attracted by the thistle bloom. They were in the most perfect condition.

Vanessa (Aglais) urticae, Esp.—Occasional specimens on the higher plateau, Granada.

Melitaea phoebe var. *occitanica*. Stg.—A very abundant species at Granada; found in the "open," and very partial to flowers of lavender May 4th to 21st.

M. dejone, Dup., var. *nevadensis*.—Another abundant species. Granada May 6th to 21st but only met with in the ravines, which intersect the hills in so many directions. In these ravines I detected an abundance of a species of *Antirrhinum*. Possibly its food plant.

Melanargia ines, Dup.—One ♂ at Ronda on April 26th.

Occasional specimens at Granada on the lower slopes of the hills until May 21st, when it became commoner. This species was not out at Malaga by April 19th, when I left. The form occurring here is larger than the Granada specimens.

M. syllius, Hbst.—Granada. I took four specimens on the upper slopes of the hills on May 20th.

Pararge aegeria var. *egeides*.—In the cork woods, occasionally, May 23rd.

P. maera var. *adrasta*.—Granada, males only throughout May.

Epinephele jurtina var. *hispulla*.—This species was just emerging at Granada at the end of May—common at Algeciras, May 26th.

E. ida, Esp.—Males only, at Linea, May 28th.

E. pasiphaë, Esp.—Occasionally towards the end of May in ravines at Granada; also in the cork woods, May 23rd, but not so abundant as one usually finds this species where it occurs.

Coenonympha pamphilus, Esp.—Common at Granada beginning of May.

Thecla (*Nordmannia*) *ilicis* var. *aesculi*, Esp.—Worn specimens at Granada, beginning of May.

Callophrys rubi, Esp.—Occasional specimens at Malaga.

C. rubi var. *immaculata*.—Very common on the higher plateau overlooking the Darro valley. Granada, beginning of May.

Chrysophanus (*liunicia*) *phlaeas*, Esp.—Occasionally met with at Granada.

Lampides boeticus, Esp.—One or two specimens at Granada and at Algeciras on May 26th.

Lycæna (*Scolitantides*) *baton* var. *panoptes*.—A most abundant butterfly. Granada, beginning of May.

L. (*Aricia*) *astrarche*.—Somewhat rare, Granada.

L. (*Polyommatus*) *icarus*.—Very common. Granada has a small form.

L. bellargus (*Agriades thetis*).—Two males only at Granada middle of May.

L. bellargus (*A. thetis*) ab. *ceronus*.—One specimen not fine, Malaga, April 17th.

L. (*Glaucopsyche*) *melanops*, Dup.—April 17th, fairly common at Malaga but local. A few at Granada the first week in May, a larger form than the Riviera specimens. I took a specimen at Granada almost approaching ab. *marchandii*, the spots on the underside being greatly reduced both in size and numbers.

Cyaniris (*Celastrina*) *argiolus*. God.—Occasionally near gardens, Granada, and at Algeciras on May 26th.

Adopæa (*Thymelicus*) *arcton*. Esp.—Two ♂s at Linea 28th May.

Carcharodus (*Erynnis*) *althææ*, Hb., var. *boeticus*.—Two specimens in the ravines, Granada.

Hesperia proto, Esp.—Two in the cork woods May 23rd.

H. (*Powellia*) *sao*, Hb.—Not uncommon, Granada.

I have been unable so far to identify most of the moths I took, but I may mention :—

Acidalia ornata.—Granada, occasional specimens.

Sterrhæa sacraria.—One ♀, Linea, May 28th.

Anatis plagiata.—Granada, occasionally.

Fidonia famula.—Ravines, Granada.

Eurranthis pennigeraria var. *chrysitaria*.—Granada, in open places on the lower slopes.

Aspilates citraria.—Granada, occasional specimens.

Deiopeia pulchella.—Linea, one specimen.

A month in Switzerland and elsewhere.

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

(Continued from page 290.)

(iii.) THE SIMPLON PASS.—I had arranged to go from Olten to Geneva on June 24th with the intention of spending some hours at Eclépens on the way, but the rain fell with such determination all day that it was useless to do anything but go straight on to Geneva, in the hope of finding some of my many entomological friends at home. I could not have chosen a worse day, they were *all* away. Professor Blachier and Mons. Marcel Rebfois came to see me the following morning however, and they told me that except at Martigny there was an unprecedented lack of butterflies this year, my experience of the previous week being by no means exceptional. In torrents of rain we left Geneva for Brig, where we spent the night, the only diligence for the Simplon now leaving at 7 a.m. There was a slight drizzle when we started on the morning of the 26th, but it had cleared sufficiently by the time we arrived at the 2nd Refuge to make me decide to descend there and perform the rest of the journey to Simplon village on foot. I spent about an hour and a half above and behind the Refuge, during most of which there was a fair amount of sunshine, and some butterflies were in evidence, though few compared with the great number which are usually to be seen there. A few *Plebeius lycidas*, a fair show of *P. aegon*, of smallish size, but fresh, and a single ♀ *Polyommatus escheri* represented the "blues," while the "skippers" could only run to a few *Hesperia carthami*, not a single *H. serratulae* being in evidence; I took a couple of ♂ *Melitaea aurelia* which was only just coming out, but a few small, dark, worn *M. cinxia* came somewhat in the nature of a surprise, though I find that I have once before taken this species on the slopes *below* the Refuge. One *Issoria lathonia* and a specimen or two of *Colias phicomone* and *C. hyale* complete the list. I continued my journey as far as the Ganter Bridge without seeing anything, but on the bank leading down to the stream shortly before the bridge some insect life was at last visible, the species being *Melitaea athalia*, smaller than in the plain, *M. phoebe*, *M. didyma* with the ♀ form *alpina*, *Polyommatus hylas*, ♂ s only, very fresh, and varying greatly in size, and *Erebia ceto*, all these being in very good condition; *M. aurelia*, which usually abounds here in June was apparently not yet out so far up the valley. From the Ganter Bridge to the top of the Pass a single *Pararge hiera* was the only butterfly I saw; on the southern side I took three "whites"—all I saw—which turned out to be *Pontia callidice*, *Anthocharis simplonia*, and *Pieris napi*.

I was received at the Fletschhorn (figuratively speaking) with open arms, and only realized how long I had left Switzerland when I saw the size to which the younger members of the family had grown, "le petit Joseph" having become a big lad of 16, and even the "baby" esteeming herself quite old enough to carry luggage down from the diligence!

The next day was, of course, spent in the Laquinthal, but there was still a good deal of snow there, so that it was impossible to go at night, as I had intended, to search for the larvæ of *Erebia christi*. This was evidently the right month for *Cupido minimus* var. *alsoides*, these giants being common at this period, while there are comparatively few from mid July onwards. The only other species which was common was *Cyaniris semiargus*, a smallish form and rather dark, but hardly reaching var. *montana*. There were a few *Parnassius apollo*, *Anthocharis simplonia*, and *Pieris napi* with var. ♀ *bryoniae*, rather more *Pararge maera*, *P. hiera*, and *Erebia ceto*, two or three *Polyommatus icarus* and *Coenonympha arcania* var. *darwiniana*, and a single ♂ of *Aricia eumedon* and *Euchloë cardamines*.

The next day, June 28th, I walked down the Pass till I was in sight of the last turn above Iselle, about a kilometer from the village. At the beginning of the Gondo gorge *C. minimus* (not *alsoides*), and *C. semiargus* were very common, the ♂s sitting in patches on damp places in the road; on reaching the zig-zags *Plebeius aegon*, a small form, was fairly common in both sexes; there were also a few *Erebia erias* on the slope above the second gallery, and a few *E. ceto* lower down, as well as large ♂s of *Polyommatus hylas*, and two dark *Lycaena ariou* near Gondo. Below the Italian frontier, however, the species were different, though a single *E. ceto* was seen; *Melitaea athalia*, fresh, bright, of fair size, was not uncommon, neither were *M. phoebe*, *Parnassius apollo* and *Lowia alciphron* var. *gordius*: of this last I took a specimen in which the spots near the border of the hind-wing, upperside, were prolonged into dashes; I was somewhat surprised to see at the entrance of the hamlet of Paligno (the first Italian village) a worn ♀ specimen of *Parnassius mnemosyne*, the elevation seemed too low, especially on the south side of the Alps. I had hoped to come across *Brenthis thore* again near Gondo, but was disappointed.

The 29th was an ideal summer day, and I walked to the top of the Pass. A little way above Eggen I saw a single *Aricia eumedon* and a few *Pieris napi* and *Chrysophanus hippothoe* var. *eurybia*, and at various points hibernated specimens of *Aglais urticae* and *Pyrameis cardui*: nearer to the summit appeared one or two *Pontia callidice*: I then went to search the very prolific ground above and behind the hospice, the result being one or two *P. callidice*, some three or four *Erebia lappona* and half-a-dozen *Hesperia cacialiae*; not another species was to be seen! But if this was a disappointment what shall I say of the following day on the Laqualp, when my sole bag was one *Anthocharis simplonia*, though it was far from being a bad day.

On July 1st we left for St. Maurice in the Rhone Valley, driving down to Iselle; I got out and walked the last mile and a half, or thereabouts, but the only species I took were *Melitaea athalia*, *M. phoebe*, *Heodes virgaureae*, and *Aphantopus hyperanthus*, all fresh, whilst *Plebeius aegon* at this elevation was quite worn out. I feel that some apology is needed for touching on such a well-worn theme as this and my next two localities, but the absence of butterflies on the whole was quite phenomenal, both in the number of species and yet more in the number of individuals of such species as did occur.

(iv.) BEX AND MARTIGNY.—We arrived at the Hôtel du Simplon, where we again met with the heartiest of welcomes, about mid-day,

and after a hurried lunch I went on direct to Bex where I had arranged to meet Mr. Fison, who duly appeared at the station and went on with me in the train to St. Triphon, whence we walked back together to the banks of the Gryonne, *Pieris rapae*, *Melanargia galatea*, and *Epinephele jurtina* being the only species to be seen in the fields. At the banks of the Gryonne he left me and returned to Bex, the heat being very great, and I spent some two hours in this, one of my favourite haunts when Switzerland was my home. Here again the species in evidence were comparatively very few, though in a few cases the specimens were fairly numerous. The three species already mentioned were very common, as were also *Argynnis ajlala* and *Pieris napi*; *P. brassicae*, *Colias edusa*, *C. hyale*, *Leptosia sinapis*, and *Plebeius argyrognomon*, ♂s only, were fairly frequent, and I took a couple of *Hirsutina damon*, ♂s of course at this date, and saw a couple of *Brenthis dia* and a few *Polyommatus icarus*. My other captures consisted of a ♀ *Melitaea athalia*, and a very beautiful light ♀ of *M. dictynna*: the spots of the upper-side are very pale, and on the forewings, underside, are two rows of spots inside the white lunules, the costal portions of which are quite white, becoming pale fawn towards the inner margin, while the whole of the light bands of the hindwing, including the lunules, are as silvery as those of the Argynnids usually are.

On returning to tea with Mr. Fison at Bex, I found Mr. and Mrs. Temperley with him, the former of whom gave me a couple of notes on the subject of *Parnassius mnemosyne*, which he requested me to make known; viz. (i.) that he had taken two or three specimens at Bérisal in which the discal spots of the forewing are joined by a bar (ab. *halteres*, Muschamp), and (ii.) that the ab. *nubilosa*, Christoph, in which the transparent margins of the forewings contain a conspicuous row of white spots, becomes a local race in the Binn Valley, where every specimen taken in 1910 was of this form, both in June in the lower, and in July in the upper part of the valley.

The following day I went over to Martigny, principally to see M. Wullschlegel. His many English acquaintances will learn with regret that he is still completely paralysed and quite speechless, though very pleased to receive visits, and able to understand everything said to him; he has so far recovered that he is able to read, though not to write, and the doctors have some hopes that he may recover his speech. I went up to La Bâtiâz, where I saw *Melitaea athalia*, one or two *Parnassius apollo*, a few *Loucia alciphron* var. *gordius*, a couple of *Satyrus aleyone*, and a single *Brenthis daphne*. An attempt to visit Branson and the *Collutea* was, however, frustrated by a violent thunderstorm that overtook me as I arrived at the Rhone, and though I was fortunately in reach of shelter I was obliged to return as soon as the deluge permitted.

The first two of my Samoussy *A. lerana* chrysalises came out on this day, producing, of course, the *prorsa* form.

(To be continued).

Anaspis hudsoni, Donisthorpe, ♀ bred.

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

In the *Ent. Record*, 1909, p. 60, I described a new species of *Anaspis* as *A. hudsoni*, from a ♂ specimen taken in a woody fungus

on Scots fir, at Nethy Bridge, in September, 1908. I have recently bred what I consider to be the ♀ of this species. It emerged last month from the inner bark of Scots fir, which I had placed in a large glass tube with a number of the larvæ of *Dendrophagus crenatus*. The bark and these larvæ were obtained at Nethy Bridge in June this year. It well agrees with my ♂ specimen, but, of course, being a ♀, the antennæ are submoniliform, the anterior tarsi not dilated, and the abdomen has the ventral segments simple. The 6th joint of the antennæ is (as I also pointed out in the ♂) not transverse, and the thorax is equally strongly transversely strigose all over. Compared to *A. rufilabris* ♀ the antennæ are a little shorter, as are also the palpi, the last joint of which is a little thicker across the middle. The thorax and elytra, though distinctly transversely strigose, are evidently more finely so than in *A. rufilabris*.

Lesteva luctuosa, Fauv., a species of Coleoptera new to Britain.

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

DESCRIPTION:—More elongate than the preceding,* less parallel than *longelytrata*, it differs by its black colour and its punctuation; antennæ towards the apex, last joint of the palpi and extremity of the legs ferruginous; base of the palpi and the tarsi yellow; pubescence, head, antennæ, thorax and abdomen as in *pandellei*: posterior angles of the thorax right angles; elytra a third broader and a little longer than in the latter, a little enlarged behind; punctuation a little more fine and more close than in *longelytrata*, truncate likewise at the top. Length 4 mm.-4½ mm. Under refuse and stones, half submerged on the borders of torrents in the mountains. Very rare. (Fauvel, *Faune gallo-rhénone*, II, p. 103.)

I took a specimen of this very interesting addition to our lists in the Isle of Eigg, in moss in a waterfall on the high ground near Beinn Tighe on September 17th last. When I came to name it I found it was unlike all our known species. On consulting Ganglbauer I found it agreed best with his description of *Lesteva luctuosa*, Fauv. He mentions, however (II, p. 713), that the species is unknown to him personally. Having looked up Fauvel's original description (the translation of which I give above) I found that my *Lesteva* agreed with it perfectly. I ventured therefore to exhibit it on October 18th at the meeting of the Entomological Society of London as *L. luctuosa*, a species new to our fauna. Monsieur Bondroit has now very kindly lent me a continental example of this species, and I find my beetle is exactly like it. It is superficially like *L. fontinalis*, but differs in the colour of the legs (the contrast between the yellow tarsi and red apex to the tibiæ, and the dark legs is most striking), the elytra are longer and the punctuation of the thorax and elytra stronger and more regular, the thorax is a little longer and more contracted at the base, the eyes are larger and the facets coarser. The very noticeably finer, closer punctuation and less parallel form, at once separate it from dark specimens of *longelytrata*. Really, however, it is not a bit like any of our species and could not be mistaken for any of them.

* *L. pandellei*, Fauv. Fauvel writes of this species "tête profondément bi-impressionnée," and this is the case with *luctuosa* also.

Fauvel records *L. luctuosa* from near the Grande Chatreuse. Captain Deville, who possesses two or three examples, but was unable to lend me one as his collections were all packed up to be removed to Paris, writes that "Here *L. luctuosa* is a mountain species, it is known from the Alps, Auvergne, and Pyrenees."

I could no doubt have obtained more specimens, but just about the time I captured it a very thick white mist rolled up, and I found I had lost my bearings, my compass went wrong, and the rest of the day was spent in a frantic endeavour to find my way home. Eigg is a small island near the Isle of Mull, in the inner Hebrides, off the West Coast of Scotland.

SCIENTIFIC NOTES AND OBSERVATIONS.

DWARF ABERRATIONS OF *PIERIS NAPI*.—NOMENCLATURE.—I have read in the *Entomologist's Record*, vol. xxiii, no. 10, p. 273, Mr. Muschamp's remarks on "The Abundance of *Pieris napi*, etc." The author speaking in his note of *Pieris napi* of small size, 29-31mm., makes of it a new aberration under the name *minima*. In 1902, in my work on the *Butterflies of Belgium*, p. 18, I gave the name *napella* to those examples of *P. napi*, measuring 28mm. in expanse. This was repeated in my *Catalogue of the Butterflies of Belgium* in 1903 and 1907. In the same year (1902) Baron de Crombrugghe, in the *Ann. de la Soc. Ent. de Belg.*, vol. 46., p. 20., gave the name of var. *minor* to examples of *P. napi* measuring 30mm. This was after my own name *napella* had been published. Thus there are three names for the same aberration of *P. napi*, ab. *napella*, Lambil. = ab. *minor*, Cromb. = ab. *minima*, Musch.—L. J. LAMBILLION, 55, rue des Cotelis, Jambes, Belgium.

PIERIS NAPI AB. *NAPELLA* (MINIMA, MUSCHAMP) AND OTHER DWARFS.—On August 17th, when idling in one of our Guernsey lanes, I came across two delightful specimens of butterflies of an extraordinary diminutive size. The first was a perfectly fresh *P. napi* ♀. This specimen measures only 28mm. in wing expanse, or $1\frac{1}{10}$ in. according to our English scale. It is therefore as small as the smallest of Mr. Muschamp's interesting captures at Stäfa, but I saw no others. The coloration and markings are as in the spring brood, not as in the late brood, as might have been expected. Both last year and this year the "whites" have been excessively abundant. The same day, and within a few yards of the same place, I took a male *Pararge aegeria* var. *intermedia*, our Guernsey form. This measures only 34mm. across the wings. *P. aegeria*, too, has been unusually abundant with us this autumn, as has also *P. megera*, the latter is still on the wing in a few places (October 19th). But both these two species have been singularly fine, indeed, it was while watching and admiring the special beauty of a number of *P. aegeria* clustering on a bramble bush, that I noticed the above dwarf. In the spring, and therefore before the influence of the long drought had been felt, I took a very perfect freshly emerged *Celastrina argiolus* ♀, which would be small for *Scolitantides baton*, measuring only 22mm. So far as I saw, specimens of other species came up to the normal standard of size. It seems probable that the individual experience of larvæ—especially of the sluggish sort—has more to do with stunted growth than climatic considerations. Either because feeding on an isolated plant, which affords too little food, or

from an unwillingness to travel perhaps, individual larvæ go on "short commons," while the majority are feeding as usual. And not unfrequently, something, in the plant itself and not in the influence of weather, makes the pabulum, which falls to a particular larva, lacking in nutriment. *Lampides boeticus* seems to afford an illustration of this, at least when feeding on *Collutea arborescens*. We have had another visit from this migrant this year, and it has been common during September. My own observations entirely coincide with Mr. Baker's about the variable size of this insect and its probable cause (*vide* Tutt's *British Lepidoptera*, vol. iv., p. 344.) A larva seldom, if ever, leaves the seed pod upon which it first began to feed until just before pupating. If therefore it has luck and a fat pod, it may become a fine imago, if on the contrary the portion is meagre, the result is a specimen of diminished size. It is hardly necessary to add any corroborative testimony to anything Dr. Chapman writes or suggests, but experience of this has convinced me of the truth of his hypothesis—(that *L. boeticus* in the north perishes every winter, even if it gets a footing in the summer). I watched several females, both in the open and in captivity, laying eggs on the *Collutea*, and also searched the bushes and found eggs. In every case the egg, or eggs, were laid on the flower, and nearly always upon, or just above, the calyx. The newly hatched larva bored at once into the centre of the flower, working its way down to the midrib of the keel, where the seed was to form, and upon which it would live, enclosed in the bladder pod. But except one that I have in the house now under observation, and supply with a new pod when needed, all the larvæ out of doors must have perished, for the flowers, or half-formed seed pods, and leaves have fallen with the first touch of cold in the last days of September. In no case were eggs laid on the wood of the tree to hibernate until the spring.—REV. FRANK E. LOWE, M.A., F.E.S., St. Stephen's Vicarage, Guernsey.

A VARIETY OF *EUCHLOË EUPHENOIDES*.—After reading Lieut.-Col. Manders' note in the October number of the *Record* I examined my series of this insect. I found *E. euphenoides* very abundant last summer at Vernet-les-Bains, Pyrénées Orientales, and I have kept 65 specimens from that place, of which 46 are males and 19 females. On the secondaries of the males I can find no trace whatever of the marginal orange coloration referred to by the Colonel, but most of the females show a very slight orange suffusion on the costa, though in only one case is it at all pronounced. In a female *E. eupheno*, the only one I took during my visit to Algeria, last year, the same slight orange suffusion is noticeable. So far, then, as my observations go the variation of which Lieut.-Col. Manders speaks is, if not absent, at any rate only very slightly developed at Vernet, where the climate is remarkably dry, the hygrometer registering a mean humidity of 59°, while the average number of rainy days is only 37 per annum. The altitude is about 700 metres. I took these figures from the pamphlets issued by l'Établissement. In my Vernet *E. euphenoides* the most noticeable variation is in size, and the difference is greater in the females than in the males. The smallest female measures 31mm. from tip to tip of the expanded wings, and the largest 45mm., a range of 14mm. in a series of 19 specimens, while the extremes in the males are 32mm. and 41mm. There is also marked variation in the colour of the apical spot in the females, in some the orange being most

strongly developed, in others the black predominating with scarcely a trace of orange.—A. E. GIBBS, F.L.S., F.E.S., Kitchener's Meads, St. Albans.

THE WORM AND THE BUTTERFLY.—Since writing the note on this subject, (see p. 274), I have received a letter from Mr. Crickmay. He says that when walking round his garden at Wandsworth Common, at 7 a.m., towards the end of August last, he found a white butterfly lying on its side with one front wing taken well down into the earth. Having often watched worms pulling leaves into the earth, he at once guessed what had happened. On closer inspection he noticed that the tip of the wing was curled as it entered the earth, that the pulling of the worm was most distinct and that the butterfly counteracted the worm's attack by clinging to the earth. Mr. Crickmay then tapped on the ground and the worm ceased to pull, but after a quarter of an hour, recommenced. He then rescued the butterfly and placed it on a roofing in the sun where, though apparently little injured, it died. Mr. Crickmay remarks that worms almost invariably seize a leaf by the point, and his pen and ink sketch shows that in this case the worm had seized the butterfly by the apex of the right forewing. Considering the early hour of this occurrence and the death of the butterfly, it seems probable that the insect had met with some previous injury.—ALFRED SICH, F.E.S., Corney House, Chiswick, S.W. *October 31st.*

NOTES ON COLLECTING, Etc.

AGRIUS CONVOLVULI AT CHICHESTER.—*Agrius convolvuli* has been somewhat abundant in this locality during September. I have no record of either *Colias edusa* or *C. hyale* here throughout the past season.—JOSEPH ANDERSON, Alre Villa, Chichester, Sussex. *November 1st, 1911.*

RUMICIA PHELEAS AND CELASTRINA ARGIOLUS.—One of the features of the autumn here has been the great abundance of *Rumicia phleas*. They were especially fond of the Michaelmas daisies and Rudbeckias in the garden, and half-a-score or more were frequently to be seen at one time sunning themselves on the blossoms of a single plant. Notwithstanding the abnormally hot summer I observed no tendency to the *eleus* form in the autumn specimens, but the ab. *caeruleopunctata* was very frequent. The second brood of *Celastrina argiolus* was also unusually abundant here, and much earlier than it generally appears. It was on the wing by July 6th, and practically over by the end of the month.—J. A. SIMES, F.E.S., Woodford, Essex. *November 1st, 1911.*

MANDUCA ATROPOS IN ESSEX.—It may be worth noting that a ♂ *Manduca atropos* was taken in the window of a shop at Ongar, in Essex, about September 16th.—A. E. TONGE, F.E.S., Aincroft, Reigate. *October 18th, 1911.*

THE RARITY OF PIERIS RAPÆ.—In the *Ent. Record* (p. 246) a note appears calling attention to the marked abundance of *Pieris rapæ* during the past season. We have been paying special attention to the three common "whites" this year, as we have been collecting series of them for a Scottish correspondent. Our experience is that *P. rapæ* has been peculiarly rare in the Rugby district this season, *P. napi* very abundant, and *P. brassicae* by no means scarce. This applies to all the

district round Rugby, and to the May and the July broods. However, *P. rapae* was undoubtedly abundant here in September. In Greece, during April, *P. rapae* and *P. brassicae* were abundant, but *P. napi* was only once taken. But this may be owing to the fact that the weather was very hot, and we were lazy and devoting such energy as we had to other groups.—P. A. and D. A. J. Buxton, Fairhill, Tonbridge. September 29th.

OCCURRENCE OF COLIAS HYALE.—It may be of interest to state that I have taken twenty specimens of *Colias hyale*, all ♂s, in a lucerne field of three acres, about a mile inland from Birchington Bay, between September 30th and October 3rd of this year. The field in question was used for grazing cattle. The withered and withering flowerless tops of the lucerne bore a striking likeness to *C. hyale* when at rest. Other insects in the field were the black-banded *Sysipus* fly, many specimens of *Aricia melon* (*astrarche*) and *Polyommatus icarus* and a solitary *Pieris rapae*. Swallows and gulls were feeding over the lucerne, but I cannot say that I saw either kind of bird catch *C. hyale*, but both were certainly attracted, and were actually feeding. I saw no specimens rise over the part of the field where the birds were feeding though I watched closely. After the appearance of *C. hyale*, *P. icarus*, which had been present in the field all the summer, kept strictly to one corner.—A. BERNHARD SMITH, 26, Yeoman Row, S.W.

PLUSIA MONETA.—Has this species spread further north than Cheshire and Lincolnshire and has it been taken in Ireland or the Isle of Man? I, for one, should be glad to have reports of the earliest captures in any localities in these districts, which reports, I think, should be placed on record for future use in relation to the spread of the species. I shall also be glad to hear from any reader who knows of any Essex captures of *P. moneta* other than those already recorded in the *Entomologist* and this magazine. Postcards will do.—C. NICHOLSON, 35, The Avenue, Hale End, Chingford.

VANESSA ANTIOPA AT FOLKESTONE.—On August 31st, as I was playing the 18th hole on the Folkestone golf links with Mr. Percy Greenstreet, a specimen of the above butterfly flew between us, and settled on a *cosmus*-infected ash close by. My friend undertook to sit down and watch while I went home for my net. On returning in ten minutes time the insect was still there, and was captured. The border, I may say, is of a decidedly ochreous tinge.—STUART S. HILL, Public Library, Folkestone.

AGRIUS CONVULYULI AT FOLKESTONE.—On September 25th a specimen of this moth was brought to me, which was taken in this town.—IBID.

CURRENT NOTES.

Another portion of the collections of our late editor, Mr. J. W. Tutt, will be sold at Stevens' sale rooms on December 19th. It will consist of the finest portion of his European Rhopalocera, the greater part of which was collected by himself or received from his correspondents during the past decade. The collection is very strong in local variation, particularly from the alpine regions of Central and Southern Europe, with many representatives of allied species or forms found over the whole of the Palearctic Region. The *Lycenidae* were being rearranged and their lines of variation were in process of being worked

out at the time of Mr. Tutt's death, and thus portions of the series of some of the species are in another cabinet to be sold at a subsequent date. The *Hesperiidae*, which are contained in several large double travelling stores boxes, are also to be disposed of on the 19th. These are not worked out in accordance with Reverdin's diagnoses (see *Bull. de la Soc. Lep. de Gen.*, vol. ii., p. 1, 1910), but no doubt most of the now recognised species will be found in the various series, for the specimens were nearly all collected in the areas which Dr. Reverdin and his colleagues of Geneva have been investigating for many years.

It is obvious that *A. prodromana* inserted in brackets in the last number on page 257 line 10 from the top should be *Brephos parthenias*, which "appears to be quite common in these open heath carpeted woods." On page 263, "The latest in Nomenclature," 1830, should be "1838" as the date of Burmeister's genus *Periplaneta*.

In the October number of the *Ent. Mo. Mag.*, Mr. Malcolm Cameron, M.B., R.N., F.E.S., records the capture of five specimens of *Atheta liliputana*, a Coleopteron new to Britain. They were found in small carcasses near Brockenhurst in May and June last. He adds an analytical table of the British members of the sub-genus *Microdota*, to which *A. liliputana* belongs.

In the same number the Rev. H. D. Morice, M.A., F.E.S., records *Periclista pubescens*, a species of *Tenthredinidae*, as new to the British List. It was swept or beaten from oak at Porlock, Somerset, in April last, by Mr. H. St. J. K. Donisthorpe.

In the same number Mr. J. E. Collin, F.E.S., continues his notes and additions to the British list of Diptera and announces the following species as new to Britain:—*Liomyza lacrygata*, from Suffolk, Cambs, and Hereford; *Periscelis nigra*, from Nethy Bridge, in June, 1905; *Phortica albo guttata*, from the New Forest, in September, 1909; *Drosophila rufifrons*, from Lingfield, Surrey, and the New Forest; *Chymomyza fuscimana*, from Tarrington, Hereford, in 1902; *C. costata*, from Nairn, Chippenham and the New Forest; *Scaptomyza tetrasticha*, generally distributed in England; *Camilla acutipennis*, from Suffolk and Hereford; *Diastata vagans*, from Nairn, 1904; *Geomyza frontalis*, from Newmarket, Ringwood and Tarrington; *Opomyza lineatopunctata*, from Crowborough, Sussex, and Dorset; *Anthomyza pallida*, from Suffolk, Cambs and Hereford; *A. albimana*, from Studland, Dorset and Nairn; *Anagnota bicolor*, from Essex, Suffolk, Dorset and Hereford; *Chironomyia minima*, from Norfolk and Suffolk; *Ochthiphila fasciata* from the New Forest; *Parochthiphila coronata*, from Walton-on-Naze in 1909; *Leucopis argentata*, from Cambs and Suffolk among reeds; *Phyllomyza flavitarsis*, from Essex and Hants; and *Ithienöessa longirostris*, from Suffolk, Essex and Dorset.

In the same number Dr. David Sharp, M.A., F.E.S., described *Homalota (Hydrosmeeta) muiri*, a Staphylinid beetle new to science. It was discovered by Mr. F. Muir in the shingle on the banks of one of the small rivers near Brockenhurst.

Dr. Malcolm Burr, F.Z.S., F.L.S., F.E.S., gives an annotated list of the Dermaptera or Earwigs found in the British Isles, also in the October number of *Ent. Mo. Mag.* In the accompanying coloured plate every known truly British species is figured, as well as one or two recently established species.

In the *Transactions* of the "1^{re} Congrès international d'Entomo-

logic" is an important paper by Mr. Merrifield, in which, from experiments reported, he is able to define, with some closeness, what are the effective temperatures, and at what stage they operate, that govern the seasonal dimorphism of *Araschnia lerana* and *Sclenia bilunaria*, and in all probability of the lepidoptera of the holarctic region. He suggests that in the tropical and subtropical faunas moisture may have a greater influence than temperature. Arctic dimorphism consists in the appearance of "winter" and "summer" phases according to the incidences of temperature. These "phases" have a long and a short pupal period as their essential character, a difference in "mass" is also usual, other characters as facies, markings, colouring, etc., are also associated, but are less essential, as they can be affected by temperature conditions that are powerless to change the one phase into the other. When hatched the larvæ can assume either "phase" according to temperature conditions. A "spring" temperature applied during the earlier larval stages produces the "summer" phase with short pupal period. A "summer" temperature, similarly applied, leads to the "winter" phase. A "spring" temperature is about 54°F., "summer" 60°F. to 65°F. But a remarkable point is that these temperatures are means of a low night and a higher day temperature, which are, when so alternating, more effective than a constant temperature. The paper is worth careful study, without which the brevity of our summary may be in some points misleading.—T.A.C.

The *Canadian Entomologist* for August has an interesting note by Dr. J. McDunnough on the habits of *Hepialus hyperboreus*, Mösch. He was collecting on Mount Hood, Oregon, when he noticed a small moth darting with extreme rapidity in an erratic zigzag flight up and down a slope, always keeping in the hottest sunshine. He managed to secure some specimens, and to his surprise found them to be Hepialids, the habit of flight being very different from that of the other N. American species of the genus which, ordinarily, are dusk fliers. Later on he discovered a virgin ♀ ascending a grass-stalk, and on arrival near the top, "it folded the hindwings closely around the body and commenced vibrating the forewings rapidly; almost immediately the summons was answered, a ♂ appeared on the scene, and before I could prevent it, coition had taken place" (the doctor's own words). The pairing habits here recorded are very interesting, and I believe hitherto unrecorded. The flight in hot sunshine, however, is paralleled by *Hepialus pyrenaicus* var. *alticolor* of the Pyrenees, where this summer we took it at about 7,500 ft. on the pass over into Spain, known either as the Porte de Gavarnie or the Port d' Espagne, according to which side you happen to be on.—G. T. B-B.

In the June number of the *Annales de la Société Entomologique de Belgique*, M. C. Emery, of Bologna, describes and illustrates a simple apparatus for measuring exactly, and without much trouble, the parts of small insects. It consists of a metal base serving either as a stand or a handle, one end of which carries a transverse scale marked in fifths of a millimètre, above which is fixed a lens of about 3 in. focal length, whose focus falls on the graduation. The insect to be measured, held either by the hand or fixed on a stand, can then be inserted between the lens and the scale and the measurement ascertained. The writer does not claim for this arrangement that it can measure with any approximation to correctness objects less than one-tenth of a millimètre. He emphasises the necessity for actual measurements by

stating that in his experience, when authors describe such and such a part of an insect as being one-and-a-half or two or three times as long as wide, these statements, based upon judgment only, are most frequently found, upon actual measurement, to be erroneous.

Mr. Frank Balfour-Browne, M.A., F.Z.S., contributes (*Ann. Scott. Nat. Hist.*) an article on the Aquatic Coleoptera of the North Ebrudes, the islands of Skye, Rhum, Canna, Eigg, and Muck. This is not merely a list of beetles found on these hitherto much neglected areas, but his visit was "to discover as much as possible of the 'Arctic' group of water-beetles of which *Deronectes griseo-striatus*, *Dytiscus lapponicus*, *Hydroporus morio*, *H. tristis*, *H. melanarius*, *Agabus arcticus*, *A. congener*, and *Illybius aenescens* are examples. Several of these species have an extensive range in the British Isles, but the first two are limited to highland lochs in Scotland and Ireland, and, so far as is at present known, they show a decidedly discontinuous distribution. I was therefore specially anxious to know what their associates were, and the kind of habitat they survive in." In this most interesting article the writer endeavours to work out the surrounding conditions most thoroughly, such as absence or presence of fish and newts, depth of the water, character of the bottom and margins, presence or absence of vegetation, nature of the soil, presence or absence of running water, etc. The abundant suggestions and references make the article a very useful one from a purely scientific point of view rather than a merely faunistic contribution.

In the *Canadian Entomologist* for August, we read that the Entomological Society of Ontario have enthusiastically taken up the preparation of a Catalogue of Canadian Insects, and have appointed a special committee consisting of Dr. E. M. Walker, Dr. C. G. Hewett, Messrs. G. Chagnon, N. Criddle, J. D. Evans, A. Gibson, W. H. Harrington, T. D. Jarvis, H. H. Lyman, G. A. Moore, G. E. Saunders, J. M. Swaine, A. T. Winn, F. H. Wolly-Dod, and Prof. T. D. A. Cockerell, to carry out their project. After the due consideration of a large number of suggestions, a scheme of procedure was formulated. From this scheme we gather that the Catalogue will not be a mere synonymic list, but will contain, in addition to the usual information, the geographical distribution within Canada, as a rule by Provinces, the faunal zones, the actual locality and captor in the case of very rare species, the type locality, and the place where the type specimens of Canadian species are deposited, the Latin name of the chief food-plants in the case of most orders, in the case of parasitic species the name of the host, or chief hosts, fossil and introduced species, and where possible, reference to a good published figure. We scarcely understand the statement that, "Under each species will be given a reference to one or two good descriptions of the insect, *not necessarily the original one* : these will be descriptions which are as accessible as possible." The italics are ours. Surely *all* important references will be given, especially the *original* ones, which are the most important of all possible references, and in many cases the date is also necessary. Authors' names will be given with the names of both species and genus, and "recent important changes in synonymy will be noticed," with the date in the case of each genus. The Catalogue will be published under the general editorship of Dr. Gordon Hewitt, Dominion Entomologist, Ottawa, by the Geological Survey of Canada, and will appear in parts as the different orders or families are completed.

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We trust that our correspondents will not send us communications identical with those they are communicating to other magazines. This month we have had to omit a "collecting note" which was in type, owing to its appearing in two other magazines.

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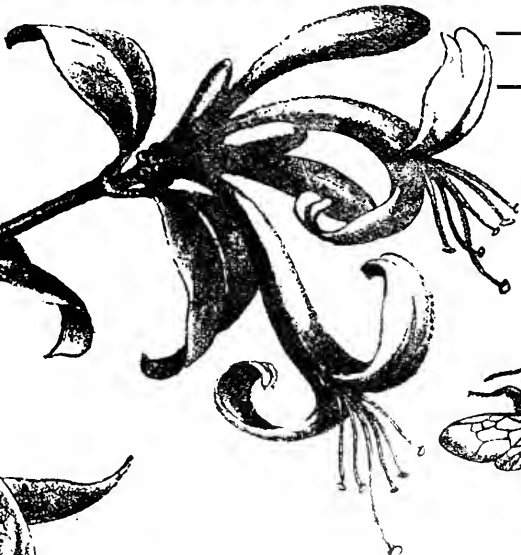
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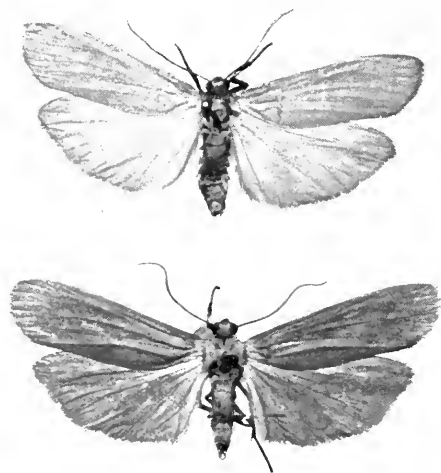
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MELANIC ABERRATION OF *LITHOSIA DEPLANA*.

A melanic aberration of *Lithosia deplana*, Esp.

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

In a considerable proportion of Surrey male specimens of *Lithosia deplana* the grey of the forewings tends to be paler than in the type, giving them a yellowed appearance. In a small percentage, however, the grey is much darker than in the typical form, but in those which I have seen the fringes remain yellow, and the basal area of the hindwings remains a lighter grey than the marginal portion, and in many the apical part of the forewing is also yellow. In the series in the British Museum the darkest specimen, a Russian one, closely resembles our dark Surrey form. Mr. Porritt tells me he has not met with any darker in the Yorkshire localities. In my specimen, taken in July, 1911, at Box Hill, the insect as a whole is much more melanic than any of these. The forewings are uniformly deep brownish-grey, the hindwings are uniformly dark grey, with no tendency towards a lighter basal area. The parts usually orange or yellow are coloured dark brown, *i.e.*, the head, thorax, patagia, legs, and the streak below the costa. The abdomen is wholly dark grey, and the fringes are grey. It would appear still darker were it not slightly worn.

Unless more are obtained I do not think it necessary to name the aberration, but it will be interesting if another insect establishes a melanic race in this locality as *Boarmia abietaria* has succeeded in doing.

The figure shows a typical male with the melanic male below.

Coleoptera in the Highlands in June, 1911.

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

On June 8th my friend, Dr. Nicholson, and I left London for a few days collecting in Scotland. We arrived at Rannoch on the 9th, where we met Mr. T. G. Bishop and Professor Hudson Beare, and we all made various excursions together. Professor Beare left on June 11th, and we went on to Aviemore on June 15th, on our way for Nethy Bridge. As we found such a large number of the Scotch and Northern Coleoptera between us, I have given the list in the order of the catalogue. My chief object in going to Rannoch was to find certain ants, in which I was successful, but I shall deal with them elsewhere. *Cychrus rostratus*, under stones; *Carabus glabratus*, on the path; *Nebria gyllenhali*, abundant at margin of the Loch; *Pterostichus oblongo-punctatus*, under chips, etc.; *P. vitreus*, under stones on mountains; *Calathus nubigena*, *C. micropterus*, *Anchomenus ericeti*, in sphagnum; *Patrobis assimilis*, *Cymindis cajarariorum*, under stones on high ground; *Dromius angustatus*, Brullé, one beaten off fir tops, it is a new record for this species, Mr. Bishop and Dr. Sharp have taken it at Nethy Bridge, the only other locality being Woking, from which place Mr. Champion introduced it as British; *Agabus arcticus*, *Ilybius aenescens*, and *Philydrus melanocephalus*, were fished out of a small pool on the mountain; *Leptusa analis*, under bark; *Tachinus flavipes*, *T. pallipes*, and *T. laticollis*, in stercore; *Euryporus picipes*, in moss; *Quedius lateralis*, under chips; *Q. xanthopus*, under bark; *Q. nigriceps* and *Q. fulvicollis*, under stones; *Quedionuchus laevigatus*, under bark; *Staphylinus latebricola*, in moss; *Xantholinus distans*, *Othius melano-*

cephalus, *Anthophagus testaceus*, and *Geodromicus nigrita*, several on the wing; *Lestera sharpi*, *L. pubescens*, and *Arpedium brachypterum*, in moss; *Homalium pineti*, under fir bark; *Agathidium badius*, several specimens taken by Dr. Nicholson and me on fungus on birch, this is a new record for Scotland; *A. atrum*, *Liodes glabra*, and *L. castanea*, at fungus on stumps, etc.; *Necrophorus ruspator* var. *microcephalus* and *Choleva coracina*, in carrion; *Bibloporus bicolor*, under bark; *Triplax russica* and *Epuraea silacea*, very abundant on *Polyporus* on birch; *E. variegata*, taken in fair numbers by Mr. Bishop, and very sparingly by Dr. Nicholson and myself on birch stumps; *Ips 4-pustulatus*, on freshly cut fir stumps; *Rhizophagus dispar*, under fir bark; *Cryptophagus cylindrus*, by beating fir tops; *Aphodius foetidus*, *A. borealis*, and *A. lapponum*, in stercore; *Melanotus castanipes*, under bark; *Athous undulatus*, two specimens of this beautiful insect were taken, one by Professor Beare and the other by myself, under bark of birch; *Corymbites impressus* and the var. *rufipes*, on roads, etc.; *C. cupreus* and var. *aeruginus*, abundant; *Dascillus cervinus*, *Microcara livida* var. *bohemannii* and *Eros aurora*, under chips, etc.; *Podabrus alpinus*, *Telephorus figuratus* and the var. *scoticus*, and *T. paludosus*, by sweeping; *Malthodes atomus* and *Ernobius nigrinus*, by beating fir tops; *Clerus formicarius*, on cut fir stumps; *Cis jaquemarti*, abundant; *C. lineatocribratus* on *Polyporus* on birch; *Asemum striatum* and *Rhagium indagator*, on cut fir stumps; *Donacia discolor*, by sweeping; *Clythra 4-punctata*, being dragged along by *Formica rufa*; *Bolitophagus reticulatus*, on *Polyporus* on birch trees, I have since bred a number from some of the fungus I took home; *Abdera flexuosa*, on fungus on birch; *Otiorhynchus blandus*, under stones, etc.; *Rhinomacer attelaboides*, *Pissodes pini*, *P. notatus*, and *Magdalis phlegmatica*, beating fir tops; *Rhyncolus ater*, under fir bark. A few hours at Aviemore on June 18th produced *Zengophora turneri*, in abundance, and *Dorytomus tortrix*, beating aspens; *Barynotus schönherri*; various of the Scotch species also found at Rannoch, and many larvæ of *Pytho depressus*, from which I have bred a few perfect specimens. We then went to Nethy Bridge, where Dr. Nicholson left me on June 18th, and Mr. Bishop came on from Rannoch on June 20th. Mr. J. J. F. X. King came to Nethy Bridge from Glasgow about the same time. The species taken here were *Carabus glabratus*, several on paths; *Dyschirius angustatus*, under stones, where also a few *Bledii* occurred; of *Miscodera arctica* Dr. Nicholson took one specimen under the bark of a fir tree, a curious place for it; *Pterostichus oblongo-punctatus* and *P. lepidus*, under stones, etc.; *Amara fulva*, *Bembidium bipunctatum*, *B. paludosum*, and *Tachypus pallipes*, under stones, and running on the sandy bank of the river; *Trechus rubens*, under chips; *Helophorus arvernicus*, in damp holes near the river; *Homalota vicina*, *H. coracina*, *H. monticola*, and *H. fungicola* var. ? (a specimen Dr. Sharp is unable to name with certainty at present), were taken under bark, at carrion, etc.; *Leptusa analis*, under bark; *Hypocyrtus laeviusculus*, by sweeping; *Myrmedonia humeralis*, abundant in a sandpit with *Formica rufa*; *Tachinus flavipes*, *T. pallipes*, and *T. proximus*, in stercore; *Staphylinus stercorarius*, in sand-pit; *Xantholinus tricolor* (?) Dr. Nicholson and I each took a specimen of a form with a dark mark on the thorax, which Dr. Sharp considers is a new species related to *tricolor*; *Nulobius lentus*, under bark of fir; *Bledius denticollis*, abundant; *B. longulus* and

B. subterraneus, in damp sand on the banks of the river; *Gabrieus appendiculatus* (♂) and *Homalium brevicorne*, under bark; *H. brevicolle*, in carrion, this species has only been taken at Great Salkeld (Britten), and Rannoch and Thornhill (Dr. Sharp) before; *Acrulia inflata*, in fungus and under bark of birch logs; *Agathidium atrum*, in sand-pit; *A. seminulum*, *A. rotundatum*, *Liodes glabra*, and *L. castanea*, at fungus on fir stumps; *Cholera morio*, *C. kirbyi*, and *C. coracina*, in carrion; *Sphaerites glabratus*, in sand-pit; *Coccinella 5-punctata*, at roots of *Lotus* on shingle; *Epuraea silacea*, common on fungus on birch; *Dendrophagus crenatus*, under bark of fir and alder, I also bred a number of specimens from the larvæ, which I took home with me; *Cryptophagus cylindrus*, under birch bark; *Morychus aeneus*, under stones; *Thymalus limbatus*, under bark and on fungus; *Parnus ernesti*, under stones on river bank; *Cetonia floricola* I have bred in my *F. rufa* nest at home from larvæ taken in a nest of that ant at Nethy Bridge; *Cryptohypnus riparius*, *C. dermestoides*, and *C. 4-guttatus*, under stones, etc.; Mr. King took a specimen of *C. maritimus*; *Elater nigrinus*, beating young firs; *Eros aurora*, in sand-pit, etc.; *Ithagonycha elongata*, beating young firs; *Cis punctulatus*, common under fir bark; *Crioccephalus rusticus* I found in abundance, pupæ and perfect insects, in the very hard wood of burnt standing pines, in the spot where Prof. Beare and I found the larvæ over two years ago, when we first visited Nethy Bridge, it is far from the place where Mr. Bishop and Dr. Sharp took it; *Pachyta sex-maculata*, I dug two beautiful specimens (♀s) out of a fir stump; *Leptura sanguinolenta*, after I left (I left Nethy Bridge on June 26th) Mr. King found two specimens in a little sand-pit, where I had set traps for beetles; *Acanthocinus aedilis* I have bred out of Scots fir bark, brought home from Nethy Bridge; *Tetratoma ancora*, common under fir bark and in fungus on alders; *Clinocara tetratoma*, by beating; *Abdera triguttata*, abundant under the bark of burnt firs; *A. flavosa*, numerous in fungus on alders; *Zilora ferruginea*, in several localities under fir bark; *Anaspis hudsoni* (♀), bred from the inner bark of fir brought here with the larvæ of *Dendrophagus*; *Otiorynchus septentrionis*, *Pissodes notatus*, *P. pineti*, and *Magdalis phlegmatica*, beating fir tops, etc. I must take this opportunity to thank Mr. Bishop for his kindness and help, which made this very pleasant excursion still more enjoyable.

A Month in Switzerland and elsewhere.

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

(Continued from page 300.)

(v.) ECLÉPENS.—The possession of *abonnement général* tickets decided us to run up for a couple of nights to Bâle before going eastwards, so as to get a day at Hinterzarten, in the Black Forest, and incidentally a short time at Eclépens on the way. The day, July 3rd, was happily fine, but I found it was only possible to get a couple of hours between the trains; still, I succeeded both in getting to the upper road and in searching the flowers of the *Sambucus ebulus* near the station. Eclépens, however, was no exception to the rule of scarcity this year; only two species were really common, *Melanargia galatea* and *Epinephele jurtina*. Even *Coenonympha pamphilus* was by no means as common as usual, and I hardly think I saw more than

half-a-dozen *Limenitis sibylla*, and certainly less than that number of *Dryas paphia*, in places on, and going towards, the upper road, where they are generally to be found in numbers. I saw only five *Apatura iris*, all of which I caught (though I didn't keep them all), and one *A. ilia*: the only other species on the upper road or in the fields and woods being *Melitaea athalia*, *Pararge maera*, and *P. achine*. On returning to the station and going along the little path behind the inn, I found the *Sambucus ebulus* fully out, and a very fair number of "hairstreaks" seated upon it. It was nearly train time, and I was consequently rather hurried, but of those I captured, the greater number were *Nordmannia ilicis*, rather pronouncedly of the *cerri* form, but somewhat below the average in size, several others proved to be *N. acaciae*, and one only *Chattendenia w-album*. A few *Parnassius apollo*, of course of the var. *niratus*, were flying on the neighbouring bank, and *Coenonympha arcania* was not uncommon on both sides of the path. It was a great pleasure to find myself at Eclépens once more, but the results were distinctly disappointing.

(vi.) HINTERZARTEN.—It is very practicable to get a day at Hinterzarten by spending two nights at Bâle, and the Hôtel Jura is very convenient for the purpose, but for those who have time at their disposal it would be preferable to make Freiburg their headquarters, visiting Alt- and perhaps Neu-Breisach, the Mooswald, and the Kaisarstühl, as well as Hinterzarten and its vicinity. However, as I had to content myself with Hinterzarten alone, snatching a day between Eclépens and the Meienthal, Bâle was the only place practicable with a view to all three localities. There is a fairly early express to Freiburg without a stop, and then a wait of some thirty minutes before the little branch-line train leaves for Neustadt and Donaueschingen. The actual distance to Hinterzarten is short, and the line very cheap, but as much of the distance rises by steep gradients, the time consumed is rather long. This, however, is made up for by the great beauty, and in places the grandeur, of the scenery through which one passes, especially in the Höllenthal (Valley of Hell) with the quaintly-named village of Himmelreich (Kingdom of Heaven) at the foot of it. It is said that in former times the pass was a favourite resort of brigands, and that the name of the village was a grateful tribute of travellers to the safety they felt on arriving there, after the perils through which they had passed. The collecting ground at Hinterzarten consists of a marsh surrounded by, and interspersed with, wood, and it is necessary to approach it by a longish détour through the scattered village. The special objects of my search were the *rinaldus* form of *Brenthis selene* and *B. arsilache*, but I rather expected to be too late for the former and too early for the latter. My original sketch of my tour had provided for two visits to this spot, one earlier and one later than I actually went, but this was frustrated by the wet weather prevailing at the time of my previous passage through Bâle, so I chose an intermediate date on the chance of just catching both species. I was to some extent successful, though only the ♂s of *B. arsilache* were to be found, and *B. selene* was mostly worn. With one exception, every specimen of the latter had a good proportion of the underside hindwing washed with silver, but, unfortunately, not one was of the *rinaldus* form, for which this locality is famous. The ♂s of *B. arsilache* were in their very first

freshness; they occur in the wettest part of the marsh, and are consequently extremely difficult to obtain. The insect is widely different from *B. pales*, and though they may prove to be local races of the same species, considering the extreme variability of *B. pales*, yet it is surprising that they should have been regarded as such at sight. Possibly it may be because so many insects are regarded as *arsilache* which certainly are mere forms *pales*, some of those of the Engadine, for example, to which I shall refer more at length in writing of their proper locality, where also a comparison of the two will be more in place. The beautiful large lowland form of *Colias palaeno*, var. *europome*, was also very fresh; in fact, considering its comparatively restricted numbers this year, it was probably not yet fully out, though ♀s were far from uncommon. Its habits present a very marked contrast with those of the Alpine form *europomene*. The latter, as all Alpine lepidopterists know only too well, combine great rapidity of flight with extreme shyness, and except on a dull, but warm day, are consequently difficult to catch, whereas at Hinterzarten var. *europome* sits complacently on the flowers of the scabious, only flitting gently, as a rule, from one to another, and being so far from nervous that they will sometimes allow themselves to be captured with the finger and thumb. The Cœnonymphids were much to the fore; *Aphantopus hyperantus* was common, the small size of the specimens making one hope (at a distance) that they might prove to be *Cœnonympha oedipus*, and though this hope invariably resulted in disappointment, yet *C. pamphilus*, *C. typhon*, and *C. iphis* were all in considerable numbers, and none of the three were quite normal in appearance (if one can say that any form of *typhon* may be called normal at all). *C. pamphilus* was unusually large and rather richly coloured, *C. typhon*, on the other hand, being mostly rather small, but fairly well spotted, one or two of the eyespots usually showing on the upperside, while *C. iphis*, though also of small size, showed only the most diminutive spots, one of the ♂s even corresponding with the *arete* form of *A. hyperantus*. In his article on the neighbourhood of Freiburg (*Ent. Rec.*, xxii., p. 91, etc.), Mr. Warren mentions the fact that I took an example of this species here in 1907, though he had never taken it himself during the years he lived at Freiburg; this latter fact seems to me remarkable, as it is certainly far from scarce at the present time. The Melitæids were distinctly interesting. *M. athalia* presented the darkest and most suffused form that I possess, except a pair from Cecina in the Bukovina, sent to me by Herr Hormuzaki, though specimens from the Murgthal come near them in this respect; the undersides vary greatly in colour, the light bands ranging in the ♂ from silvery-white to buff. *M. dictynna* exhibited a glorious form, intensely dark on the upperside, the ground colour being of a rich golden-brown, though as a rule one clear row of spots, and slight indications of a second, afforded the only glimpses of it on the hindwing. The range of colour on the underside was even greater than in *M. athalia*. I took also a single very fresh ♂ of *M. parthenie*, slightly darker than the one I took on my previous visit, which latter is hardly distinguishable from those of the Rhone Valley, but I found no *Melitæa* this time corresponding with my most interesting capture on July 19th, 1907. This has been pronounced by every one to whom I have shown it, without disclosing the locality in which it was taken, to be *M. deione*, and I had hoped

that I might on this occasion, be able to confirm the diagnosis; the specimen is rather worn, and even my prolonged study of this group does not enable me to pronounce with certainty upon it. I still think it an uncommonly good imitation of *deione*, but unless (or until) others turn up it would perhaps be best to regard it, subject to correction, as an extraordinarily *deione*-like specimen of *M. parthenie*. *Erebia stygne* was common, the ♂s in far better condition than the ♀s, a point which I noticed elsewhere this season, but which I have never before remarked in the case of any butterfly except *Enodia dryas*. The *Hinterzarten* form of *E. stygne* is the brightest I know of, the chestnut band in the ♂ being much lighter and broader than in those from other localities where I have found it, and though I have a couple of ♀s from Martigny in which the band is broader, it is in these cases considerably duller and far less sharply defined. Except for rather small dark specimens of *Chrysophanus hippothoë*, *Lycænids* were at a discount, the "blues" being represented by one ♀ *Cyaniris semiargus*, and the "hairstreaks" by a blank. The fine form of *Vacciniina optilete* which occurs here was apparently not yet out. *Pieris rapae* and *P. napi* were not uncommon, and a few dark *Pararge maera*, the ♀ with singularly little red-brown, were also taken. The only *Heterocera* that I saw were a single specimen each of *Nemeophila plantaginis* and *Euthemonia sannio (russula)*. This was, however, in spite of certain disappointments, the most successful day that I had hitherto experienced this season.

(To be continued.)

Notes on the Season 1911.

By P. A. BUXTON.

It is hoped that the following notes may be of interest:—

Arentia flexula.—During mid-July, 1910, we took a perfect specimen of this insect at light in a first floor room at Fairhill, near Tonbridge. This should have been recorded last year.

Rumicia phlaeas.—This insect has been unusually abundant at Hillmorton, near Rugby, during July; also in the garden at Fairhill during mid-September, on Michaelmas daisy, and in the lanes, etc., on fleabane. Many of the specimens were large, some very large, and there was a marked tendency towards melanism among the Hillmorton specimens. This was produced by the spots being striate, and the "copper" dusted with black scales. The ground colour was also frequently rather paler and less fiery than usual.

Polyommatus icarus was unusually abundant at Hillmorton and also on the top of One Tree Hill, near Sevenoaks.

Lithosia griseola was distinctly past at Stalham on August 2nd and succeeding days, though in a normal year it ought surely to be fresh on such a date.

Larvæ of *Notolonta dictaeoides* and *N. dromedarius* were beaten from birch at Fairhill on August 28th.

A fine asymmetrical specimen of *Asphalia diluta* came to light on August 30th at Fairhill. The characteristic bands on the left forewing are run together, and this is particularly noticeable on the disc.

Nonagria brevilinea was, I believe, particularly abundant in the Broads this year. Certainly our first trip to those parts proved a great

success. This species was obtained at light on the fen, at Stalham, Hoveton, entrance of S. Walsham Dyke (type and var. *sinelinea*), Horsey Cut, and Horning Ferry.

At Horning Ferry, on the night of August 11th, we sugared some of the alders in the lane. Nothing at all save *Crambus pascuellus* was to be found in the marsh at the sides. Nothing interesting was flying in the lane, except *Plusia festucae*, at flowers of *Eupatorium cannabinum*. But every patch of sugar was packed with moths. Even *N. brevilinea* could not resist the temptation, while *Noctua rubi*, *Apamea secalis* (*didyma*), and others swarmed, and *Apamea leucostigma* var. *fibrosa*, and many other species were exceedingly abundant.

Why are moths melanic in Norwich? We were shown by the Rev. A. Dalby specimens taken in Old Catton of *Boarmia geminaria* and *Eupithecia rectangulata*, both of which were black, and of *Cidaria immanata* or *truncata*, which were as dark and unicolorously dull as some specimens we have from the extreme north of Scotland.

Pupæ and fullgrown larvæ of *Gortyna ochracea* were found in stems of *Carduus palustris* in various parts of the Broads in the first week in August. They were particularly abundant at the south end of Heigham Sound.

In 1909 *Hydroecia crinanensis* was abundant on the border near New Castletown in early September. This year all efforts to find it on September 9th, 10th and 11th, resulted in failure. The thistles were no longer in flower. In 1909 this species frequented *Carduus palustris* in numbers, and more rarely *C. arvensis* and scabious.

Anchocelis litura.—One at sugar, September 6th, Fairhill.

Tiliacea citrago.—Abundant at sugared lime trees from August 21st onwards. Occasionally at light. The ♂s are out many days before the ♀s.

On September 30th, in a howling gale on a cold night, we took one *Xanthia aurago* at ivy blossom at Fairhill. The species also occurred once last year.

Aporophylla lutulenta occurred at Fairhill on September 12th (one), 21st (two ♂s), and 29th (one ♀). The first was taken indoors, the others at ivy-blossom.

Hadena protea was abundant and variable at sugar at Fairhill, commencing on September 1st. It occasionally comes to light. Not one specimen was taken in 1910.

A specimen of *Acidalia virgularia* came to light on September 5th. This is surely a late date though probably *Acidalia* hatch whenever they are ready, and do not wait for times and seasons.

A Season's Collecting at Constantinople in 1911.

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

During the past six months I was able to do a certain amount of collecting in the vicinity of Constantinople. I should have liked to have had more time at my disposal, and also to have paid more visits, however short, to Ismid, Yalova, on the south side of the Sea of Marmora, and Brusa with its marshes and great isolated mountain, the Mysian Olympus or Keshish Dagh. But my work prevented me from getting away, and the outbreak of cholera in August and September greatly restricted my collecting.

I propose to begin my account of the season's work by describing the areas of the Constantinople district which I actually worked. By the Constantinople district I mean the two necks of land, separated by the Bosphorus, and bounded by the Black Sea on the north and on the south by the Sea of Marmora, extending from the Tchataldja lines in the west to the town of Ismid on the east. Of this area much is still wooded, though large portions have been stripped of trees and are either bare or covered with oak and thorn scrub. The Belgrade Forest behind Therapia on the European side of the Upper Bosphorus is the largest wood in the near neighbourhood of Constantinople. On the Asiatic side there is one considerable forest, the Alem Dagh wood, which covers some 40 square miles all told, and several minor preserves and covers, but the south side of the Asiatic peninsula is terribly bare of wood, having been cleared during the last 50 years. The commonest trees are oak (*Quercus robur* and *Q. cerris*), ilex, chestnut, lime, and beech in the order given; wild cherry trees are not infrequent, plane, willow and poplar, abundant near water in the neighbourhood of villages, cypress in gardens and cemeteries, elm less frequently, and pine only on the Prince's islands, and on a few hilltops, and apparently planted in some coverts behind Beikos on the Asiatic shore of the Bosphorus. Myrtle, a small-leaved bay, arbutus, tree heather, blackberry, broom and buckthorn, blackthorn and hawthorn, form the undergrowth, which is often distressingly thick in the woods and bushy valleys, with here and there *Paliurus* thorn, and any quantity of *Rubus* and wild rose. As a general rule the vegetation has a fairly northern air. There are, however, some warm valleys, e.g., the Djenderé valley, branching off from the Valley of the Sweet waters of Europe (Kiat-hané), which have a decidedly Mediterranean aspect, where heather, broom and cistus, with abundance of aromatic plants, above all thyme and lavender, flourish. The soil is clay or sandstone, with a few limestone outcrops in the neighbourhood of the capital. I have seen what appeared to be a cretaceous rock on the way to Ismid. There are no marshes near the Bosphorus, except the saltmarsh at the mouth of the Tchekmedjé lakes, but there is a great marsh at Ismid where I hope to take *Chrysophanus rutilus* another year. As a rule the hillsides, when stripped, are rather unproductive, mere windy downs, much grazed by sheep and cattle. The hills behind Erenkeui on the Asiatic side of the Marmora are, when stripped of trees, very barren and covered only with a dismal-looking brownish-green vegetation, composed partly of a thorny plant, which replaces heather in Syria, and which is commonly called "geven." In most of the valleys there are brooks, temporary or perennial, which, with the draught from the Black Sea, keep vegetation fresh till late in the year. As far as I can learn the average temperature during the summer is higher on the Asiatic side of the Bosphorus than on the European, but decidedly lower than that of Naples, which is in almost the exact latitude of Constantinople, but once one "turns the corner" and passes Scutari going east along the coast, the average maxima and minima increase. In other words, the further you go from the Bosphorus draught the more "continental" the climate becomes.

To turn to my collecting this year, two points struck me rather forcibly, firstly, the very western appearance of many of the butterflies I took; secondly, the apparent rarity of certain species which one

expects to take in south-eastern Europe and north-western Asia Minor. Of these I may note *Pontia (Synchlœ) callidice* (one ♂ only) and *Pararge maera*, of which I have only one ♀ out of three or four examples seen. Of *Chilades trochilus* and *Tarucus balkanica*, I have only single specimens, neither in good condition. I may have overlooked *Gegenes nostradamus*, of which I took a pair only in very moderate condition on September 3rd. *Melitaea phoebe* appeared to be rare, and I only took four specimens, only one of which is undamaged. Of *Aglais urticae* I took none, and saw but one hibernated specimen in April. It is, of course, possible that I missed finding good localities for some of these insects, or that the year was an unfavourable one for them. As for the frequency of butterflies I cannot say that I ever found the swarms of insects which I have seen in Switzerland and in one or two favoured Syrian localities, but there were two or three localities, the Djenderé valley, near the Sweet Waters of Europe, the outskirts of the Belgrade Forest, between Büyük-deré and the Baghtché-keui aqueduct, and parts of the Gyök-su valley, also called the Sweet Waters of Asia, which always gave me a very good bag. I never had time to visit the Alem-Dagh forest, and on my only journey to Ismid I had no time for collecting, though I saw a good many insects from the train on the shores of the Ismid Gulf. I made close observations of the habits and of the times of emergence of certain species, and am quite positive that certain butterflies are triple-brooded in this district, e.g., *Papilio machaon*, *Pieris napi*, *Leptidìa sinapis*, *Lowia dorilis*, *Aricia anteros*, and *Hesperia alveus*. *P. machaon* was first taken by me on April 28th, and occurred not uncommonly, though worn as a rule, till the end of May. On June 15th and on subsequent days, I took fresh ♂s, and later, ♀s, of a larger and yellower brood, often reaching 84mm. in total expanse, which persisted till mid-August, though it was then very worn indeed. On August 19th I took a fresh mate of a third brood which was still out on October 7th. I may remark that the specimens which I took in early May were mostly rather worn, and gave me the impression that they had been some time on the wing. *L. dorilis* was first taken by me on May 5th. A fresh emergence took place at the end of June, and I caught fresh specimens in September, one perfect male as late as October 7th. *A. anteros* was often worn by mid-May, abundant and fresh from the beginning of July to mid-August, and in mid-September fresh males were again out. My records for *H. alveus* extend from May 12th-June 6th (first brood), and July 8th-October 7th, on which later date I got a good short series of perfectly fresh specimens. In the case of *H. alveus*, however, I am not altogether sure if I have one species or two in my series of some 30 specimens. I need not speak of the triple—or many—broodedness of species such as *P. icarus*, *Rumicìa phlaeas*, *Pontia daplidice* and the common whites, not to mention *Colias edusa*, which here as in Egypt has a spring, a summer and an autumn brood, occurring in April and May, late June and July, and late August to early November.

Of the different species of the *Urbicolidae* which I took, twelve in number all told, *Nisoniades tages*, *Hesperia malvae*, and *Heteropterus morpheus* were rare, especially the latter, which I only found between Büyük-deré and the Baghtché-keui aqueduct in wood clearings at the end of June. It was not in good condition, and I only took three or half a dozen specimens seen. My two *G. nostradamus* were taken in

the dry bed of a stream at Djenderé. *Hesperia sidae*, a very fine skipper, appeared to be confined to that locality, where it haunted the slopes above the stream in May and June, occasionally flying wildly round in circles, and always going away like a flash when disturbed. I only took one female out of some 24 specimens. The specimens varied little *inter se*, save in the colour of the bands on the underside of the posterior wings, which varied from pale ochre to rich orange. Can Mr. Harold Powell kindly tell me what its foodplant is? *Adopaea flava* was large and abundant; *Thymelicus actaeon* was more local, but common where it occurred, and *Angiades sylvanus* was common in woods and bushy places, the females being larger than is the case at home. *Erynnis alceae* occurred nearly everywhere, but as a rule in small numbers. *E. althaeae* was more local, but more frequent where it did occur. *Powellia orbifer* was unquestionably the commonest "skipper," especially in its first brood, though there seemed to be a great disproportion in the numbers of the sexes, the females, though I hunted for them assiduously, occurring in the proportion of 1 to 5. I may have missed other species of this and other groups, owing to my having failed to visit the excellent Gyök-su localities before July, but I shall endeavour to work them in May and June next year. I failed to find two species which I rather expected to take, *viz.*, *E. laraterae* and *Muschampia proto*. *Urbicola comma* does not appear to occur here, but I did not expect it at so low a level so far south. In Syria (Lebanon) you must not look for *U. comma* at a lower altitude than 4,000 feet.

(To be continued.)

Some more Considerations about Descriptions and Figures.

By OSCAR JOHN (O. Ion of St. Petersburg.)

Monsieur Charles Oberthür's proclamation to all lepidopterologists to adopt, at the next Entomological Congress, as a law, the principle that "no description should be valid without a good figure," has induced Dr. T. A. Chapman and Mr. L. B. Prout to offer some considerations,* which bear on the point, but which I shall not discuss, that M. Oberthür's rather radical propositions should be well considered before the Congress assembles. The question raised is most certainly of a very serious kind, and strict rules for new descriptions will, I am sure, be welcomed by every serious student. I may be permitted to suggest a few points, which might be taken into consideration before definitely adopting any rules for descriptions of lepidoptera.

We must agree with M. Oberthür, that many descriptions without figures have led, and continue to lead, to misunderstandings, so that often the only means of identifying such doubtful species is the comparison with the types, and when these are lost, every attempt to unravel such questions has to be dismissed as hopeless. Such descriptions being in fact *nomina nuda* might well be left aside without any loss to lepidopterology, but it is absolutely necessary that such *nomina nuda* should not be created in future. To avoid this the following considerations, for which I do not claim originality, might be of importance.

* *The Ent. Record*, pp. 239 and 263.

1.—Types should not be kept in private collections, but given over to museums, where they are less subject to the possibility of being lost or destroyed.

2.—Figures are indispensable, but it is very important *how* the objects are figured. In the first place we must not forget that only a very limited number of publications have at disposal such funds as would allow the illustration of all descriptions by coloured plates, such as in M. Oberthür's *Études*. A good photograph is of course much cheaper, and certainly the minimum to be demanded, as Dr. Chapman claims, but it cannot enlighten us upon questions of coloration. In this point, as it seems to me, satisfactory results could be obtained by a good nomenclator of colours after the pattern of Ridgeway's or Saccardo's, but much more complete than these. Such a nomenclator, brought into general use, would give us a fairly good idea of the coloration. An international prize-competition might furnish us with a nomenclator that would suit for this purpose.

3.—But there is another point, which in some cases may lead to misunderstandings. Some species are so very much alike or of such small dimensions, that a figure might be incapable of giving us any certainty as to what we have to deal with. Besides, we must not forget that not all specimens from which the first description or figure are made, are absolutely perfect, and that therefore a description and figure from a more or less defective type might not always furnish us with sufficient clue for identification. It would as a consequence be desirable to have means of checking our suppositions and this could be arrived at by the description and figuration of external as well as internal or anatomical structural peculiarities of the species described.

4.—Thus we arrive at another point of the utmost importance, *i.e.*, that every species to be described should be thoroughly examined from every point of view, including its inter-relations to its nearest relatives. The author of a new species should not only describe it, but should also prove it to be different from all others known to science. Every description of a new species therefore should be accompanied by a revision of the genus it belongs to, or at least of its group.

All this, of course, would make it much more difficult to put out lots of new names, but I am sure, that if one or another species should remain undescribed for more or less time, no one but an ambitious author will be the loser, whereas entomology as a science will certainly be the gainer, relieved of so many confusing—and unnecessary—names of "new" lepidoptera. The more we complicate the laws for valuable descriptions and restrict the sport of namegiving, the more we shall simplify serious systematic work.

NOTES ON COLLECTING, Etc.

VARIATION IN *EUCHLOË EUPHENOIDES*.—In reply to Lieut.-Col. Manders' suggestion I have looked through my series of *E. euphenoides*, 110 specimens, from Digne and Marseilles. Four examples from Digne have a slight touch of orange on the extreme border of the wing and one has a rich orange border 3mm. deep. The date of capture of this last is the beginning of April, 1901, Marseilles. The specimens I took at Digne were much smaller than those taken at Marseilles.—P. A. H. MUSCHAMP, F.E.S., Stäfa. *October 25th, 1911.*

SECOND BROODS.—I took a freshly emerged ♂ of *Nisoniades tages* in mid-August, on the Blackdown Hills south of Taunton in Somersetshire, and on August 20th near Wellington Monument on the same range, a ♀ *Brenthis selene*. Sugar has paid well here in September and October. Among undoubted second broods, which rarely occur in north-east Yorkshire, have been *Noctua c-nigrum* commonly, and two or three *Leucania pallens*.—A. S. TETLEY, M.A., F.E.S., 22, Avenue Road, Scarborough. November 15th.

RUGBY LEPIDOPTERA IN 1911.—The following species have been taken this year in the Rugby district. Fuller notes on these and many other insects will be found in *The Report of the Rugby School Nat. Hist. Soc.*, but perhaps these captures deserve wider circulation than the pages of that Report. *Heterogenea asella*, not previously recorded for Warwickshire; two specimens beaten from oak and hazel at Brandon, June 10th. *Adscita statives* was abundant in a very circumscribed locality at Hillmorton. With it were found specimens of a burnet, which agree in every particular with normal *Anthroceria jilipendulæ*. In appearance they are far removed from *A. hippocrepidis*. Yet a ♂ was taken on June 12th and the species was quite over by July 4th. *Acrionicta alni*.—A larva was obtained in Ryton Wood on July 29th. It subsequently died. The species has occurred before in the district. *Boarmia roboraria*.—From June 27th no ♂s were noted. It has occurred not infrequently in the oak woods. *Hybernia marginaria* var. *fuscata*.—A ♂ at Rugby on March 4th darker than fig. 12, pl. 120, in "South." We have no former records, but hitherto varieties have been utterly neglected. *Macaria liturata*.—June 3rd at Princethorpe. This species has occurred before but infrequently. Many species of the groups of smaller moths remain yet unidentified. They will appear in the next Report. Among them we note *Adela rufimitrella*, abundant at Princethorpe from May 22nd onwards, at flowers of *Cardamine*. This insect rarely settles. A specimen of *Spilonota roborana* was taken at Newbold on July 20th.—P. A. and D. A. J. Buxton, Fairhill, Tonbridge.

AGRIUS CONVULVULI IN CORNWALL.—The *Convolvulus* Hawk Moth, with its eggs, was found by my sons, A. N. and D. C. Venning, on September 2nd this year at Polzeath, North Cornwall, in a garden near the sea. The eggs were on some *Convolvulus arvensis* close to the moth. Between 60 and 70 were collected. They all hatched out, except some half dozen, in between a week and 10 days. About half were given to Colonel Le Marchant. He has, I understand, only lost three or four larvæ, and of ours, 23 are alive, of which half at least are now full grown. The first of our larvæ went down into earth on November 3rd, and four are now down (November 8th), one turning into a chrysalis on the surface. Some are only about half grown, one changed its skin for the last time yesterday, the smallest only $1\frac{1}{2}$ inches long made its last change from a green to its brown skin to-day. When first hatched the larvæ were all pale green with faint slanting lines, the reddish spots gradually developing. After the first fortnight they varied considerably, some being much more marked with dark lines than others. After the last change they all turned brown or purplish green, and finally, became deep brown with hardly any markings. They all went into a state of quiescence for three or four days before changing their skins. This process of

changing took about 20 minutes. The boys also caught another *Convolvulus* Hawk Moth on the wing about half a mile away. The caterpillars ate the small and large white convolvulus equally well. We had only three casualties among the half grown caterpillars—one was bitten to death by another, and two disappeared mysteriously, perhaps eaten by others, as I do not think they could have got out of the box. I find that the smallest has not yet turned brown, but is developing a black band down the centre of its back, with green spots and black stripes on its sides, much as the others did some time ago. The last change of skin took place when they were about two inches long and they grew to be four or five inches when fully extended.—MRS. KATHARINE H. VENNING, per HERBERT J. MCGILL, Bordyke Lodge, Tonbridge. *November 10th.*

CURRENT NOTES AND SHORT NOTICES.

We have been looking through the pages of the weekly *Internationale Entomologische Zeitschrift*, published at Guben, Germany, of which some six months' numbers have accumulated upon our table. The bulk of the matter is lepidopterous and much of it bears upon species belonging to our own fauna, or with the butterflies of the continent, and is very interesting. In the April numbers we get "Observations on *Nonagria geminipuncta*, with description of the egg," with which there is a figure of the method of pupation, and details of the method of escape of the imago by means of a specially prepared guarded opening from the stem in which the larva pupated; "A preliminary List of the larger Lepidoptera met with in the neighbourhood of Kiel," from which we find that no less than 57 species of Rhopalocera have been obtained in that restricted area; and three figures, with notes, of extreme aberrations of *Melitaea maturna*. In the May numbers we have a figure of a melanic form of *Cymatophora* or, which apparently since its first appearance is getting more commonly met with, thus resembling *Amphidasis betularia* var. *doubledayaria*, it is named var. *abingensis* by Herr. Warneche; a discussion of the variation of *Mimas (Smerinthus) tiliae* and its forms, and pointing out among other things that Staudinger's name ab. *extincta* (1901) must fall before ab. *obsoleta* of Clarke (*Ent. Record.*, vol. i., p. 328, 1891) as the name of the form in which the fasciae of the forewings are absent; and an account of the breeding from the egg of a number of examples of *Parnassius apollo*, in which the forewings were characterised by the almost total disappearance of the outer costal, black blotch, with a plate of seven of the examples; this form has been named var. *provincialis* as the ♀ parent was captured in the Provence district of South France. In the June numbers is commenced a lengthy series of articles on "Notable Collections," by Napoleon M. Kheil, who begins with an account of the Collection of Saturniids of Herr André of Mâcon; "The Eggs of our Lepidoptera," by Professor Dr. v. Linstow, is a summary of the state of our knowledge of this stage with a short historical resumé of its development, and full references to the locale of information on lepidopterous embryology; the discussion of the occurrence and variation of *Parnassius nordmanni* is interesting, as a portion of the article is devoted to the consideration of the "*Parnassiidae* as commercial objects," contrasting adversely investment in specimens of natural history with

the acquisition of postage stamps, antiquities, etc.; and the commencement of an article reproducing the diary of a collecting tour taken in Swedish Lapland by the late Herr Carl F. Höge, of Hamburg, in the year 1866, in which are records of many interesting species and northern forms in spite of the continual recurrence of "rain," "cloudy," etc., in the journal. The numbers for July contain "Observations on *Hepialus humuli*," dealing with the time of flight, which differs according to elevation, being much later in elevated districts, the duration of flight, which is shown to be but very limited, the comparison of the flight with that of other species of *Hepialus*, the peculiar pairing habits, etc.; five figures of teratological specimens of Coleoptera in which the antennæ are (1) asymmetrical, *Polyphylla fullo*, one antenna being longer and the other shorter than normal in each of two specimens, (2) multiplied, *Melolontha vulgaris*, one specimen with the right antenna duplicated from the end of the second joint, and another with the right antenna triplicated from the third joint, and *Orinocarabus sylvestris*, right antenna doubled from the fifth joint; and a very full list of the parasites (hymenopterous and dipterous) which have been recorded as taking the *Bombycidae* as their hosts. The August numbers contain, a long and critical article on the Linnæan *Parnassius apollo* with eleven figures and full references, by Felix Bryk, of Finland, and an account of the pairing of *Saturnia atlantica* ♂ with *S. pyri* ♀, the description of the larvæ obtained, and the method of treatment whereby 27 perfect cocoons were obtained from about 100 eggs laid. In September the numbers contain, in addition to many short notes, an account of a collecting holiday spent from Airolo over the St. Gotthard, the Furka and the Grimsel to Interlaken; the obituary of the late Oskar Schultz, to whom we are indebted for many articles and notes on variation and for a most useful compilation of the occurrence of gynandromorphs in the Lepidoptera; another notable collection is brought under notice, that of the late M. Finot of Fontainebleau, who was the greatest French authority on the Orthoptera, and whose collection is now located in Paris; and an account of the variation of *Brenthis daphne*, by Herr M. Gillmer, with a figure of a most remarkable dark suffused aberration, *melanotica*.

The weekly *Entomologische Zeitschrift*, published at Frankfort-on-the-Main and edited by Prof. Dr. A. Spuler and Dr. Max Nassauer, during the last few months has contained a number of more or less generally useful articles. In June a very comprehensive article was begun which will be suggestive to entomologists who interest themselves in insects other than lepidoptera, "Biological observations on *Dixippus morosus*"; and the completion of the long series of articles on the *Lycænidæ*, to which we have before referred. In July occurs a very important study by Prof. Dr. Deegener on the "Structure and Function of the Scent-organs of *Hepialus hecta*." The August numbers contain a long article on the efficacy of "sugaring" since 1905, especially in the neighbourhood of Brunswick; and the completion of the sixth series of articles on the "Gynandromorphs in the Macrolepidoptera of the Palæarctic Fauna." In September Dr. Denso discusses comparatively the various crosses obtained by pairing *Celerio euphorbiae*, and *C. hippophaës*.

In the *Societas Entomologica* for June Mr. P. Cameron gives descriptions of "New Genera and Species of *Chalcididae*," and Herr

Fruhstorfer brings forward a number of "New forms of Palearctic Rhopalocera." The July numbers contain a long "List of newly described or bred Parasites with their Hosts," and an account of "A Few Aberrations and Gynandromorphs of the Palearctic genus *Papilio*." In August we find a very full account of "*Parnassius mnemosyne*," giving its life history, distribution and variation at some length. The September number contains an important article with several illustrations, by Dr. Jas. L. Reverdin, on "*Parnara nostradamus* and *P. lefebrrii*."

We are pleased to note that Dr. Malcolm Burr has recently been elected a Corresponding Member of the American Entomological Society.

The Carlisle Natural History Society are about to bring out another volume of their "Transactions." We understand that it will contain among other matters a continuation of the List of the Lepidoptera of the district, probably including the *Noctuae*, and also a further instalment of the List of Carlisle Coleoptera, comprising the Water-beetles and the *Staphylinidae*.

In recent numbers of the *Bulletin de la Société Entomologique de France* are several items of general interest to English readers.

(1) Prof. L. B. Howard, of the National Museum, Washington, U.S.A., draws attention to the large number of changes in the fauna and flora of the United States, which have taken place in recent times under the eyes of living observers, and in support of his remarks he refers to *Pieris rapae* supplanting *P. protodice* and *Lepidosaphes ulmi* replacing *Chionaspis furfurus*. He is now studying the *Coccidae*, many species of which, following the trade routes, have become more or less cosmopolitan in their distribution, so that at the present time it is practically impossible to ascertain with certainty their original home, so few students having until the present time given their attention to these multitudinous pests. What Prof. Howard particularly desires is to ascertain all the facts that can be obtained as to the existence and distribution of the extremely minute parasites of the *Coccidae*, the *Aphelinae*, and to discover how far the extraordinary spread of the *Coccidae* has been followed by a corresponding spread of the parasites. He states that the fauna of the United States, as regards the *Aphelinae*, in 1900 was radically different from that of 1880, at which latter date he began to publish notes and records of the group. As instances he states that the species of the genus *Aphelinus*, and also of the genus *Coccophagus* have been replaced by the rapid spread of immigrant species of the genera *Aspidiotiphagus*, *Prospaltella*, etc. Are similar changes going on in Europe? Are the old recorded species still common, or are they, as in America, on the road to disappearance from the competition of introduced foreign species?

(2) M. Chas. Oberthür describes a number of new varieties of Western Palearctic Lepidoptera, among them being *Lycæna iolas* var. *powelli*, which has been bred from larvæ taken by Mr. Powell at Geryville in the province of Oran, Algeria, symbiosis existing between the larvæ and ants as described in *Études de Lépidoptérologie comparée*, vol. v., pt. i.; *Erebia tyndarus* ab. *albana*, taken by M. Rondou in the Hautes-Pyrénées, has the markings, which normally are yellow, changed to white; *Nemeophila plantaginis* ab. *rondoni*, from Gèdre,

Hautes Pyrénées, is just the opposite of ab. *matronalis*, the melanic form, the forewings being of a slightly yellowish-white above and below, with a minimum of black markings on costa and apex, while the lower wings are yellow with blackish marginal markings.

(3) Count Emilio Turati, among numerous new forms, records and describes a new *Dianthoecia*, *D. dubia*, allied to our *D. caesia*, from the neighbourhood of Monte Autore, Province of Rome; *Ortholitha cervinata* var. *fumosa*, from Oran, Algeria; and *Crambus falsellus* var. *neutrellus*, from Sicily, in which much of the normal dark pattern has disappeared or has become considerably reduced, with a much lighter ground.

(4) M. Roger Verity names the Scotch, Galashiels form of *Erebia aethiops* as var. *caledonia*, and the race from the Alps of Piedmont as var. *taurinorum*: the race of *E. eurygale* from the Tuscan Apennines he calls var. *apennincola*: the Scotch race of *Satyrus semele* he denotes as var. *scota*: and the race of *Pararge megera* from the same country he names var. *caledonia*. These and other variations are illustrated by a plate.

(5) Dr. Jacques Reverdin returns to the subject he so ably attempted to elucidate in the *Bull. de la Soc. Lep. de Gen.* in 1910, viz., the specific distinguishing characters of the European species of the *Hesperidae*. In this article he separates, on genital and other characters, *Carcharodus altheae* and *C. boeticus*, and remarks on the very great value of the work of Rambur, who clearly saw the specific differences of these two, but whose opinion was unfortunately disregarded by all subsequent writers. He gives several figures of the genitalia of the two species.

(6) In a short note on insects injurious to agriculture, M. Marchal states that the larvæ of *Sesia ichneumoniformis* have caused considerable damage by mining the roots of one of the most important forage plants, *Hedysarum coronarium*, in Tunis.

In the August and September numbers of *Fauna Exotica*, published fortnightly under the editorship of Prof. Dr. A. Spuler and Dr. Max Nassauer, we find the following interesting articles: "An Entomological Collecting-tour to Kansas," "Habits and Habitats of the genus *Morpho* in the Amazon Region," and "Observations on the Occurrence and Habits of the genus *Ayria* of the Amazonian region."

Mr. J. R. le B. Tomlin, M.A., F.E.S., and Mr. W. Sharp, F.E.S., have written a series of Critical Notes on the British species of the Coleopterous genus *Longitarsus* in the October number of the *Ent. Mo. Mag.*

In recent numbers of the *Entomologist*, Mr. Sydney Webb has been giving a series of Notes on the Tortricid genus *Peronea*. He is dealing mainly with the variation shown in the very fine collection made by the late J. A. Clarke, which passed into his (Mr. Webb's) hands at Mr. Clarke's death. At the same time the opportunity is taken to revise the intricate nomenclature of the named varieties.

We have just heard that the Second International Congress of Entomology will be held at Oxford from August 5th to 10th, 1912. The President of the Congress will be Professor E. B. Poulton, B.Sc., F.R.S., F.E.S. The Executive Committee proposes to find for Members of the Congress lodgings in the town, or rooms in one or more of the Colleges at a moderate charge; the rooms in the Colleges

will be available only for men. The Executive Committee invites an early provisional notice of intention to join the Congress, in order to be able to make the arrangements for the necessary accommodation. We understand that the *Proceedings* of the First Congress are in the press and will be published shortly. All communications and enquiries should be addressed to the Hon. General Secretary of the Executive Committee, Dr. Malcolm Burr, c/o The Entomological Society of London, 11, Chandos Street, Cavendish Square, London, W.

We understand that there is no truth in the rumour which has been current that Messrs. Kernan, the new publishers of Seitz's *Macrolepidoptera of the World*, contemplate the discontinuance of the work with the completion of the current volumes. Such a lapse would be an immense loss to the study of lepidoptera throughout the world. When we remember the price of most of the more reliable and well illustrated works hitherto published on this group, we think it is marvellous to be able to obtain a volume of 3,470 coloured figures, generally excellent and faithful representations, with concise explanatory letterpress, for the small outlay of £3. We must certainly write it down as "reliable and cheap," for it most certainly belies the phrase usually associated with the word "cheap."

We regret to announce the death on October 23rd of Edith Wollaston, widow of the late T. Vernon Wollaston, the well-known coleopterist and explorer of the Madeira and Canary Isles and also of St. Helena. Marrying at a very early age, she threw herself heartily into her husband's journeyings and entomological excursions, which, however, were nearly all taken on account of the delicate state of his health. She camped out with him on the north side of Madeira, and helped to enlarge his collection considerably, both in coleoptera and lepidoptera, the latter were, however, her favourite group, and on their return from a prolonged sojourn in St. Helena, she set herself the task of working out this section of their collections, the result of which appeared in the *Annals and Mag. of Nat. History* for the year 1879, when she recorded ninety-four species from that rock, of which only four were butterflies. In this paper, she described thirty-eight new species, all but two being *Tineina*. Mrs. Wollaston was the daughter of the late Mr. Joseph Shepherd, of Bristol. She has done but little collecting since her husband's death, the delicate state of her health making it necessary for her to be lying down a large portion of the day. She leaves no issue.—G.T.B.-B.

Mr. Donisthorpe writes that he has taken specimens of *Eryx fairmairei*, Reiche, a species of Coleoptera new to the British fauna, in Sherwood Forest. An article describing this beetle will appear shortly.

SOCIETIES.

THE SOUTH LONDON ENTOMOLOGICAL AND NATURAL HISTORY SOCIETY.
—September 14th.—MELANIC LITHOSIA DEPLANA.—Mr. Turner exhibited the photograph of a very dark specimen of *Lithosia deplana* (*helvcola*) sent him by Mr. Cockayne and asked if such melanic specimens had been recorded. VARIATION IN *PIERIS NAPI* IN 1911.—Mr. Grosvenor, an extensive series of *Pieris napi* taken and bred in 1911, selected to show every phase of variation obtained, including a gynandromorph,

a male with female markings, specimens of yellow general coloration, etc. HEMIPTERA.—Mr. West (Greenwich), *Teratocoris antennatus* and *Nabis lineatus*, two uncommon species of Hemiptera from near Gravesend. CORSICAN FORMS OF BRITISH SPECIES.—Mr. Gibbs, long and varied series of *Satyrus semele* var. *aristaeus*, *Pararge megera* var. *tigelius* and *Epinephele jurtina* var. *hispulla* from Corsica. THE PEPPERCORN GALL OF THE OAK.—Dr. Chapman, empty and full galls of *Andricus ostaeus* the peppercorn gall, which has been so apparent this season. SYNTOMID LARVÆ.—Mr. Barrett, living larvæ of *Syntomis phegea* from Sicily.—September 28th.—EPHYRA PENDULARIA AB. SUBROSEATA.—Mr. Kaye exhibited a long series of this species including some very beautifully marked examples of the variety. HADENA CONTIGUA BRED FROM OVA.—Captain Cardew, a beautiful series bred from ova laid by a New Forest ♀, 49 imagines were obtained from 62 fertile ova. "BUTTERFLIES IN THE FOREST OF ARQUES."—Mr. Moore read a short note on a visit recently made, and exhibited a number of species he obtained. He referred to the abundance of *Pieris napi* and the scarcity of *P. rapae* in the Forest about August 12th last. AGRIS CONVULVULI IN DEPTFORD.—Mr. Moore, the only one noted by him this season. APLECTA PRASINA (HERBIDA), IRREGULAR FEEDING UP.—Mr. Main, a bred example remarkable for the delicacy of its colouring. Some of the larvæ were still small, some were in pupa, and this had emerged. MYXOGASTERS.—Mr. Step, and gave a short account of the organisms, considered by some as plants, by others as animals. HADENA PROTEA, ANTHROCERA HIPPOCREPIDIS (?), AND TERATOLOGICAL A. FILIPENDULÆ.—Mr. Buxton, a long series of the first from near Tonbridge, at sugar; of the last species one specimen had the antennæ short but very thick and contorted.—October 12th.—Mr. H. R. Sweeting, M.A., of S. Woodford, was elected a member. LITHOSIA DEPLANA.—Mr. W. J. Kaye exhibited bred and captured series, in which some of the former were much darker than usual. Mr. Barrett, three series, one taken many years ago, one in 1909, and one this year, the 1909 were generally darker in colour, but not so dark as Mr. Kaye's bred specimens, although several specimens were without the yellow costa of the forewings. XYLINA FURCIFERA (CONFORMIS).—Mr. Barrett, a specimen taken in 1904 in the east of England, and an example bred in South Wales in 1876 by Evan John. The latter was var. *suffusa*, Tutt. NEW FOOD FOR GRACILARIA SYRINGELLA.—Mr. Sich, specimens bred from *Phillyrea media*, a foodplant not hitherto recorded. SECOND BROOD OF TORTRIX PODANA.—Mr. R. Adkin, an example bred on September 13th from a pupa taken in a shoot of *Euonymus* at Eastbourne, and reported that the Rev. W. Claxton had reared several specimens in mid-September. STERRIA SACRARIA AND RUMICIA PHLÆAS VAR.—Mr. B. H. Smith, a specimen of *Sterria sacraria* (♀) taken by him just recently near the Lizard, and a *Rumicia phlaeas* with right forewing ab. *schmidtii*. WHITE COCOONS OF PHILOSAMIA CECROPIA.—Mr. Dods, the huge cocoons of *Philosamia cecropia*, all of which had become dark brown in colour, except one, which had kept its pure white colour. GRUB IN A COQUILLO-NUT.—Mr. Main said that the grub shown in the Coquillo-nut exhibited at the last meeting was that of the large "pea weevil," *Caryoborus nuctuorum*, a native of Brazil. BOREUS HIEMALIS.—Mr. Blair, specimens from Stanmore Common, in Essex. COLEOPTERA IN 1911.—Mr. Blenkarn, many species of Coleoptera taken by him during the season, including

Clytus arietis, *Cicindela sylvatica*, *Dytiscus marginalis*, *Aromia moschata*, etc. THE SEASON.—Mr. Adkin and others gave their experiences of the season.—October 26th.—The Rev. George Wheeler, M.A., F.Z.S., F.E.S., and Mr. H. B. Wells were elected members.—LITHOCOLETIS HORTELLA AND L. SYLVELLA.—Mr. Sich exhibited these two species and noted their specific characters and markings. PHRYXUS LIVORNICA AND AUTUMN BRED D. SANNIO.—Mr. Russell, a *Phryxus livornica* from Purley, three autumn bred specimens of *Diacrisia sannio* (*russula*) from Grange-over-Sands, and recorded a *Bithys quercus* taken on September 1st. EUPITHECIA SUBFULVATA FROM OVA.—Mr. R. Adkin, a series of *Eupithecia subfulvata* bred from ova laid by a ♀ taken at Chiswick. EXOTIC CICADA AT WANSTEAD.—Mr. Moore, a large *Cicada* taken on a window at Wanstead, and read notes on a Silphid beetle from the Orange River Colony which in life bore an abundant waxy secretion on its elytra. COLIAS NASTES VAR. WERDANDI.—Mr. Sheldon, a long and fine series of this species taken by him in Lapland. SECOND-BROOD A. POPULI.—Mr. Newman, a long and varied series of bred *Amorpha populi* with three second-brood examples. LIVING "STICK INSECTS."—Mr. Blair, living ♂ and ♀ specimens of the "stick" insect known as *Dicrippus morosus*, and imagines of the rare Dipteron, *Boreus hiemalis*. MELANIC A. VIRGULARIA.—Mr. Baumann, a fine melanic form of *Acidalia virgularia* from Lewisham. SWISS BUTTERFLIES AND MELANIC MOTHS.—Mr. Curwen, series of *Colias palaeno*, *C. phicomone*, *C. hyale*, and *C. elusa* from the Swiss Alps, and also melanic forms of *Cidaria immanata*, *Hypsipetes sordidata*, and *Mania maura*. NEW COLEOPTERA.—Mr. Blenkarn, examples of three species of Coleoptera recently recognised as British, *viz.*, *Haliplus heydeni*, *H. immaculata*, and *Gabrinus stipes*, from the Cotswolds, Lowestoft, and Beckenham respectively. FINE ABERRATION OF BRENTHIS SELENE.—Mr. Buckstone, a very remarkable *Brenthis selene* from Wanborough with almost all the usual markings absent on the upperside.—November 9th.—NEW MEMBERS.—Mr. H. E. Page, F.E.S., of New Cross, and Mr. W. S. Coxhead, of Clapton, were elected members. LEUCANIA PALLENS AND L. FAVICOLOR.—Mr. South, on behalf of the Rev. A. P. Waller, exhibited a series of a *Leucania* reared from ova laid by a ♀ *L. favicolor*, half of which are distinctly *L. pallens*, the rest agree with the parent or are intermediate, and numerous captured examples for comparison. FORCING OF PYRAMEIS CARDUI.—Mr. Newman, a long series of *Pyrameis cardui* bred from ova and fed up in a hot-house. The ♀ was captured at Folkestone on September 2nd, and the last imago appeared on October 16th. FORCING OF RUMICIA PHLÆAS.—Mr. Kaye, bred specimens of *Rumicia phlæas*, forced in a hot-house from ova. LOCAL DIPTERA.—Mr. Andrews, the local Diptera—*Syrphus vittiger*, *S. lineola*, and *Sciomyza simplex*—from North Kent. SECOND-BROOD OF PERONEA VARIEGANA.—Mr. Adkin, specimens of *Peronea variegana* taken in or reared from his own garden, including a second-brood example on October 6th. XYLINA SEMBRUNNEA IN THE NEW FOREST.—Mr. Tonge and Mr. Colthrup, series and specimens of *Xylina socia* (*petricata*) and *X. sembrunnea* for comparison. One specimen of the latter species was from the New Forest. SURREY RACES OF BRENTHIS SELENE.—Mr. Buckstone, series of *Brenthis selene* from Surrey, one small and dark from high ground, gravel overlying chalk taken mainly in July, the other large and light, on low, marshy ground, clay, taken mainly in June.

LANTERN SLIDES.—Mr. Tonge, lantern slides of imagines shortly after emergence of species of the genus *Egeria* (*Sesia*), and also of the ova. Mr. Dennis, lantern slides of the characteristic plants of a salt-marsh, both individuals, and massed in natural groups. Mr. J. P. Barrett, lantern slides of collecting grounds around Mt. Etna. Mr. Main, lantern slides showing details of the life-history and economy of a common millepede.

CITY OF LONDON ENTOMOLOGICAL SOCIETY.—*June 6th, 1911.*—*EPIONE APICIARIA.*—Mr. A. W. Mera exhibited larvæ of this species, and remarked on the prolonged period of hatching of the ova, which resulted in some being still unhatched, while these larvæ were almost fullfed. *EUPITHECIA EXTENSARIA.*—Mr. L. B. Prout, a living imago bred from Hunstanton larvæ.—*June 20th, 1911.*—*NOLA CONFUSALIS—MELANIC.*—Mr. H. B. Williams a series from Epping Forest, including one very dark example, and *SELENIA ILLUNARIA, AB.*—A specimen of almost unicolorous grey colour, with usual transverse lines only very faintly indicated.—*September 5th, 1911.*—*AGRIADES CORIDON, ABS.*—Mr. C. P. Pickett a series from Royston (Herts.), including var. *semisygrapha*, and two brown suffused undersides. *CELASTRINA ARGIOLUS, DWARFS.*—Two very small specimens of a third brood from Leytonstone.—*September 19th, 1911.*—*URAPTERYX SAMBUCARIA.*—Mr. C. P. Pickett two series, the one bred in heat and the other at ordinary temperature; the former were on the whole slightly larger. *TEPHROSIA CREPUSCULARIA.*—Mr. A. W. Mera a second brood series from New Forest and Swansea; those from the latter district were very dark. *EMMELESIA ALBULATA.*—Mr. F. B. Cross a bred series from Shetlands. *ENNOMOS AUTUMNARIA.*—Mr. A. J. Willsdon a single specimen taken wild at Ramsgate, September 11th, 1911, also long series from Dover and Chichester. *CATOCALA NUPTA, AB.*—Mr. B. S. Williams on behalf of Mr. Bloomfield, an example from Finchley with usual red ground colour of secondaries replaced by purplish brown. *AGRIADES CORIFON, ABS.*—Mr. T. H. L. Grosvenor a series from the North Downs, including males with broad-bordered primaries, male approaching ab. *fourleri*, another with orange on secondaries, and a female with right primary cream coloured and left secondary cream streaked with brown.—*October 3rd, 1911.*—*CALAMIA PHRAGMITIDIS, AB.*—Mr. G. Brooke exhibited a specimen from Wicken with a small striate black spot just below centre of costal streak. *MELANARGIA GALATHEA.*—Mr. C. P. Pickett, a series reared in a greenhouse from Folkestone larvæ; the most noteworthy specimens were—uppersides, ♂ with black markings much increased, ♂ with central area of primaries almost devoid of black; undersides, ♂ with black markings much reduced, two ♂s with black markings much enlarged and ground colour suffused with blue-black tinge. *PIERIS RAPÆ, THIRD BROOD.*—From Leytonstone, a spotless ♂, and ♀ with spots coalescent; on the underside the whole brood showed a yellowish ground colour thickly powdered with black scales. *RUMICIA PHLEAS, ABS.*—Mr. A. J. Willsdon, a number of specimens from Deal district, 1911, including two with copper marginal band on inferiors almost obsolete, one with left superior pale straw colour, and a very large specimen with abnormal development of blue spots on inferiors. *AGROTIS RIPÆ. EARLY PUPATION.*—Mr. F. B. Cross reported that larvæ taken nearly full-fed in August, had completed the change to pupæ during September. *LEPIDOPTERA AT LIGHT.*—Mr. J. E. Gardner

recorded having observed an extraordinary number of lepidoptera round the electric lamps in Amherst Park in July, sixty species being counted round one lamp.—*October 17th, 1911.*—*ABRAXAS GROSSULARIATA, ABS.*—Rev. C. R. N. Burrows exhibited a number of aberrant examples, mostly bred from larvæ collected at Macclesfield and Wallasey; these included a specimen of ab. *laticolor* (Raynor) with basal area of superiors suffused with black, also ab. *fulvaticata* (Raynor) and others with increase of black marking. *ZYGENIDÆ.*—Mr. E. A. Cockayne, a number of five and six spotted specimens of somewhat doubtful identity, from a colony found in a field in Berkshire which produced both forms in June, 1911. *PERONEA VARIEGANA.*—Mr. J. E. Gardner, a very variable series mostly collected in a garden at Clapton. *OEDEMATOPHORUS LITHODACTYLUS.*—Mr. G. H. Heath, a series from S. Wales showing colour variation parallel to that occurring in *Emmelina monodactyla*. *AMORPHA POPULI.*—Mr. L. W. Newman, a long series bred from selected Bexley parents ranging from pink flushed forms to pale cream coloured, and including two hermaphrodites, of which ten were bred from one thousand pupæ. *ANGERONA PRUNARIA*—EFFECT OF ENVIRONMENT.—Mr. C. P. Pickett, some half dozen series, mostly from the same brood, reared *ab ovo* under different coloured muslins; the series as shown displayed marked differences in coloration which the exhibitor attributed to the varying environment. *COENONYMPHA PAMPHILUS AB.*—Mr. J. Riches, a dingy brown specimen with pale patch in marginal area of inferiors, Lewes, August 1911. *COLIAS EDUSA, VARS.*—Mr. A. J. Willsdon, specimens from Plymouth and Torquay, 1900, including ♀ without usual yellow patches on black margin of superiors, and the lemon coloured form of var. *helice*. Mr. Willsdon recalled having captured a freshly emerged *C. hyale* early in June of the following year. *COLIAS HYALE.*—Mr. L. W. Newman reported that ♀s taken in September and kept for ova showed no inclination to lay and seemed disposed to hibernate. *PYRAMEIS CARDUI* AND *AGRIUS CONVULVULI.* *SHORT LARVAL PERIOD.*—Mr. Newman recorded that by feeding up larvæ in a hothouse he had secured the completion of this stage in three weeks for the former and twenty six days for the latter.

ENTOMOLOGICAL SOCIETY OF LONDON.—*October 4th, 1911.*—Mr. C. B. Williams, 20, Slatey Road, Birkenhead, was elected a Fellow of the Society. Votes of condolence were passed with the relatives of the late Mr. Verrall and of the late Mr. Albert Harrison who were Fellows, and of Mr. Scudder, who was an Honorary Fellow, all the Fellows standing. *ANTS FROM RANNOCH.*—Mr. Donisthorpe exhibited specimens (♂s and ♀s) of *Formica pratensis*, De. G. (*congeneris*, Nyl.), taken at Rannoch in June, also ♀s of *F. sanguinea* captured in the same region, a new locality for it; and ♀s and ♂s of a new race of *Formica rufa*, also from Rannoch. *BLACK MELANARGIA GALATHEA.*—Mr. Bethune-Baker exhibited a specimen of *Melanargia galathea* var. *lugens*, taken at Digne in July last. It is an entirely dark brown (almost black) form, with no white markings, though the ordinary markings are just traceable in a slightly lighter shade. *A REMARKABLE OXYTELUS.*—Mr. Norman H. Joy exhibited a remarkable specimen of *Oxytelus* taken at Tresco, Scilly Isles, April 1908. In many respects it is quite intermediate in character between *O. sculptus* and *O. laqueatus*, Marsh., and is probably a species new to science, but may

possibly be a hybrid of these two species. SPECIES OF LIODES.—He also showed *Liodes stenocoryphe*, Joy, ♂, taken by Mr. W. E. Sharp, at Forres, 1910, as well as its near allies for comparison, viz.:—*Liodes picea*, Ill., taken by Mr. Tomlin and Mr. Joy at Dalwhinnie, Inverness-shire, in September, when the larva was also found feeding on a small underground fungus, *L. dubia*, King, and its various varieties, and *L. algerica*, Rye, which is almost certainly only another variety of this species. PARTHENOGENESIS IN LASIUS NIGER.—Mr. W. C. Crawley exhibited a mixed colony of *Lasius umbratus* and *L. niger*. This colony consists of a ♀ *L. umbratus*, which was accepted in 1908 by a queenless colony of *L. niger*. During 1909 and 1910 only *niger* ♀s came to maturity in the nest; those, therefore, that hatched in 1910 must have been from parthenogenetic eggs laid by the *niger* ♂s. Over a dozen of these latter were dissected, and found to contain no *receptaculum seminis*. MELANIC LITHOSIA.—Mr. E. A. Cockayne exhibited a melanic specimen of *Lithosia deplana*, ♂, taken in Surrey last July. SICILIAN RHOPALOCERA.—Mr. J. Platt Barrett exhibited species of Sicilian butterflies taken this year in contrast with corresponding British species, *Euchloë cardamines* and *E. damone*, *Gonepteryx rhamni* and *G. cleopatra* *Hipparchia semele* and var. *algerica*. Small southern forms were also exhibited of *E. cardamines* and *Leptidia sinapis*. ALPINE LYCAENIDS.—Dr. Chapman exhibited living larvæ of *Albulina pheretes*, and a living imago of *Latorina orbitulus*, and said that his former suggestion that *Albulina (Lycaena) pheretes* had probably a larva without a honey gland was incorrect. The larvæ of *A. pheretes* possesses a honey gland and fans. TWO TORTICIDÆ NEW TO SCIENCE.—Mr. J. H. Durrant described and exhibited two new British species of *Rhyacionia*, Hb. (= *Retinia* Gd.; *Eretria*, Hb., Meyr.), viz., *Rhyacionia purdeyi*, sp. n., taken among Scots firs at Folkestone at the end of July, 1911, by Mr. W. Purdey, a very distinct species intermediate between *sylvestrana*, Crt., and *duplana* Hb.; and *R. loyaca*, sp. n., from Forres, Scotland (W. Salvage and H. McArthur), closely allied to *duplana*, Hb., and *posticana*, Ztst. COLIADS FROM BERKSHIRE.—Mr. J. H. Durrant also exhibited eighteen specimens of *Colias* taken by himself in a field of lucerne at Barcote, near Faringdon, Berks, from September 4th-10th, 1892. They comprised both *hyale* (2) and *edusa* (14) and two aberrations of the latter, one of a very light orange colour (ab. *helicina*) and the other a fine ab. *helice*. All the specimens of *C. edusa* were of a yellowish-orange tint. SYMPETRUM FONSCOLOMBII.—Mr. W. J. Lucas exhibited specimens of *Sympetrum fonscolombii*, taken at a pond in the south of the New Forest, August 4th, 7th, 8th, 25th and 29th, all but one being males. SEPARATION OF THE SEXES IN HYPOLIMNAS MISIPPUS.—Dr. F. A. Dixey read a letter received by him from Mr. E. A. Agar, of Dominica, West Indies, on the subject of the "Separation of the Sexes of *Hypolimnas misippus*," the writer remarking that in that island, although in similar localities, the ♀ remains on the coast while the ♂ is to be met with some distance inland. The former is scarcely ever to be seen in company with the ♂ of its own species, though it flies with *Danaïda pleippus*, of which it is a mimic. ALL-FEMALE BATCHES OF ACRAEA ENCEDON, L, BRED IN THE LAGOS DISTRICT.—Prof. Poulton also exhibited examples from three of the all-female broods obtained by Mr. W. A. Lamborn, these three sets being chosen because they prove that the unisexual batches are not necessarily associated with either of the

forms of *eucedon* in the locality. One brood was all *lycia*, another all *eucedon*, while the third was as nearly as possible half and half (23 to 24). THE PROOF BY BREEDING THAT *ACRAEA AURIVILLII*, STAUD., IS THE FEMALE OF *A. ALCIOPE*, HEW.—Prof. Poulton exhibited a series of eight *A. alciope* and five *A. aurivillii* bred in the present year by Dr. G. D. H. Carpenter from thirteen small larvæ found on a single leaf of the food-plant on Damba Island, in the Victoria Nyanza to the east of Entebbe. DEPREDACTIONS BY MINUTE ANTS.—The Rev. G. Wheeler exhibited some living ♂s of a small ant, identified by Mr. Donisthorpe as *Monomorium pharaonis*, imported from Madeira, and now settled in England, together with several butterflies whose bodies and heads had been devoured by them while in the setting box. He observed that these insects had all been killed in the cyanide bottle, whilst others in the same setting box which had been injected with oxalic acid were left untouched. INSECTS SEEKING HIGH GROUND.—The President said that about the beginning of July this year, he had noticed while collecting near El Guerrah, the junction for Constantine, Biskra and Alger, both sexes of the yellow and black *Leucospis gigas*, and of another red and black *Leucospis*, flying in great numbers, round a cairn of stones on the top of a hill, and suggested that the common instinct to seek high places might provide a meeting-ground for the sexes.—October 18th. —The following gentlemen were elected Fellows of the Society:—Mr. Sidney Howard Cotton, Mayfair; Captain J. J. Jacobs, R.E., Gibraltar; Mr. Kunni Khunan, M.A., Bangalore, South India; Dr. Ivad Clarkson Maclean, M.D., B.Sc., M.R.C.S., L.R.C.P., Knightsbridge, S.W.; and Mr. Frank Taylor, Sydney, New South Wales. PAPILO (TACHYRIS) MELANIA, FABR.—Dr. F. A. Dixey exhibited a pair of each of the following species—*Tachyris melania*, Fabr., *T. celestina* and *Catophaga ega*, Boisd., and remarked that Fabricius's type is still preserved in the Banksian Cabinet, and that Mr. G. A. Waterhouse has now sent home specimens which are undoubtedly of the species described by Fabricius and represented by Donovan. It is not a *Catophaga* allied to *ega* or *paulina*, but a *Tachyris* belonging to the group which contains *T. celestina* and *T. nero*. LARVA OF COLIAS NASTES. VAR. WERDANDI.—Mr. W. G. Sheldon exhibited a living larva of *Colias nastes* var. *werdandi*, which he had bred from an ovum deposited by a ♀ captured at Abisko, in Swedish Lapland: the natural foodplant is *Astragalus alpinus*, L., but in captivity the larva fed upon white clover. SOUTHERN NEUROPTERA.—Mr. W. J. Lucas exhibited two specimens of *Nemoptera bipennis*, Illig. (*lusitanica*, Leach), taken by Mr. A. H. Jones, one in the cork woods at Almorima, Spain, on May 5th, 1911, and the other at Linea, Gibraltar, on the 28th. Also a specimen of *Lertha barbara*, Klug, taken by Mr. H. Powell at Affou, Oran, Algeria, on June 30th, 1911. SIREX NOCTILIO.—Mr. W. J. Lucas also exhibited a large specimen of *Sirex noctilio*, taken by himself at Leith Hill, Surrey, walking on the road, on September 8th, 1911. A COLEOPTERON NEW TO BRITAIN.—Mr. H. St. J. Donisthorpe exhibited a species of Coleoptera new to Britain, *Lesteva luctuosa*, Fauvel, which he had taken in moss in a waterfall on the high ground in the Isle of Eigg, near Mull, on September 17th, 1911. BRED ERASTRIA VENUSTULA.—Mr. H. M. Edelsten showed some bred specimens of *Erastria venustula*: the larvæ had fed readily on flowers of *Potentilla tormentilla*, and on garden forms of *Potentilla*, strawberry, and bramble

blossoms, and later, on lettuce leaves, which they seemed to prefer. They pupated below the surface of the ground in a strong cocoon. A MALE "STICK-INSECT."—Mr. K. G. Blair exhibited a ♂ and two ♀s of a "stick-insect" (? *Louchodes* sp.), which is usually parthenogenetic. Mr. C. O. Waterhouse said he had bred three generations of this Phasmid, and had had many hundreds of specimens, and he congratulated Mr. Blair on having the only ♂ he had ever seen or heard of. DELIAS FROM NEW GUINEA MOUNTAINS.—Dr. K. Jordan exhibited 46 forms of *Delias* from the mountain ranges of New Guinea. In suitable localities of the Owen Stanley Range no less than 24 of these have been obtained, of which 18 are confined to the higher altitudes. BRAZILIAN SPHINGIDS.—The Rev. A. Miles Moss exhibited the following Sphingids from Pará—*Amphimoeca walkeri*, *Isognathus excelsior*, *Grammodia caicus*, with pupa spun up in a leaf, *Hemeroplanes innuus*, *Epistor gorgon*, ♂ and ♀, *Phobus phorbis*, *Xylophanes nechus*, with chrysalis, and *X. cosmius*, ♀, the first known specimen of this sex. NEW ENTOMOLOGICAL POST.—The President mentioned that the University of Cambridge had decided to appoint a Demonstrator in Medical Entomology.

LANCASHIRE AND CHESHIRE ENTOMOLOGICAL SOCIETY.—The opening meeting of the session was held at the Royal Institution, Colquhoun Street, Liverpool, on Monday, October 16th, 1911, Dr. P. F. Turner, vice-president in the chair. This being the exhibitional meeting of the Society, the exhibits were the feature of the evening. Mr. B. H. Crabtree brought a fine bred series of *Boarmia repandata* from Cornwall and Delamere, a very fine and varied series of *Ennomos autumnaria* bred from Southend ova, *Agrotis ashworthii* and *A. lucernea* from Penmaenmawr, *Hadena dissimilis* (*suasa*) from S. Manchester larvæ, *Aplecta nebulosa* and var. *robsoni* from Delamere larvæ, *Argynnis selene* and *Cocconympha typhon* from Haverthwaite mosses and *Erebia epiphron*, *Nemeophila plantaginis* and var. *hospita* from the Westmoreland mountains. Mr. R. Tait, junr., shewed a long series of *Abraças grossulariata* from a garden in Huddersfield shewing an exceptional range of variation, *B. repandata* including var. *conversaria*, Penmaenmawr var. etc., *Drepana falcataria*, *Diacrisia sannio* (*russula*), *Acidalia strigilaria*, *Minoa murinata*, *Geometra papilionaria*, *Lithosia mesomella*, *Aplecta tineta* from Wyre Forest, June, 1911, bred typical form of *Amphidasis betularia* from Pendine, S. Wales, 1911, *A. adrena* and *B. roboraria* from Monkswood, June, 1911. Dr. P. F. Tinne's exhibit consisted of a nice series of variations of *Rumiccia phlaeas* collected on the coast of Donegal during August, 1911. These included ab. *argentea* and specimens shewing extreme forms with light and heavy black markings. Mr. W. Mansbridge had a long series of *Selenia bilunaria* shewing dense fuscous irroration, from a Delamere ♀, also a new form ab. *brunnearia* from the same locality; a long series of *Aplecta nebulosa* and vars. from *robsoni* parents. The results were contrary to usual experience with this parentage, the progeny being as follows:—49 per cent. *robsoni*, 6 per cent. *thompsoni*, and 45 per cent. grey forms with typical markings, the last being remarkable as shewing a full range of variation *inter se*, from the palest Delamere variety to the darkest, nearly all, however, possessing the typical markings. He also showed a series of *Abraças grossulariata* from Huddersfield, which included the usual well-known West Riding variations. Mr. A. W.

Boyd exhibited a box of micro-lepidoptera collected in Lancashire and Cheshire during the past season. Mr. F. N. Pierce a box of Huntingdonshire Lepidoptera.

REVIEWS AND NOTICES OF BOOKS.

THE MACROLEPIDOPTERA OF THE WORLD, VOL. I., THE PALÆARCTIC BUTTERFLIES, 89 COLOURED PLATES (3,470 FIGURES). By Dr. Adalbert Seitz, Stuttgart. Price £3 (Messrs. Kernen, Stuttgart, Germany.—The first volume of Dr. Adelbert Seitz's work, *The Macro-lepidoptera of the World*, has just been completed. This volume embraces the Palæarctic butterflies, which are figured on 89 plates. As it is the plates which are the outstanding feature of the work, we will speak of them first. In the great majority the figures are remarkably good, and there are very few bad or misleading representations. We do not like *bellaragus* or *coridon* on pl. 81. The figure on the same plate of *apennina*, would, however, serve admirably for the vast majority of British *coridon*. The metallic lustre of many Lycaenids, but particularly of *brillantina* and *tarila*, on pl. 73, is wonderfully produced. One wonders why a similar lustre was not attempted for the "coppers" on pl. 76. The pair of *C. dispar* on the latter plate are very undersized, and the *rutilus* ♀ even exceeds the *dispar* ♀. It appears evident that the plates have not all been executed by the same firm, for the paper is of different thicknesses and quality, and some plates are vastly superior in the execution of the figures to others. Plates 29, 30 and 31 of the genus *Lethe* are beautiful examples of reproduction, and the paper is of a suitable thickness for a large-sized plate. Plates 20 and 62, the former of "whites," the latter of species of *Vanessa*, are certainly poor by comparison, and are on very much thinner paper, with hardly any stiffening. The species of the genus *Colias*, on plates 26 and 27, lack the tone that the living insects possess, while the very next plate of *Danais* and *Euploea* is a wonderfully true likeness of the insects it illustrates. Students of the Palæarctic butterflies must rejoice to have all the species and a very large percentage of the known forms illustrated, and well illustrated, within the covers of a single volume. It is the first time it has ever been done on such a scale, and although it has taken five years to accomplish (1906-11), we can truly say this collection of plates has been well worth waiting for. There is a small matter before we leave the plates that calls for notice. It is that many of these are inserted before they are properly dry and with the consequence that they stick to the paper they come in contact with. Frequently, this entails the adhesion of pieces of paper to the figures. This can be remedied by moistening such places and gently rubbing with a pointed piece of stick, but it entails time and labour unnecessarily spent. With the first two or three parts tissue paper was inserted against the plates, but this has long been discontinued, with the results given above. With such a splendid set of plates it is to be regretted that the accompanying letterpress is so superficial. It is a great mistake to suppose that anyone without a special knowledge can name specimens of any but the best defined species from a figure and two lines of description. If one is a specialist or already has a fair knowledge of one's insects, the present work must be of considerable utility in naming a given insect.

Various collaborators have undertaken the work in the different families and genera, and we get practically a short digest of the results arrived at, which in the case of the more recently thoroughly worked out groups is of very great use and interest. For a work of this class we do think the families should have been better defined. Here is the characterisation of the *Nymphalidae*: "The butterflies have the forelegs in both sexes atrophied." There is a lot of other useful information vouchsafed, chiefly as regards the habits of the family, but it does not help the man who wants to know if his butterfly is a *Nymphalid*. The treatment of the different groups is of varying value. The genera *Paruassius* and *Neptis* by Stichel, and the genus *Erebia* by Eiffinger, are all very carefully done, and should be of considerable value to those who study these difficult groups. The separation of many of the skippers, or *Grypcera* as they are here called, is not nearly complete enough. In the present state of our knowledge the *Grypcera* are perhaps the most difficult of all to name, yet we have but 24 pages of printed matter for the well over 200 forms discussed. We admit that Mons. P. Mabille had one of the most difficult sections to deal with, but we expect that in the rush to get the volume completed he was unduly hurried. At the conclusion of each family there is an alphabetical list of all the species treated, with the reference to the original description. A full index of genera, species, forms and synonyms, completes this most commendable book. A word must be said about the Introduction. In Part 13 there appeared the first eight pages, but none has since appeared to complete it, and now on a sheet of "advice" to the bookbinder we are told that the one sheet (= 8 pages) of the Introduction is not to be bound in this I. volume. As this Part 13 is numbered on the title page "I.," it is necessary that this matter should receive general notice. In conclusion, one must mention the name of Dr. Jordan, the man who is responsible for the translation of the original German into English. Let us say at once that this is highly commendable, with far fewer slips than is usual in a translation of these dimensions. On p. 283 under *P. dispar*, there is, however, a foreign tone about the English in—20 shilling—£139, *i.e.*, nearly 90 shillings the specimens; but this is about the only case that has come under the writer's notice. We offer our congratulations to Dr. Seitz and his numerous helpers, and hope that we shall not have to wait so long for the other volumes to be completed.—W. J. K.

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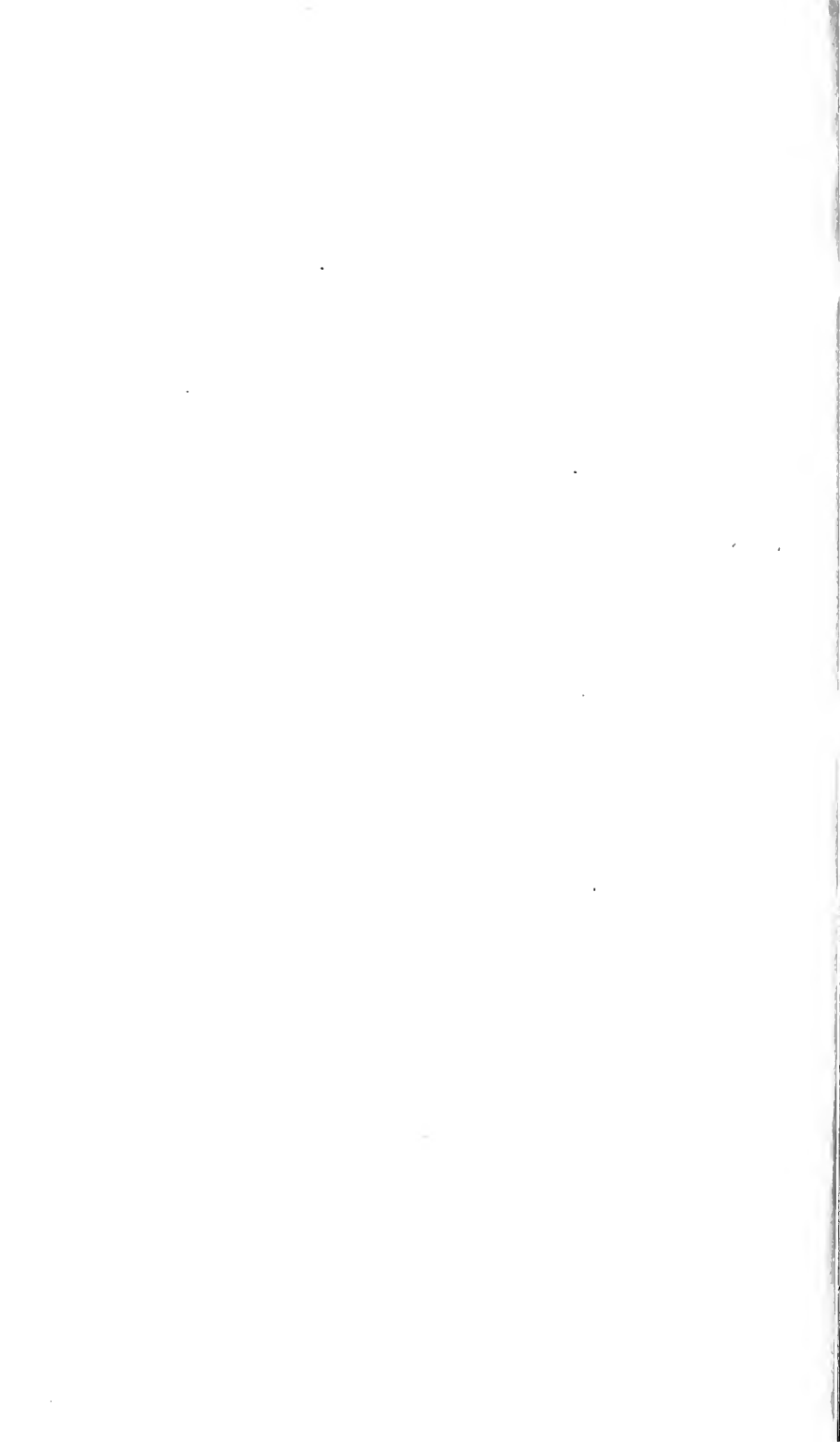
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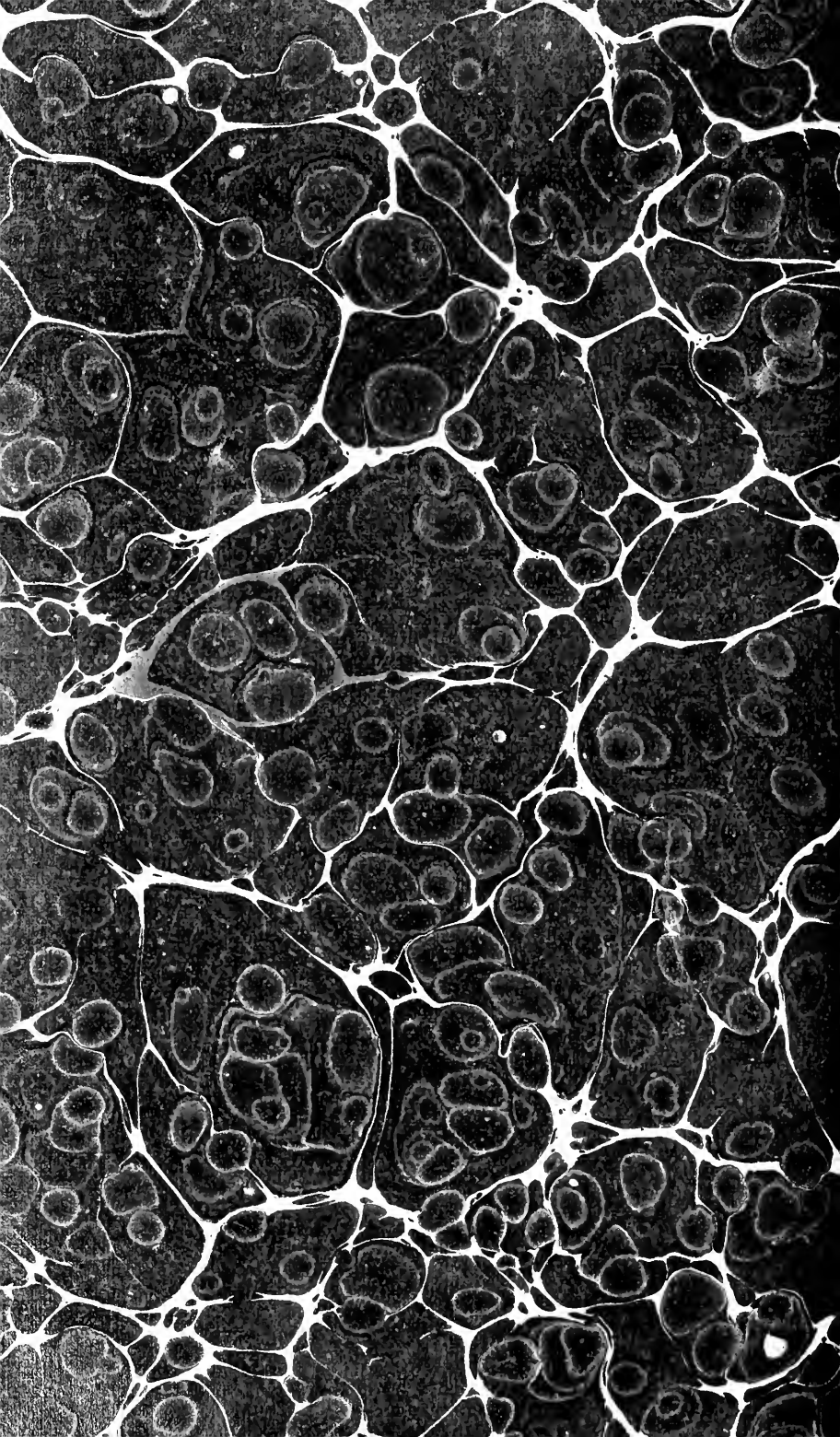
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