

ENT
2853

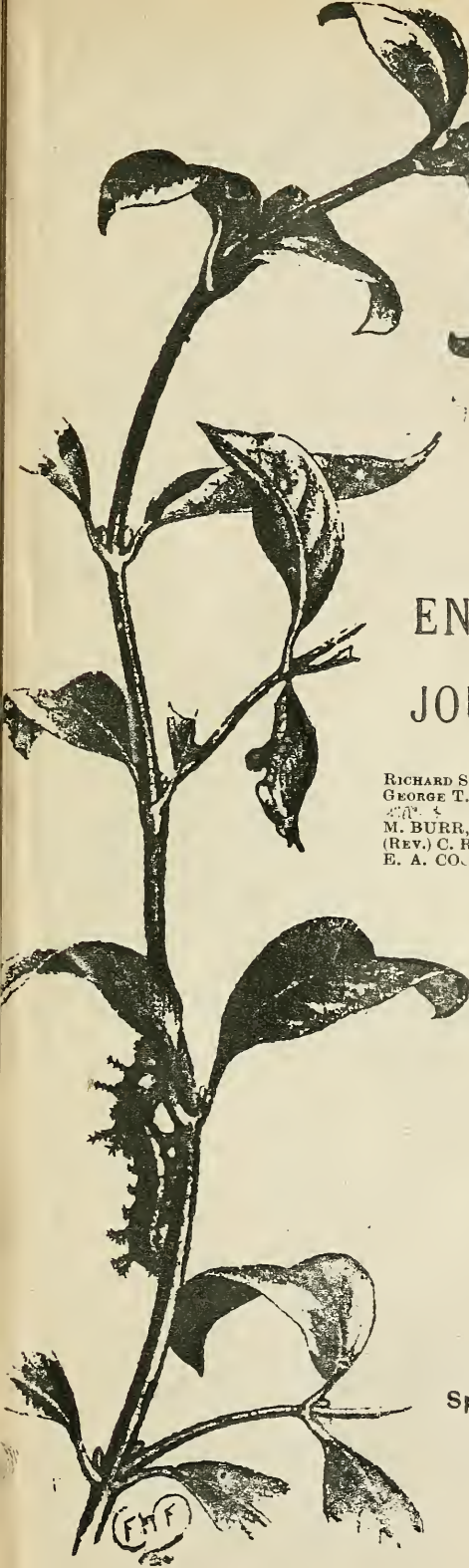
HARVARD UNIVERSITY
LIBRARY
OF THE
MUSEUM OF COMPARATIVE ZOOLOGY



FROM THE
WILLARD PEELE HUNNEWELL
(CLASS OF 1904)
MEMORIAL FUND
13,820

The income of this fund is used for the purchase of entomological books

February 6, 1924 - February 13, 1925.



THE
ENTOMOLOGIST'S RECORD
AND
JOURNAL OF VARIATION

EDITED BY

RICHARD S. BAGNALL, F.L.S., F.E.S.
GEORGE T. BETHUNE-BAKER,
F.L.S., F.Z.S., F.E.S.
M. BURR, D.S.C., F.L.S., F.Z.S., F.E.S.
(REV.) C. R. N. BURROWS, F.E.S.
E. A. CO. KAYNE, M.D., F.E.S.

JAS. E. COLLIN, F.E.S.
H. ST. J. K. DONISTHORPE,
F.Z.S., F.E.S.
JOHN HARTLEY DURRANT, F.E.S.
ALFRED SICH, F.E.S.

(REV.) GEORGE WHEELER, M.A., F.E.S.,
and
HENRY J. TURNER, F.E.S.,
Editorial Secretary.

VOL. XXXVI.

JANUARY TO DECEMBER, 1924.

PRICE 12s. 6d.

Special Index (with every reference), 1s. 6d.

EHF

THE
SOCIETY OF
MUSICIANS

Subscriptions for 1924 are now due.

Vol. XXXVI.

13,820

FEB 6 1924

No. 1.

The Entomologist's Record AND Journal of Variation

EDITED BY

RICHARD S. BAGNALL, F.L.S., F.E.S.

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

M. BURR, D.Sc., F.L.S., F.Z.S., F.E.S.

(REV.) C. R. N. BURROWS, F.E.S.

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

JAS. E. COLLIN, F.E.S.

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

JOHN HARTLEY DURRANT, F.E.S.

ALFRED SICH, F.E.S.

(REV.) GEORGE WHEELER, M.A., F.E.S.

and

HENRY J. TURNER, F.E.S.,

Editorial Secretary.

CONTENTS.

	PAGE.
Hippodamia variegata, Goeze, <i>G. B. C. Leman, F.E.S.</i>	1
Switzerland in 1923, <i>D. H. Pearson, F.E.S.</i>	2
Entomological Notes for the Season 1923, <i>Command. G. C. Woodward, R.N.</i>	4
The Rainham "Hybrids," <i>E. A. Cockayne, M.A., M.D., F.E.S.</i>	6
SCIENTIFIC NOTES AND OBSERVATIONS:— <i>Brenthis euphrosyne, ab. plumbea, ab. nov., E. A. Cockayne, M.D.</i> ; <i>Lycænid larvae and Ants, Hy.J.T.</i> ; "Hermaphroditism" in the <i>Hesperiidae, Hy.J.T.</i>	8
NOTES ON COLLECTING:— <i>Lady-birds hibernating in the house, Florence J. Kirk</i> ; <i>Syntarus telicanus in Switzerland, G. T. Bethune-Baker, F.L.S., F.E.S.</i> ; <i>O. R. Goodman, F.E.S., F.Z.S.</i> ; <i>Hy.J.T.</i> ; <i>G.W.</i> ; <i>A Homeric Contest, G. C. Leman, F.E.S.</i>	9
CURRENT NOTES	
SOCIETIES:— <i>The Entomological Society of London</i> ; <i>The South London Entomological Society</i>	11
REVIEWS AND NOTICES OF BOOKS:— <i>Hy.J.T.</i> ; <i>E.A.B.</i> ; <i>H.E.P.</i>	13
List of Races of the Rhopalocera of Peninsular Italy, <i>Roger Verity, M.D. and Orazio Querci.</i>	14
Title-page for 1923.	(21)–(24)
SPECIAL INDEX, 1923.	

JANUARY 15th, 1924.

Price TWO SHILLINGS (NET).
WITH SPECIAL INDEX.

Subscription for Complete Volume, post free
(Including all DOUBLE NUMBERS, etc.)

TEN SHILLINGS.

TO BE FORWARDED TO

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

"BERTROSE," GELLATLY ROAD, NEW CROSS, S.E.14.

Communications have been received or have been promised from Messrs. H. Donisthorpe, Dr. Verity, J. H. Durrant, G. T. Bethune-Baker, Rev. C. R. N. Burrows, Wm. Fasnidge, H. B. Williams, Orazio Querci, H. J. Turner, Commander G. C. Woodward, R.N., E. A. Cockayne, M.D., F.E.S.; Karl Höfer; R. S. Bagnall, F.R.S.E., F.L.S., F.E.S., J. W. H. Harrison, D.Sc., F.R.S.E., O. R. Goodman, F.Z.S., F.E.S., Lieut. E. B. Ashby, F.E.S., with Reports of Societies and Reviews.

WATKINS & DONCASTER

(ESTABLISHED 1879)

36, Strand, London, W.C.2.

Telephone: GERRARD 9451.

:: **Manufacturers and Suppliers of** ::
Natural History Requisites of all Kinds.

Cabinets. Best quality and finish. All sizes at lowest prices on view at above address.

Lepidoptera. Large stocks kept of British Palæarctic and Exotic Species. Lists on application.

Bird's Eggs. Large selection of British and European Eggs, singles and in sets with data, always on hand.

Books. A varied and extensive stock on Entomology and all Branches of Natural History.

GENERAL CATALOGUE SENT POST FREE.

ENTOMOLOGICAL NEWS.

An illustrated magazine, published monthly—except August and September—devoted to the study of **INSECT LIFE**. It contains a list of the titles of the current Literature on American Entomology, articles by the leading authorities in the United States and Canada, and is a necessary journal of reference for working entomologists. Valuable information for economic and systematic students.

Annual subscription price \$2.50. Foreign (except Canadian) subscriptions \$2.70. Single copies 30 cents. Address

ENTOMOLOGICAL NEWS, 1900 Race Street, Philadelphia, Pa.

Bexley] L. W. NEWMAN [Kent

Has for sale a superb stock of 1920 specimens in fine condition, including *Varleyata*; *Bicuspis*; *Pendularia* var. *Subroseata*; Melanic forms *Lariciata*, *Consortaria*, *Consonaria*, *Abietaria*; Irish forms *Aurinia* and *Napi*, fine vars. *Tiliae*, *Yellow Dominula*, etc., etc. Quotations and Insects sent on approval with pleasure.

Also a huge stock of fine PUPÆ and OVA.

Write for latest price lists.

Relaxing Tins are now 4/- small and 6/- large, pos free **Re-fills, 2/3** small, 3/3 large, post free.

The Entomologist's Record

AND

JOURNAL OF VARIATION.

VOL. XXXVI. No. 1.

JANUARY 15TH, 1924.

Hippodamia variegata, Goeze.

By G. B. C. LEMAN, F.E.S.

1. ab. *arcuata*, n.ab.

I regret to find that through an oversight this new aberration was omitted from my paper in *Ent. Rec.* XXXV., p. 11, though in fact I did refer to it under my ab. *subarcuata* in such paper.

This aberration differs from ab. *turkmenica*, Zoubk., in having spots 4 + 5 + 6 in the form of a "C," teste Weise B.-T., 1885.

Its formula is: 1, 2, 3, 4 + 5 + 6 ("C" - form), $\frac{1}{2}$.

2. ab. *triangularis*, nov. nom.

Mr. H. St. J. K. Donisthorpe has drawn my attention to the fact that my ab. *maculigera* in *Ent. Rec.* XXXIV., no. 2, p. 1, 1 (2) is preoccupied by Weise's ab. *maculigera* (= ab. *turkmenica*, Zoubk.), 1879.

I therefore propose to give my aberration the above new name.

Switzerland in 1923.

By D. H. PEARSON, F.E.S.

Someone has said that we ought to record our failures as well as our successes, and it may therefore be well to record a visit to Eclépens and Yverdon this year for the "Emperors" and *Limentis populi*.

My brother and I left London on June 28th, and arrived at Yverdon on the morning of the 29th, as this was said to be a convenient centre from which to work, Yvonand for *L. populi* and Eclépens for the "Emperors."

We worked both, and when on July 4th we shook the dust of Yverdon from our feet, we had not even seen either an "Emperor" or *L. populi*, and very little else, which was probably due to the very late season. We tried both the upper and lower road to Yvonand, but on one day achieved the distinction of not bringing home a single butterfly, and on another three or four rather nice *Pararge aegeria*, but we did manage to take a pair of *Trochilium apiformis* on a poplar trunk. At Eclépens we tried the upper road, the road near the brickfield, and over the tunnel, but saw never a sign of the desired Apaturids, and again very little else. In articles on Eclépens the "marsh" is often referred to, and we took this to be the flat ground on the right of the station as one arrives from Yverdon, but we found the first part a hay-field, and further on rough ground, but no marsh, and the only butter-

flies a few *Melitaea dictynna*. On another day we tried the ground beyond the tunnel, where peat is being dug, but found nothing. A few *Lycaena alcon* were found in the wood above the tunnel, and some *Melitaea parthenie*, but the latter very badly worn, though a few *M. athalia* flying with them were quite fresh. We took odd specimens of both *L. sibilla* and *L. rivularis* (*camilla*) at Eclépens. On July 4th we took train to Brigue and drove up to Bérisal, where better luck awaited us. I had never taken *Plebeius sephyrus* race *lycidas*, and on the afternoon of the 5th we walked down to the second Refuge and managed to net a few both ♂ and ♀ in good condition, though some were too much worn to be worth keeping and were released. The species seems to emerge over a considerable period, and during the next few days we took a nice little series, most of them being taken on the road between the Refuge and the Ganter Bridge. Flying with them were a number of *Polyommatus escheri* and *P. hylas*, and we took a few large *Erynnis lavaterae* in good condition. *Paruassius mnemosyne* was plentiful in the field at the back of the hotel, but most of them had gone from their best.

The road above Bérisal was not very productive, but on the 6th we took a motor diligence up to Simplon Kulm, had a fine day among the alpins and a walk down in the afternoon. As a result of three visits to the Kulm we took a nice series of *Melitaea aurinia* race *merope*, brightly coloured, *M. varia*, three or four *M. cynthia*, *Erebia lappona*, *Plebeius* (*Latorina*) *orbitulus*, and *Polyommatus* (*Agriades*) *coridon*, which we also took in the Laquinthal, an unexpected capture, as there does not appear to be any limestone in the district. Our second visit to the Kulm was marred by a heavy storm of rain and hail. On July 11th we took the motor to Simplon Dorf, and stayed until the 23rd at the Hotel Fletschorn, and found the landlord most obliging and attentive. Here we had the pleasure of staying with Mr. and Mrs. Warren, who were making a most vigorous attack upon *Erebia christi* (and who very kindly gave us the benefit of their experience), but had come to the conclusion that it was for this season at least very scarce. On July 12th we took two *E. christi*, but only managed to take a total of six during our stay, though we worked fairly well for them. One ♀ was taken about half-way from the entrance of the Laquinthal to the usual ground, but we could not find them further up the valley near the Chalets. *Erebia ceto*, both var. *obscura* and well marked ordinary forms, and *E. mnestra*, were abundant, with a sprinkling of *E. epiphron* and *E. melampus*, and a large number of these were netted and examined to make sure they were not *E. christi*, which, when flying with them were difficult to spot. *Erebia goante* ♂s were in fine condition in the Laquinthal, and we took some nice ♀s on the Gondo road. A few nice *L. arion*, both var. *obscura* and the normal form, were taken, with one or two very dwarf specimens. We also took a few of the large var. *alsoides* of *Cupido minimus*. *Coenonympha arcania* var. *darwiniana* was plentiful, and we took a nice and varied series, some being very close to forms of race *satyrion*. Seitz gives both *satyrion* and *darwiniana* as vars. of *arcania*. One specimen has two spots under the eye-spot on the underside of forewing, and one male is partly bleached on upperside. A nice little series of *Hesperia carlinae* was taken in the lower part of the Laquinthal, and some very bright *Pyrgus sao*. A few males of *Heodes virgaureae* were netted, but we failed to

find a single ♀ either at Simplon or Bérisal, which was disappointing, as my series is a short one.

Mr. Wheeler kindly gave me some most valuable information as to working the district, and he said "if you like to walk down to Iselle and back," etc. Well, we didn't, far from it, the ten miles steeply up hill at the end of a ten miles walk down, not seeming to agree with "anno domini," but we had four most delightful trips down to Gondo or Iselle, took some interesting insects, and found the motor diligence an excellent method of making the return journey. On the Swiss side of Gondo we took two *Lampides boeticus* and one *Syntarucus telicannus*, the latter badly worn, but interesting as being the first time we had met with the species. They were caught near a large red pea, which was probably the food-plant, as we took *L. boeticus* near the same pea at Luchon, in the Pyrenees. Close to Iselle station and upwards nearly to Gondo, but not above, we took some fine large *Scolitantides orion* which were very welcome, and we also took some bright male *Heodes (Loewii) alciphron* race *gordius*, but nothing very striking among the ♀s.

We picked up a few useful "Burnets" during the trip. On the Simplon Kulm a densely scaled form of *Zygaena œculans* was taken, quite a different looking insect from those taken at Lauteret. Near Gondo two very bright *Z. carniolica*, without the usual light border to the spots, and some very large *Z. lonicerae*. Below Gondo a number of *Syntomis phegea* were flying, and three or four were taken. It was only on reaching home that among them a specimen of *Z. ephialtes* var. *coronillae* was discovered, which was annoying, as doubtless more were to be had. *Z. purpuralis* was common, and both *Z. transalpina* and *Z. filipendulae* were taken, but I must confess that I am unable to separate these two species. In Vol. 32, p. 29 of the *Ent. Record*, Dr. Verity writes: "An unmistakable character which distinguishes all the subspecies of *filipendulae* from all those of *transalpina*, no matter how similar to each other they may be in certain regions, is the position of the hind row of red spots of the forewing as compared to the corresponding spots of the fore-row; the former in *transalpina* are always situated more outwardly, and a line drawn parallel to the direction of the body through these spots does not pass through the spot which stands in front of it, as it does in *filipendulae* and in its subspecies *stoehadis*. No author seems to have noticed this character, which is the only really constant and reliable one, to my knowledge."

The above is more or less correct, as in a row of *filipendulae* the bulk of them agree with this description, but I have Sussex specimens which have spots exactly as in *transalpina*, and the distinction therefore fails, unless we are to conclude that *transalpina* occurs in Sussex.

Mr. Warren kindly handed me his notes on *Erebia christi*, as follows:—"None seen on July 7th or 8th, although perfect days. Three ♂s in finest condition taken on the 9th, and a few every day up to the 13th, those taken on the 12th and 13th being worn. One ♀ on the 15th and one on the 17th. No ♂ seen after the 13th at 4800 to 4900 feet, but one on the 18th at 5600 feet, on left side of valley, south-west of Altstafel. One was taken on July 14th in the Gondo gorge, a new locality, so far as I know."

On the morning of July 23rd we took a few *Erebia pronœ* race *pitho*, on the Simplon Road, near the entrance of the Laquintbal, and this brought our holiday to a conclusion, for we packed in the after-

noon, caught the 8 p.m. at Brigue, and travelled straight through to Nottingham. Owing to the late season the first part of the trip was a failure, but it would never do to take all one wanted on one holiday, or there would be nothing to look forward to for the next, and half our pleasures are in anticipation.

Entomological Notes for the Season 1923.

By Commander GEORGE C. WOODWARD, R.N.

I found the season 1923, with the exception of some cold weather during June, on the whole, good. One curious fact I noticed was, that evidently on account of the cold weather a good many of the earlier species were on the wing much later than usual.

At the beginning of the season, on March 27th, I paid a visit to Oxshott Heath, where I found *Brephos parthenias* common, flying at a height around the birch trees in the sunshine, but they seemed to come down readily enough to sallow bushes in bloom. A pair of *Saturnia pavonia* emerged in my breeding cage; this early date evidently being due to the fact that the cage was kept in an unheated greenhouse. They emerged from the pupae about 12.30 p.m., and paired at 5.0 p.m. The female laid three batches of eggs during the night, commencing about 8 p.m. The first batch of eggs was laid on the woodwork of the cage, and not on the twigs supplied for that purpose. They remained paired for about one hour. *Cucullia verbasci* emerged about two days earlier.

On March 28th another pair of *S. pavonia* emerged at almost the same time and also paired about the same time and the ♀ laid during the night. This female also laid her ova on the woodwork of the cage and not on the twigs, I think because the part of the cage where they laid their eggs was more in the shade; each laid about 150 eggs in the first night. The first batch hatched out on May 3rd, and started feeding readily on bramble.

By April 2nd *B. parthenias* appeared to be pretty well over, only one or two stray specimens being observed.

On April 6th I observed *Lycaenopsis (Celastrina) argiolus* at Surbiton.

On May 1st I again visited Oxshott, and found *Ematurga atomaria* very common, mostly males; also one specimen of *Eupithecia nanata*.

May 2nd, at Oxshott, I found one *S. pavonia* at rest on rough grass, *Pieris rapae* just out; *Gonepteryx rhamni*, *Tephrosia punctularia*, and *L. argiolus*.

On May 3rd, at Surbiton, *L. argiolus* was quite common in the garden and with *P. rapae* continued so on the next few succeeding days.

On May 7th, at Oxshott, *Pieris napi* was common, and *Euchloë cardamines*, both sexes, *Hesperia malvae* just beginning to emerge, *Euclidia mi*, *Tephrosia crepuscularia*, *Ephyra pendularia*, *T. punctularia*, and *S. pavonia* ♂, were noted.

On May 24th, I went down to Bramshott, just over the Hants border, a fine bright day, with a few clouds above, and found *E. cardamines* common, *Brenthis euphrosyne* common, *Pararge megera*, *Heodes phlaeas* common, *Hesperia malvae*, *Nisoniades tages* common, *Diacrisia*

men dica, *Phlogophora meticulosa*, *Xanthorhoë sociata*, and *Venilia maculata* common.

On May 25th I again visited Oxshott, Surrey, and observed *E. cardamines*, *H. phlaeas*, *Coenonympha pamphilus*, *H. malvae* well out, *E. mi*, *Hemaris fuciformis*, *X. sociata*, and *X. fluctuata*.

At the end of May I went to stay for about a fortnight in Shropshire, close to Cleobury Mortimer, the weather all this time was horribly cold for the time of year, especially at night, so it was only when the sun was out in sufficient strength that there was much doing.

On May 30th, *E. cardamines*, *Lampropteryx suffumata*, *Perizoma albulata*, *X. sociata*, *X. fluctuata*, and *Opisthograptis luteolata* were seen.

May 31st was very cold and the only insect seen was one specimen of *L. suffumata*.

June 1st was cold with a north-east wind; there were observed *Gonodontis bidentata*, *P. albulata*, *O. luteolata*, *X. fluctuata*, and *Lygris prunata*.

On June 2nd the same north-east wind was prevailing, to the detriment of things entomological, but we had some sunshine during the afternoon, when *H. malvae*, *N. tages*, and *B. euphrosyne* were fairly common on some rough ground on the outskirts of a wood; also I saw *Phragmatobia fuliginosa*, *Phytometra viridaria*, *X. rivata*, *E. nanata*, *P. albulata*, *Lozogramma petrarvia*, and *Anticlea badiata* very worn.

June 3rd was warmer, the wind having gone round to the west. The sun was shining in the morning, but it clouded over later on. I saw the same insects as before mentioned, with the addition of *Hemaris tityus*, *Heliaea tenebrata*, and *Eustroma silaceata*. I tried sugar in the evening, but found it perfectly useless, about 50 trees producing one *Xylophasia rurea*.

June 6th, most of the forego and *Ortholitha plumbaria*, *Eulype hastata*, and *Mamestra nana (dentina)*. I again tried sugar with about the same results as the previous night, one *S. libatrix* very worn, one *A. fluctuata*, and *Cidaria corylata*.

June 7th was much warmer with a south-west wind, but the sun hardly showed itself. The usual species mentioned were seen when the sun did appear, and I also found a large number of pupae of *Abraxas grossulariata* under the porch of the local post office. The evening produced *Eupithecia castigata*, *Ochyria designata*, *Mesoleuca ocellata*, *L. suffumata*, and *Perizoma flavofasciata (decolorata)*.

The next three days produced nothing new except *X. montanata*, *E. vulgata*, *X. rivata*, and one specimen of *M. genistae* at sugar.

By June 20th I was again down south, and visited Oxshott on the 20th, 21st, and 22nd. The weather was now warmer. I found there *B. piniaria*, not nearly so common as most years, all ♂s, *S. liturata*, *Cabera pusaria*, *H. phlaeas*, *H. malvae* going over, *E. mi*, *E. hastata*, *Euchoeca oblitterata*, *Diacrisia lutea (lubricipeda)*, *Noctua primulae*, *Miana jasciuncula*, *X. rurea* and var. *alopecurus*, *Iodis lactearia*, *Ephyra annulata*, *Timandra amata*, *Amoeba viridaria*, *C. bilineata*, *L. petrarvia*, and *Hepialus hectus* ♀.

On June 23rd I went down to Shoreham, in Kent, and here I found *C. pamphilus* very common, *Epinephele jurtina* just emerging, *H. phlaeas*, *Polyommatus icarus*, *Callophrys rubi*, *Cupido minimus* ♀, *Niso-*

niades tages, *H. malvae*, *Augiades sylvanus* just out, *Hipocrita jacobaeae*, *A. amata*, and *Anaitis plagiata*.

On June 25th, at Oxshott, Surrey. Weather again cold. *X. rurea* var. *alopecurus*, *Noctua brunnea*, *A. viridaria*, *X. montanata*, *Cabera exanthemata*, and *C. pusaria*.

In July conditions were better and we had some really hot days. During the first week, at Oxshott, I observed the following species:—*L. amata* common, *X. rurea*, *A. viridaria*, *L. impura*, *M. margaritaria*, *H. hectus* positively swarming, *E. jurtina* very common, *A. sylvanus* very common indeed, *Petilampa arcuosa*, *Cosmotriche potatoria*, *Hygrochroa syringaria*, *E. succenturiata*, and *Ania emarginata*.

On some waste ground close to Esher, Surrey, I found *Zygaena filipendulae* very common, including two ab. *conjuncta*.

On the 11th I tried Wisley Common. *Diacrisia sannio* was fairly frequent, *Perconia strigillaria*, *Anarta myrtilli* a most annoying insect when one is trying to capture it, as it is so swift when on the wing that it does not give one a chance, and when it settles it so resembles the heather that one cannot see it till it gets on the wing again, *Plebeius argus* (*aegon*) just emerging, and *Pachygenia hippocastanaria*.

On the 12th I found *P. argus* (*aegon*) very abundant indeed on another part of the common, and saw all the species observed on the previous day.

July 13th, at Oxshott, *X. monoglypha*, *Petilampa arcuosa*, *A. emarginata*, *A. aversata*, *Hydriomena furcata* ab. *infusata*.

On July 16th, *Aphantopus hyperantus* was fully emerged and very common, also *A. sylvanus* and *A. flava* (*thausas*). I also took one specimen of *H. malvae* quite fresh, surely a very late date for this species. *Plusia gamma*, *Aglais urticae*, *Pseudoterpna pruinata*, *D. sannio*, and *P. chrysitis* were also seen.

On July 17th I again journeyed to Bramshott, but directly I got into the collecting ground the sun disappeared and the afternoon finished up with rain. Beside the usual common species I saw two specimens of *Limenitis sibilla*, also *A. urticae* and *Dryas paphia*.

On July 19th I again paid a visit to Oxshott, when, besides the species mentioned before, I found *P. argus* (*aegon*) common, a very dark specimen of *E. atomaria*, *L. impura* common, *Geometra papilionaria* very worn, *Hemithea strigata*, *T. fimbria*, one specimen at rest on a blade of grass, *P. arcuosa* abundant, *Z. filipendulae* and *Z. trifolii* common, *Caradrina taraxaci*, and *C. morphens*.

(To be concluded.)

The Rainham "Hybrids."

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

A note entitled "Remarkable variety of *Lycaena bellargus*," published in the *Entomologist*, 1886, XIX., p. 176, by Mr. E. Sabine, states that he and his sons took five or six males of a beautiful pale lilac or French gray colour, and six females, very pale brown or fawn, clouded with pale lilac and with pale orange spots. They were all caught within the space of a couple of acres, and most of them in one particular portion of ground, a few yards in extent, where *bellargus* was very abundant. The date was June, and the place an inland locality in

Kent, where he had not collected previously. In a second note, on page 248, he says that, although the species was scarce in September, two more pairs were taken in two visits to the same place. He records that in June, 1887 (*Ent. XX.*, pp. 181-2), more specimens of the same colour were taken on the same ground, but were distributed over a wider area, and suggests that they are a distinct species, simple varieties of *bellargus*, or hybrids between *bellargus* and *icarus*, most probably the latter.

Mr. Richard South describes eight of them in detail in the same volume, pp. 79-81. One of the males was a blue-black one, and one a mauve one with *bellargus*-blue margins. Of the seven pale specimens five had undersides like *bellargus* and two like *icarus*. In the Farn collection, sold in 1922, there were 24 males and 12 females catalogued as hybrids between *alexis* and *adonis*.

These were some of Sabine's specimens from Rainham. They varied a little in tint, but all were very pale with faintly chequered or plain white fringes.

I am indebted to Mr. L. W. Newman for the remains of one of them, a pale greyish-blue male. Its genitalia agree in all respects with those of *Polyommatus (Agriades) thetis (bellargus)*, and show not transition to those of *Polyommatus icarus*. In some parts of the wings the blue scales are curled up at the sides, in others they are rolled up into cylinders, but all appear pale blue by reflected light. Some androconia appear normal, but others are curled up. The lower layers of scales are deficiently pigmented, the lack of pigment being greater in some parts than in others. The peculiar colour is due to several factors. The abnormal structure of the blue scales produces a paler blue than usual, and the light is reflected from them at various angles owing to their deformity. The pinkish appearance is caused by the refraction of the light falling on the striated surface of the poorly pigmented lower layer of scales. It is most marked where the blue scales are most curled and leave them more completely exposed. The defect is very different from that found in the dark leaden *thetis*. In them the lower scales are fully pigmented, but the upper ones are very thin, quite colourless, and rolled into triangles with the tips so twisted as to resemble hairs. Their wings would appear black were it not for some light reflected from the upper scales.

There can be no doubt that the Rainham specimens are *Agriades thetis*, and that they owe their peculiar colour to a defect of pigment and structure of the lower and upper scales respectively.

Interesting as they are they afford no certain clue to the cause of this and similar abnormalities. Their occurrence in considerable numbers in three successive broods at least may be regarded as evidence of an inherited defect. But it can be explained with equal probability as the result of some disease due to special local conditions. Other facts are in favour of the correctness of the second of these alternatives. Sabine states that three of his earlier specimens were crippled, and some of Farn's specimens also were imperfectly expanded. Leaden *thetis* is not found at Folkestone every season, but in many different years it has appeared on the same small piece of down. Although in some specimens all the upper scales are affected uniformly, in others normal blue scales are present symmetrically placed along the costa or round the margin, and in a few specimens irregular patches of normal

scales are found, and the abnormal ones are not equally defective in different parts of the wings.

In the Rainham specimen I examined, the degree of defect varied in different parts, and one South described had normal blue scales round the margins. This patchy distribution is more suggestive of a disease than of an inherited condition. The occurrence of a leaden specimen amongst the grey-blue ones at Rainham is easier to explain, if both are the result of disease, in the one case affecting the upper scales severely and sparing the lower, and in the other affecting both layers to a moderate degree, than if each is due to an inborn error involving the development of the scales. They are so different that, if they are mutations, I think the grey-blue mutant must differ genetically from the leaden one. On the other hand, if they are due to disease it is remarkable that specimens like the Rainham ones have not been found at Folkestone and other places, where leaden ones occur. The arguments in favour of disease are not conclusive.

SCIENTIFIC NOTES AND OBSERVATIONS.

BRENTHIS EUPHROSYNE, L. AB., **plumbea**, AB. NOV.—This differs from the type in having on the underside all the spots, which are usually silver, a dull leaden colour. Microscopical examination of the scales shows no difference from the silver ones, except that of colour. It occurs in both sexes and is found in the Chilterns, where Mr. H. B. Williams caught two in 1916. I have seen three others from the Bucks Chilterns, one a bred specimen, and have heard of more. It is scarce, but appears to be firmly established in a rather restricted locality. No intermediate form appears to have been met with. The type is in the Collection of Mr. H. B. Williams.—E. A. COCKAYNE (M.D., F.E.S.), 116, Westbourne Terrace, W.2.

LYCAENID LARVAE AND ANTS.—It may be interesting to recall the observations made by Doherty in 1886 on this subject (*Jr. As. Soc. Bengal*). After quoting Dr. Thwaites in Moore's *Lepidoptera of Ceylon*, "Nature, however, finds a protection for these said helpless individuals [Lycaenid larvae] in the instincts of a species of ant, *Formica smaragdina*, which finding a substance palatable to it secreted naturally from a glandular defined spot upon the bodies of these helpless larvae, takes possession of them as 'cows,' surrounding each separate one, and the leaf on which it feeds, with a few silken strands of its web, protecting them jealously and attacking most fiercely any living thing intruding upon them:" Doherty gives his own observations on this singular occurrence as follows:—

"I have myself observed it in quite a number of Indian *Lycaenidae*, belonging to several distinct groups, and feeding on the leaves of various trees and herbs. The larvae in question are all very helpless and inactive grubs, slug-like in shape, tapering at both ends, pubescent, green or brown, with a very small retractile head. On each side of the penultimate segment above there is a short protuberance, from which can, in most cases (*e.g.*, *Tarucus theophrastus*), be extended a brush of hairs (apparently absent in some species, *e.g.*, *Azanus ubaldus*). This is, I have no doubt, a scent-gland, and may be intended to attract the notice of the purblind ants. On the dorsal line of the preceding

segment, the eleventh, there is another short tubercle exuding a viscid juice. It exists in all the *Lycanidae* known to me, whether they are maintained by ants or not, and from it issues a gummy thread, by the aid of which I believe the caterpillars sometimes swing themselves from branch to branch, or attach themselves to leaves. But though in all probability acquired for such purposes, it is peculiarly attractive to the ants, which at all hours surround the poor caterpillar and, by stroking and tickling it with their antennae, induce it to yield up this sweet (?) liquid. I have not yet found any caterpillars in the possession of web-making or arboreal ants such as *Formica smaragdina*, and no restraint such as Dr. Thwaites mentions was placed upon any larva observed by me. But the ants would always remain near the caterpillar, and would always fly fiercely to the rescue if anything molested it. When it had attained its full growth, the ants, forming a circle round it, would forcibly drive it down to their nest at the foot of the tree. This sight is rather an amusing one, the caterpillar often showing the greatest reluctance to leave its pasture ground, and manifesting strong doubts as to the intentions of its escort. I was struck with the forbearance and patience of the ants, which carefully abstained from any violent use of their formidable jaws, though the journey was thereby sometimes prolonged to six or seven hours. Having arrived at the foot of the tree, the ants deposited the caterpillar in an open space just within the mouth of the nest, whereupon the latter immediately attached itself to the bark, and commenced its transformations. I have counted as many as thirteen chrysalids of *Azanius ubaldus* so attached in one nest at the foot of a kind of Cabul tree (*Acacia leucoploea*). All were uninjured and all produced perfect butterflies." One would like to know if Dr. Thwaites' observation on the action of the web-making ants has been substantiated by any later observers.—H.J.T.

"HERMAPHRODITISM" IN THE HESPERIIDAE.—Doherty, in the same place, makes the following observation, for which one would like to have an interpretation. "A kind of hermaphroditism seems to occur sometimes in the *Hesperiidae*. From the body of (apparent) males of *Suastus eltola* and of *Coladenia dan*, both having perfect prehensores of the form characteristic of their respective species, I obtained one or two well-developed eggs exactly similar to those taken from the females of the same species. Also from a male of *Suastus tosna* (the egg of that species being, except for this, unknown to me) I obtained a single blood-red egg. I have not observed this in any of the higher groups of butterflies." I do not think that Doherty could have been in error as to "eggs," for he was at the time working especially on the ova of the butterflies to try to find some indication of their characteristics which would aid in classification.—H.J.T.

NOTES ON COLLECTING, etc.

LADY-BIRDS HIBERNATING IN THE HOUSE.—For the last three years a certain number of the common Lady-bird (*Coccinella bipunctata*, L.) have entered my house and passed the winter in the upper back rooms. This year, however, a front bed-room has also been utilised; the phenomenon being of a more interesting and spectacular type. Early in September over a dozen individuals appeared in this room and fixed

themselves in a close mass, some resting on the others, in a crevice in the ornamental plaster work of the ceiling. At the same time a number of small plant-lice settled down all round the ceiling, but these soon disappeared some being eaten by the lady-birds. It was very interesting to notice that whenever the weather got warmer most of the lady-birds left their situation and circulated about the room, flying round and striking at the ceiling, when they looked like flies; and this they kept up for hours at a time, even when the room was nearly in darkness. When they settled down again it was always in the exact same spot which they originally occupied; and where they are to be found at the present moment. This would appear to exhibit both memory and a knowledge of direction. Most of the lady-birds in question consist of the type-form (red with two black spots). A few have exhibited a slight variation: but one specimen, which was found dead, is a very nice aberration, being marked with a zig-zag black pattern and various spots on the elytra.—FLORENCE J. KIRK, 52, Oakhill Road, Putney, S.W. 15.

SYNTARUCUS TELICANUS IN SWITZERLAND.—A few months ago my friend Mr. Sich sent me a specimen of this butterfly, which he had taken at Dorf, just above the Lake of Lucerne. Mr. Sich writes me as follows:—"I boxed it off *Eupatorium cannabinum* on the road side near Kehrsiten Dorf, August 27th, 1923. The Dorf lies at the foot of the Bürgenstock, just above the lake, roughly 1450 feet above sea level. If the butterfly is *telicanus*, and you think it worth recording will you kindly do so."

It seems desirable that this capture should be recorded.—G. T. BETHUNE-BAKER (F.L.S., F.E.S.).

SYNTARUCUS TELICANUS IN SWITZERLAND.—My son, Mr. O. R. de B. Goodman, took a very worn specimen of *O. telicanus* in the Val del Fain, which joins the Bernina Pass, close to the Bernina Houses station, at a height of about 8500ft. I should think this is a record for altitude if not for Switzerland.—O. R. GOODMAN (F.E.S., F.Z.S.), Horley, Surrey.

[Seitz, *Macro-lep*: Pal: Vol. I., says of this species, that it appears to migrate in certain years, since the butterflies, as rare exceptions have been observed here and there in localities lying far north, for instance at Bâle, Strasburg, Augsburg, Bozen, etc. Favre, *Mac.-Lep. du Valais*, says, "Very rare. Opposite La Croix, Martigny, not far from the Dranse, in October," reported by Wullschlegel; in July, 1893, on the road above Trois Torrents (coll. Fison). Wheeler, *Butt. of Switz.*, quotes these localities, and adds Cassarate, August 14th, 1902 (Fison); Hermanz, July, and Pinchat, July (Blachier); Geneva, August, and the remark that it occurs every year in gardens in and round Geneva. It will be noted that all these captures were of the second generation, as was the specimen exhibited at the S. London Annual Exhibition in November last, taken by Mr. D. H. Pearson on the Swiss side of Gondo, in July. Frey, *Lep. der Schw.*, refers to the species by a note, in which he mentions its occurrence at Misox, Chur, and Ragatz, but says these reports have never been confirmed. Rühl, *Pal. Grossschm.*, adds the Swiss localities Kreuzlingen and Thusis. All these records

seem to substantiate the remarks of Seitz as above; the species is a purely Mediterranean one so far as its real habitat, its further remove being Aswan on the Nile, where Captain Hayward took it commonly in 1920-21.—H.J.T.]

[I have also taken it at Mendrisio (*Ent. Rec.*, XVII., p. 198).—G.W.]

A HOMERIC CONTEST.—*Cervus lucanus* was very much in evidence in my garden on the evening of July 6th, 1923, taking off in their usual blundering way and as inevitably crashing in the tennis netting. I rescued two males and placed them vis-à-vis on the top of the fence to recover their equanimity. They did not, however, appear to appreciate this close proximity, and, having recovered their breath, started sparring. One, a heavy-weight, was about one-third larger than his opponent, and the odds were therefore on the heavy bruiser. After several preliminary clinches the heavy-weight secured his antagonist by the horns with a firm grip, and so interlocked raised the light-weight bodily off his feet into the air, until the latter was in a vertical position, head downwards. He then to all appearance threw the light-weight over his back, an easy winner. Even allowing for his greater size and weight, this feat appears to me a remarkable exhibition of strength.—G. C. LEMAN, F.E.S.

CURRENT NOTES AND SHORT NOTICES.

We understand that the expedition to the Islands of the Southern Seas, of which Miss E. Cheesman, the talented and successful entomologist of the Zoological Society's Gardens in Regent's Park, is a member, was delayed until the end of December owing to the Board of Trade insisting upon certain alterations in the ventilation and general fittings being first carried out.

We have received the following request from Embrik Strand, Professor of Zoology and Director of the Systematic Zoological Institute of the University of Riga (Latvia):—"For several years I have been collecting contributions to a voluminous work, a Biographical Entomological Dictionary, which will contain biographies of entomologists and arachnologists of all times and of all nations. The biographies of deceased entomologists and arachnologists I have already almost completed from the literature, but to obtain the biographies of living persons is more difficult. I hereby beg all entomologists and arachnologists, who have worked scientifically as authors, collectors, students, etc., to send me their autobiographies. As far as possible these will be printed in their original form and language. It would be a pity that any of our workers should be omitted from such a comprehensive work. If any one would volunteer to obtain such for me I should be very grateful, and would much like to correspond with him."

We hear that the *South-Eastern Naturalist*, the annual issue of the South-Eastern Union of Scientific Societies was published early in December and is now issued.

The Directors of the British Museum (Natural History) have issued series of post cards, both plain and in colours, of the various objects exhibited in the galleries and of the aspects of the different rooms. Those cards illustrating entomological subjects are extremely well

executed and the colours accurate. Each packet contains a four-paged description of the subjects depicted.

We have to record the death of Colonel Swinhoe, M.A., F.L.S., F.Z.S., F.E.S., who was well-known to students of the Indian Fauna for his writing on the Lepidoptera, and particularly for the comprehensive catalogues of the Heterocera of that vast area, which he so carefully compiled some years ago. He was vice-president of the Entomological Society in 1894 and was twice on its Council, and at various times contributed articles to the *Transactions*. His large collection is, we understand, to be sold privately.

After several years of more or less apparent inaction the "Società Entomologica Italiana" has since its removal from Florence to Genoa, been regularly issuing its *Bolletino* with many interesting and useful notes each month and the other day we received Fasc. 1 of Vol. II., of its new series of *Memoires*. This contains (1) Dr. Rocci, "Note di Lepidotterologia" dealing with Italian forms of species which have come under notice more or less recently. (2) P. Zangheri, "Fauna di Romagna" (Lep.), an annotated list of nearly 30 pages. (3) P. Lugliani, "Le Specie e le Varieta del gen. *Pachypus* (Col.) in Italia." (4) A "Mirecologiche Note" by Dr. G. Müller, giving notes on various species of ants found in Italy. (5) C. Holdhaus, "Elenco dei Coleotteri dell'isola d'Elba," an annotated List of species of some 30 pages.

Some time ago reference was made to the establishment of an entomological society in Rio de Janeiro. Recently we have received the first parts of the *Boletim da Sociedade Entomologica do Brazil*. The President of the Society is the well known Prof. Benedicto Raymundo and the Secretary Edward May. The "membros efectivos" number 88 and the "membros honorarios" 26, a by no means small beginning. A large number of books and separata have been given to establish a reference library. No doubt the *Boletim* will improve and the illustrations will also be executed in a more effective manner. It is printed partly in Portuguese and partly in French. A very useful article deals with the pest of the banana, *Cosmopolites sordidus* (Col.) from an economic point of view. Others treat of a new aberration of *Papilio agavus* ab., *aurimaculatus*, *Castnia laura* is proved to be another geographical form of *Castnia licus*, a new species of *Phoridae* (Dip.) is described, *Dohrniphora brasiliensis*. May the Society grow and flourish.

Can any of our readers give us particulars of a Society called the Wernerian Club which was established about the year 1844, for the purpose of publishing works of science, natural history, etc. The Club commenced to publish in 1847 a translation of the *Natural History* of Pliny, of which we have two volumes before us. Were there any more printed subsequently? Does the Club still exist? If not when did it cease? Among the first list of members we note R. T. Abrahams (Exeter), William White (Godalming), Robert Cook (York), W. Sherwood (Hull), J. W. Slater (Manchester), and in the second list of members, J. C. Dale (Glanville's Wooton) all labelled "entomology." Jonathan Crouch (Cornwall) was the "Superintending Editor" of the Translation of Pliny. Other members we note were Sir J. F. W. Herschel, F.R.S., J. D. Salmon (Godalming) J. T. Bell (Maida Hill), George Bird (Yorkshire), W. H. Allebin (Bedford Sq.), B. R. Morris (York), etc. The Club was to publish two volumes per year and the annual subscription was one guinea. Ray's "Essay on

the Wisdom of God, manifested in the Works of Creation" was the first work which they reprinted, and they proposed to reprint Swammerdam's "Bibla Naturae." The number of members was at first limited to 75, but it was proposed to add a further 50.

SOCIETIES.

THE ENTOMOLOGICAL SOCIETY OF LONDON.

December 5th, 1923.—OBITUARY.—The Chairman announced the death of Colonel Charles Swinhoe.

ELECTION OF FELLOWS.—The following were elected fellows of the Society:—Mr. R. Cottam, Entomological Dept., Wellcome Tropical Research Lab., Khartoun, Sudan; Mr. G. D. Morison, B.Sc., Research Entomologist, North of Scotland Agric. College, Aberdeen; Capt. T. N. C. Nevill, 48, Sloan Square, S.W.

EXHIBITIONS.—Mr. G. T. Bethune-Baker exhibited a synaposematic group of Butterflies from the Kameruns.

Mr. J. E. Campbell-Taylor exhibited examples of Coleoptera mounted on celluloid to afford means of examining the undersides.

Mr. W. G. Sheldon exhibited an example of *Ancylis tineana*, Hb., from Rannoch, and a bred example of *Hedya simplana* F. von R., from S.E. Kent.

Mr. E. B. Ashby exhibited varieties of *Melanargia galathea*, L., from various localities in France, including ab. *leucomelas*.

Dr. K. Jordan exhibited some remarkable pupae of a Brazilian Erycinid, *Mesosemia sylvina*, Bates.

Mr. G. J. Arrow, who illustrated his remarks with lantern slides, discussed dimorphism and polymorphism in male Dynastid Beetles.

PAPERS.—The following papers were read:—

1. Notes on the Orthoptera in the British Museum, no. 3, by Mr. B. P. Uvarov.

2. Physical Factors controlling Harvesting in an Ant, by Dr. P. Buxton.

3. On Microlepidoptera of Rodriguez, by E. Meyrick, B.A., F.R.S.

4. On the Geographical Races of *Heodes phlaeas*, by Mr. E. B. Ford. (Communicated by Commr. J. J. Walker, R.N., M.A.)

5. Some Coleopterous remains from the Peat Bed at Wolvercote, Oxford, by Mr. K. G. Blair.

THE SOUTH LONDON ENTOMOLOGICAL SOCIETY.

October 25th, 1923.—Mr. Tonge exhibited several *Sphinx ligustri* bred from a wild Cornish ♀, in which the normal pink of the hind-wings was replaced by cream.

Mr. Enefer, a *Mygale* spider found among bananas from Costa Rica.

Mr. Ashby, a series of *Phytodecta pallida* (Col.) from hazel in Glen Nant, Scotland, with the forms ab. *borealis* and ab. *nigripennis*, not noticed hitherto in Britain.

Messrs. Buckstone, Mera, and R. Adkin, long series of the "Ermines," to illustrate the paper read by Mr. R. Adkin, "The White and Buff Ermines, some Notes on their History and Variation."

November 8th.—Baron J. A. Bouche, of Godstone, Mr. T. A. Nash, of Richmond, and Mr. D. G. Sevastopula, of Gloucester Terrace, W., were elected members.

Mr. Mera exhibited a melanic form of *Boarmia repandata* from Durham, and a partial second brood of the same somewhat smaller in size.

Mr. Barnett, series of *Plebeius aegon* (*argus*) from Eynesford (chalk) and Oxshott (heath) for contrast, and *Xanthorhoë fluctuata* from various localities.

Mr. Step, the Mosquito-bug, *Helopeltis theivora*, received from Mr. W. H. Miles, Calcutta. It was one of the chief pests of the tea grower.

Mr. Turner, lepidoptera from W. Africa: 1. Four different species of black and white butterflies showing Müllerian Mimicry, *Amauris niarvus* (Danaid), *Papilio dardanus* ♀ f. *hippocoon* (Papilionid), *Hypolimnas dubia* race *anthon* (Nymphalid), and *Elymnioptis bammakoo* (Satyrid), the first being the distasteful model. 2. Specimens of a Lycaenid, *Larinopoda* sp., which on account of its white coloration with few sparse markings and aberrant appearance, had been classified as a Pierid.

Mr. Grosvenor, Lepidoptera, Bird's Eggs, etc., illustrative of his paper on "Natural History in the North-West Provinces of India."

REVIEWS AND NOTICES OF BOOKS.

"FABRE'S BOOK OF INSECTS," retold from Alexander Teixeira de Mattos' Translation of Fabre's *Souvenirs Entomologiques*, by Mrs. Rodolph Stewell.—Thos. Nelson and Sons, London. Price 2s.—This little book is an admirable introduction to the works of Fabre, in which one still can appreciate the spirit and feeling of the great Frenchman's work, the matter having been judiciously selected, with the boiling down process, which often mars works which are intended to be educative introductions, very carefully carried out. In it Fabre speaks for himself. The first of the sixteen chapters is headed "My Work and my Workshop." This is followed by chapters dealing with The Sacred Beetle, The Cicada, The Praying Mantis, The Glow-worm, A Mason Wasp, The Psyche, The Self-denial of the Spanish Copris, Two Strange Grasshoppers, Common Wasps, The Adventures of a Grub, The Cricket, The Sisyphus, The Capricorn, Locusts, The Anthrax Fly. Each of these is dealt with under subheadings, as with the Hunting-wasp for instance, we have Her Choice of a Building-site, Her Building, Her Provisions, Her Origin. We can highly recommend this admirable little book.—H.J.T.

"SOME HABITAT RESPONSES OF THE LARGE WATER-STRIDER, *Gerris remigis*," Say., by C. F. Curtis Riley.—New York. Reprinted from the *American Naturalist*, 1919-1920.—Some months ago we had the pleasure

of reviewing a paper by Mr. C. F. Curtis Riley on the American water-strider, *Gerris remigis*, Say., and its responses to contact and light, and now we have another paper by the same observer on other aspects of the bionomics of the same insect. It is the record of a large number of experiments carried out in the open with great assiduity and patience, including in one case an all-day-long watching of 20 specimens, which had been trapped on a small pool during a severe drought, until and after their pool was completely dried up, the object of the observer being to determine, as far as possible, the influences under which the insect, especially in the apterous form, migrated from one body of water to another at a distance. Flying specimens, when in the air, might of course be influenced by their sense of sight and also probably by their perception of the hygroscopic condition of the air due to the proximity of a large body of water. But with the apterous specimens the case was different. From the nearness of their eyes to the ground, even small obstacles might easily cut off the reflection of light from small surfaces of water even if near at hand, and vision would therefore play a less important part in directing migration. In the case of the 20 specimens mentioned above, it was found that they made no attempt to escape until ten minutes after their little pool was completely dried up, and then they did not go into hiding under stones or plants, or bury themselves in the soil so as to wait till conditions were restored as before; but they began at once to move off apparently in search of another pond. As the insect is so constructed that its limbs on the two sides move simultaneously, and not alternately, they can progress only by a series of jumps, and on performing these acrobatic feats they often lose control of the orientation of the body, so that at the end of a jump they often proceed in a different direction from that towards which they were facing at its beginning, and hence the entire course pursued becomes zigzag. As the result of a very long series of observations and experiments, the author was driven to the rather disappointing conclusion that the insects were not guided by some preconceived idea of the direction in which they should aim, but that when they did arrive at another water supply, it was as the result of what he calls a "blundering sort of trial and error," and he concludes therefore that many must perish on the way. Some of the experiments consisted in removing individual specimens from the water and placing them at varying distances of one, two, three, or four yards from the water's edge and in three different positions, facing the water, facing away from it, and with the body parallel to it. In most cases they were able to find their way back again after a longer or shorter time, and sometimes by circuitous routes. British hemipterists might take advantage of suggestions contained in this paper to experiment with our *Gerris najas*, De G. These questions of phototropism and hydrotropism have not been much studied by observers in these Islands, and to those who have the time and opportunity for such investigations, interesting facts would probably be revealed.—E. A. B.

"PRACTICAL BEE ANATOMY," with notes on the Embryology, Metamorphoses and Physiology of the Honey Bee, by Annie D. Betts, B.Sc. (Lond.), Vice-President and Fellow of the Apis Club.—Published by the Apis Club. Benson, Oxon, England, 76 pp. and 12 plates.

The publication of this first volume of the series comprising the Apis Club Library will undoubtedly appeal to all educated bee-keepers throughout the country.

The format of the books recalls our college days, when practical note books on Chemistry were required for use in the laboratory.

The amount of information packed in these closely printed pages is wonderful, and ordinarily would make a volume three or four times the size. This brochure is intensely practical and is only beneficially read in conjunction with the microscope, a number of bees (freshly killed or in spirit), a complete set of re-agents, dishes, scalpels, razor and scissors all at hand.

The authoress has pursued her studies methodically and in extreme detail. The first eight chapters deal with how to collect and preserve material, the embryology and metamorphoses of the bee, external anatomy, internal structure and dissection. Then follows an appendix dealing with the petiole, the abdominal muscles, respiration, notes on flight, gynandromorphs, and disease diagnosis.

There is also a good Bibliography, and the writer points out the weak spots in our knowledge to date. Hence students can concentrate on these and arrange their research work accordingly. It appears that the method by which the spermatozoa pass into the spermatheca is not yet understood, and it is hinted that research in tropical climates would reveal some fungus diseases of bees at present unknown.

We certainly think that the excellent work of the writer deserves a better binding, and we hope that when the next edition is called for some attention will be given to this, and a better paper and different type indented for.—H.E.P.

“OUR BUTTERFLIES AND MOTHS AND HOW TO KNOW THEM,” by E. Fitch Daghish, F.L.S., F.Z.S.—Published by Thornton Butterworth, Ltd. Price 6s. 126 pp. Illustrated.

In the Introduction of this handy and concise volume, the life-history of the Small White (*Pieris rapae*) Butterfly is dealt with in all its stages as being typical of that of most butterflies. This species has been selected as being one of the commonest, and hence the earnest student can easily procure specimens and familiarise himself by personal observation with the facts as clearly written in the book.

The writer makes it an easy matter for the tyro to identify his captures of butterflies by reference to the various groupings on pp. 18-20, no less than 51 of our British species being included. Additionally 42 species are figured, some in colour, others in half-tone plates.

The moths are dealt with on similar lines, being grouped and classified as to certain characteristics. Then follow detailed descriptions of each of the more notable species, supplemented by good photographic figures. The names of the principal food-plants are given with each species dealt with, together with a full description of the caterpillar, and the month and localities in which the perfect insect is to be found.

Whilst it is obviously impossible in a work of this size to deal with all our 70 British Butterflies and 3000 British Moths, enough has been done to put the young naturalists on the right path.

The book will prove of great value to teachers and others responsible for conducting parties on rambles and field excursions.—H.E.P.

Subscriptions for Vol. XXXVI. (10 shillings) should be sent to Mr. Herbert E. Page, "Bertrose," Gellatly Road, New Cross, S.E. 14 [This subscription includes all numbers published from January 15th to December 15th, 1924.]

Non-receipt or errors in the sending of Subscribers' magazines should be notified to Mr. Herbert E. Page, "Bertrose," Gellatly Road, New Cross, S.E. 14

ADVERTISEMENTS of Books and Insects for Sale, or Books wanted will be inserted at a minimum charge of 2s. 6d. (for four lines). Longer Advertisements in proportion. A reduction made for a series Particulars of Mr. Herbert E. Page, "Bertrose," Gellatly Road, New Cross, S.E. 14

Subscribers who change their addresses must report the same to Mr. H. E. PAGE "Bertrose Gellatly Road, New Cross, London, S.E., otherwise their magazines will probably be delayed.

Desiderata.—Foreign examples, local races, vars. and abs. from all parts of the world of any butterflies included in the British list. Setting immaterial; exact data indispensable. Liberal return made.—*W. G. Pether, "Thalma," 4, Willow Bridge Road, London, N. 1.*

Duplicates.—*Cinxia*, *Bellargus*, *Coridon*, *H. Comma*, *Lineola*, *Galathea*, *Moneta*, *Nupta*, and many others. *Desiderata*.—*Blandina*, *Irish Icarus*, *Carmelita*, *Oculla*, *Gonostigma*, *Ashworthii*, *Templi*, *Australis*, *Undulata*, *Smaragdaria*, *Testacea*.—*W. Gifford Nash, Clavering House, Bedford.*

Duplicates.—*Cinerea* ♀, fine forms, grey, brown and blackish, *Maritima* and vars. *Immorata* and other East Sussex species.

Desiderata.—Pupæ. *Luteago* (*Barrettii*), *Caesia*, *Albimacula*, *Alpina*, *Xanthomista*, *Sparganii*, *Dissoluta* (*Arundineta*), *Graphalii*. Also imagines of extreme forms *Noctuæ* in fine condition only.—*A. J. Wightman, 35, Morris Road, Lewes.*

N. American Lepidoptera in papers in exchange for ditto from any part of the world. *J. C. Woodward, Training Ship "Cornwall," Purfleet, Essex.*

CHANGE OF ADDRESS.—*E. W. Morse, 4, Wortley Road, Upper Armley, Leeds.*
Commander J. C. Woodward, Training Ship "Cornwall," Purfleet, Essex.
J. H. Durrant, from 17 to 20, Burstock Road, Putney, S.W.

MEETINGS OF SOCIETIES.

Entomological Society of London.—41, Queen's Gate, South Kensington, S.W. 7, 8 p.m. February 6th, 1924.

The South London Entomological and Natural History Society, Hibernia Chambers, London Bridge. Second and Fourth Thursdays in the month, at 7 p.m. January 24th, Annual Meeting. February 14th, W. J. Lucas, B.A., "The caudal lamellæ of the Naiads of the British Agrionid Dragonflies."—*Hon. Sec., Stanley Edwards, 15, St. German's Place, Blackheath, S.E.3.*

The London Natural History Society (the amalgamation of the City of London Entomological and Natural History Society and the North London Natural History Society) now meets in Hall 40, Winchester House, Old Broad Street E.C. 2, first and third Tuesdays in the month, at 6.30 p.m. Visitors welcomed. *Hon. Sec., W. E. GLEGG, 44, Belfast Road, N. 16.*

All MS. and editorial matter should be sent and all proofs returned to H. J. TURNER, 98, Drakefell Road, New Cross, London, S.E.14

We must earnestly request our correspondents NOT to send us communications IDENTICAL with those they are sending to other magazines.

Lists of DUPLICATES and DESIDERATA should be sent direct to Mr. H. E. Page, Bertrose, Gellatly Road, New Cross, S.E. 14

OVA, LARVÆ, AND PUPÆ.

The Largest Breeder of Lepidoptera in the British Isles is

H. W. HEAD, Entomologist,
BURNISTON, Nr. SEARBOROUGH.

Full List of Ova, Larvae, and Pupae, also Lepidoptera, Apparatus, Cabinets etc., sent on application.

Many Rare British Species and Good Varieties for Sale.

GREAT REDUCTION IN PRICES

Cabinets. Hardwood finished rich mahogany, panelled or glass doors. Drawers, $17 \times 16 \times 2\frac{1}{4}$ ", on hidden runners.

Lift-off glazed tops. Camphor cells. Lined cork or peat.

40-drawer, **12/6** per drawer. 20-drawer, **1/-** per drawer extra.

Store Boxes.

10×8	13×8	14×10	16×11	17×12
3/11	5/-	6/6	7/9	9/-

G. A. BENTALL, 392, Strand, W.C.2.

The Executors of the WILL of the late

Hon. Nathaniel Charles Rothschild

in accordance with a direction contained in his said Will, hereby notify that they have burned unopened all the Letters, Books, Maps, and Papers in his possession directly or indirectly giving the localities of British Lepidoptera received by him from his various Entomological friends and acquaintances.

Subscriptions for 1924 are now due.

E.D.

MAR 1 1924

Vol. XXXVI.

13,820

No. 2.

The Entomologist's Record AND Journal of Variation

EDITED BY

RICHARD S. BAGNALL, F.L.S., F.E.S.
GEORGE T. BETHUNE-BAKER, F.L.S., F.E.S.
M. BURR, D.SC., F.L.S., F.Z.S., F.E.S.
(REV.) C. R. N. BURROWS, F.E.S.
E. A. COCKAYNE, M.D., F.E.S.

JAS. E. COLLIN, F.E.S.
H. ST. J. K. DONISTHORPE, F.Z.S., F.E.S.
JOHN HARTLEY DURRANT, F.E.S.
ALFRED SICH, F.E.S.
(REV.) GEORGE WHEELER, M.A., F.E.S.

and

HENRY J. TURNER, F.E.S.,
Editorial Secretary.

CONTENTS.

	PAGE.
A Somatic Mosaic or Mutation in <i>Abraxas grossulariata</i> , <i>E. A. Cockayne, M.D., F.R.C.P., F.E.S.</i> (with Plate I.)	17
Entomological Notes for the Season 1923, <i>Commander G. C. Woodward, R.N.</i> (concluded)	20
Geographical Variation in <i>Hipparchia semele</i> , <i>Roger Verity, M.D.</i> (concluded)	21
NOTES ON COLLECTING:— <i>B. abietaria</i> at Gravesend, <i>F. T. Grant</i> ; Early appearance of <i>E. pumilata</i> , <i>H. J. T.</i> ; New species of <i>G. Britain, Id.</i> ; <i>B. euphrosyne ab. plumbea</i> , <i>H. B. Williams</i> ; Lady-birds hibernating in the house, <i>Id.</i> ; <i>D. fascelina</i> in Surrey, <i>H. B. D. Kettlewell</i> ; <i>P. plumigera</i> in Surrey, <i>Id.</i> ; <i>N. confusa</i> in Hyde Park, <i>Id.</i> ; <i>S. andreaeformis</i> near Guildford, <i>Id.</i> ; <i>C. trapezina</i> in Putney, <i>Id.</i>	26
CURRENT NOTES	28
SOCIETIES:—The South London Entomological Society	29
REVIEW:—"Social Life among the Insects," <i>H.D.</i>	30
List of the Macro-lepidoptera of Hampshire and the Isle of Wight, <i>W. Fassnidge, M.A.</i> (17)–(20)	

FEBRUARY 15th, 1924.

Price ONE SHILLING and SIXPENCE (NET).
WITH ONE PLATE.

Subscription for Complete Volume, post free
(Including all DOUBLE NUMBERS, etc.)
TEN SHILLINGS.

TO BE FORWARDED TO

HERBERT E. PAGE, F.E.S.,
"BERTROSE," GELLATLY ROAD, NEW CROSS, S.E.14.

Communications have been received or have been promised from Messrs. H. Donisthorpe, Dr. Verity, J. H. Durrant, G. T. Bethune-Baker, Rev. C. R. N. Burrows, Wm. Fassnidge, Orazio Querci, H. J. Turner, E. A. Cockayne, M.D., F.E.S.; Karl Höfer; R. S. Bagnall, F.R.S.E., F.L.S., F.E.S., J. W. H. Harrison, D.Sc., F.R.S.E., O. R. Goodman, F.Z.S., F.E.S., Lieut. E. B. Ashby, F.E.S., W. Hawker-Smith, F.E.S., with Reports of Societies and Reviews.

☺

WATKINS & DONCASTER

(ESTABLISHED 1879)

36, Strand, London, W.C.2.

Telephone: GERRARD 9451.

:: **Manufacturers and Suppliers of** ::
Natural History Requisites of all Kinds.

Cabinets. Best quality and finish. All sizes at lowest prices on view at above address.

Lepidoptera. Large stocks kept of British Palæarctic and Exotic Species. Lists on application.

Bird's Eggs. Large selection of British and European Eggs, singles and in sets with data, always on hand.

Books. A varied and extensive stock on Entomology and all Branches of Natural History.

GENERAL CATALOGUE SENT POST FREE.

ENTOMOLOGICAL NEWS.

An illustrated magazine, published monthly—except August and September—devoted to the study of **INSECT LIFE**. It contains a list of the titles of the current Literature on American Entomology, articles by the leading authorities in the United States and Canada, and is a necessary journal of reference for working entomologists. Valuable information for economic and systematic students.

Annual subscription price \$2.50. Foreign (except Canadian) subscriptions \$2.70. Single copies 30 cents. Address

ENTOMOLOGICAL NEWS, 1900 Race Street, Philadelphia, Pa.

Bexley]

L. W. NEWMAN

[Kent

Has for sale a superb stock of 1920 specimens in fine condition, including Varleyata; Bicuspis; Pendularia var. Subroseata; Melanic forms Lariciata, Consortaria, Consonaria, Abietaria; Irish forms Aurinia and Napi, fine vars. Tiliae, Yellow Dominula, etc., etc. Quotations and Insects sent on approval with pleasure.

Also a huge stock of fine PUPÆ and OVA.

Write for latest price lists.

Relaxing Tins are now 4/- small and 6/- large, pos free **Re-fills, 2/3** small, 3/3 large, post free.

A Somatic Mosaic or Mutation in *Abraxas grossulariata*. (With Plate I.)

By E. A. COCKAYNE, M.D., F.R.C.P., F.E.S.

The specimen is a large female, labelled "A. Horne, Aberdeenshire, 1906," and was most generously given to me by Mr. Robert Adkin. The whole of the upper- and underside of the wings on the left side have a rather heavily marked pattern of typical *grossulariata*, both wings on the right upperside are *lacticolor*. On the underside the right forewing is *lacticolor* with a large area in the middle of the central band and a smaller one at the termen, showing the pattern of *grossulariata*. The underside of the right hindwing is *lacticolor*, pure white except for the small black discal spot. The insect is a mosaic of a dominant and a sex-linked recessive pattern.

For the benefit of those who have not read the literature on this subject I will preface my attempt to explain its origin by an account of the mode of inheritance of the sex, and of the somatic factors involved. In moths the male is homozygous for sex; in other words, the spermatozoa are all alike in having one sex-determining or Z chromosome. The female is heterozygous for sex and has eggs of two kinds, one kind male-producing, the other female-producing. The former has a Z chromosome and, when it is fertilised, receives a Z chromosome from the spermatozoon, giving rise to an individual which is homozygous in regard to sex, having chromosomes ZZ in all its cells, and is therefore a male. The latter has instead of a Z chromosome the corresponding W chromosome, which in *grossulariata* may be entirely absent without any apparent effect on the individual. When fertilised it receives a Z chromosome from the spermatozoon, and gives rise to an individual heterozygous for sex with chromosomes WZ in each cell, a female. The Z chromosome in addition to its effect on sex has an effect on the appearance of the markings of the wings, because it carries the dominant factor, which gives rise to the *grossulariata* pattern, or the corresponding recessive factor, which gives rise to the *lacticolor* pattern.

The W chromosome is negligible in this respect. We may represent the Z chromosome carrying the *grossulariata* factor by γ , and that carrying the *lacticolor* factor by Δ . Males may be homozygous for the *grossulariata* factor with chromosomes $\gamma\gamma$ or heterozygous with chromosomes $\gamma\Delta$, if the female parent was *lacticolor*.

All the spermatozoa of the first or homozygous male will carry γ in the Z chromosome, and all the offspring of both sexes must be *grossulariata*, but half the spermatozoa of the second, homozygous for sex but heterozygous for the *grossulariata-lacticolor* factors, have the Δ factor in the Z chromosome. If one of these fertilises a female-producing egg, a *lacticolor* female is the result, since the W chromosome of the egg does not affect the appearance, and the Z chromosome carries no *grossulariata* factor.

This has been proved by many breeding experiments, and is the classical example of sex-linked inheritance in Lepidoptera. Another discovery which bears on the origin of this mosaic was made by Doncaster, who showed that in some eggs of *grossulariata* there are two

FEBRUARY 15TH, 1924.

nuclei instead of one, and that each may be fertilised by a separate spermatozoon. Although only a single insect results from such a union, one part of it may be genetically different from the other.

One explanation of the origin of this mosaic is that, although both parents were *grossulariata* in appearance, the male was heterozygous for the *grossulariata* factor, and the female had binucleate eggs.

If both nuclei of one of these eggs were female producing, and one was fertilised by a spermatozoon carrying the *grossulariata* factor and the other by one carrying the *lacticolor* factor, a *grossulariata-lacticolor* mosaic would be produced.

The part derived from the first union would have chromosomes (7W in all its cells and would be female *grossulariata*, and the part derived from the second union would have chromosomes 2W in its cells and be female *lacticolor*.

In the case of an ordinary egg with a single nucleus, division into two cells takes place after fertilisation, and as a rule each of these by innumerable subsequent divisions gives rise to half the resultant insect. Sometimes, however, cells derived from one of these wander across and mingle with those derived from the other. This is seen readily in gynandromorphs, which may have streaks of male tissue amongst the female or *vice versa*, although the loss of a Z chromosome, which caused the gynandromorphism, occurred at the first division of the fertilised ovum.

A migration of cells derived from the one fertilised nucleus amongst those derived from the other would explain the streak of *grossulariata* pattern on the *lacticolor* side of this specimen.

It is fortunate that this mosaic occurred in a species in which the cytology has been so thoroughly investigated, and involved somatic characters the inheritance of which are so well known.

All the conditions necessary for its production in the way suggested above are known to occur in wild *grossulariata*. It has also been proved that a somatic mosaic has originated from a binucleate ovum. This example, which occurred in *Drosophila* is described by Morgan in his *Origin of Gynandromorphs* on page 26.

A second possible explanation is that the specimen is a somatic mutation, which originated by loss of the *grossulariata* factor from the Z chromosome, during, or immediately after the first division of the fertilised ovum.

In this case after the first division of the fertilised ovum was complete, one cell would have a Z chromosome lacking the *grossulariata* factor, and would produce the *lacticolor* part, the other would still have the *grossulariata* factor and would produce the typical part by its subsequent divisions. Both parents in this case might have been typical *grossulariata*. Since the insect is a female, with only one Z chromosome in each cell a mutation occurring in that chromosome would cause a visible difference in outward appearance.

The arguments for and against this origin of mosaics in Lepidoptera by somatic mutation were given in my former paper in the *Entomologist's Record* 1922, XXXIV., p. 105. There is no doubt that it is the cause, which usually operates in *Drosophila*.

A third explanation is that the same mutation occurred in a germline cell of the male parent. Morgan mentions its possibility in this

species and points out that it would give rise to a *lacticolor* female, although both parents were normal *grossulariata*.

But to produce a mosaic the spermatozoon in which this mutation occurred would have to fertilise one nucleus of a female-producing binucleate egg and a normal spermatozoon the other.

It is obvious that the third explanation is the most improbable. In favour of the first is the fact that we know that all the conditions necessary for its production do exist in wild *grossulariata*, whereas we do not know that somatic mutations have ever occurred in this species. In addition there is the probability that several similar mosaics would be found in one brood and the chance of capturing one or breeding one from a wild larva would be much greater than in the case of a somatic mutation, because this would only affect a single individual.

Its likelihood depends on the frequency with which *lacticolor* is found in Aberdeenshire, and of this I have no knowledge.

The following are descriptions of two more mosaics in *Abraxas grossulariata*.

- (1) A female formerly in the Horne Collection. Left side typical *grossulariata*, right side a lightly marked form.
- (2) A female bred by Mr. H. B. Williams in June 1921, from a wild larva found in his garden at Thornton Heath. It is a small specimen with the wings equal on the two sides.

The upper- and undersides of both wings on the left are the usual heavily marked London form of *grossulariata*, with the fringes almost completely black. On the right side the black markings are much reduced, especially those on the outer side of the orange band of the forewings, the median row of spots on the hindwing and the marginal spots, and the fringes are white. Mr. Williams tells me he has never met with a specimen of this lightly marked form in his garden. I have seen specimens of both sexes marked like the light halves of these two mosaics from Argyllshire, Durham and Bath, and elsewhere, so it must have a wide distribution. It may be a recessive like the Q variety, with the factor carried by an autosomal chromosome. Since wild males are found it is not sex-linked. Each of these specimens may have arisen from a binucleate ovum, with the nuclei differing in the constitution of an autosomal chromosome, or with the nuclei alike but fertilised by spermatozoa differing in the same way. On the other hand, since both are females, they may be somatic mutations.

To my list of somatic mosaics published in this journal, 1922, pp. 105 and 200, I add the following:—

Viminia (Acronicta) menyanthidis, Vieweg. Sex not mentioned. Right side var. *obsoleta*, Tutt, left side much more strongly marked and typical (Tutt, *British Noctuae and their Varieties*, Vol. I., p. 24).

Mimas (Smerinthus) tiliae, L. Female. Right side typical with large markings on costa and posterior margin, left side with one central spot, var. *centripuncta*, Clark. The latter appears to be recessive to the former (*Bull. Ent. Soc. de France*, 1895, p. xc.).

Dryas paphia. Female.

Right upperside	<i>valesina nigra</i> (ohner schiller).
Left upperside	<i>valesina brunnea</i> (grund schillernd).

Right underside *valesina subtusaurea*.
 Left underside *valesina subtuscoerulea*.

D. paphia. Female.

Right upperside *paphia rutila*.
 Left upperside *paphia viridescens*.
 Right underside *paphia*.
 Left underside *paphia subtusaurea*.

D. paphia. Male.

Upper surface on both sides *paphia*.
 Right underside var. *subtusaurea*.

(T. Reuss, *Societas Entomologica*, 1923, p. 26).

Cirrohoedia xerampelina, Hb. Right side typical, left unicolorous, but not agreeing exactly with the description of var. *unicolor*, Stgr. (*Ent. Record*, 1922, XXXIV., p. 18).

Mr. W. Fassnidge took it on the trunk of an ash, between Lützelbourg and Saverne, in Lorraine, in August, 1921. It is a female, in which the ovipositor and both frenula were clearly seen.

Entomological Notes for the Season 1923.

By Commander GEORGE C. WOODWARD, R.N.

(Concluded from page 6.)

July 22nd, *Triphaena fimbria* (1), *Leucania lithargyria*, *Leucoma chrysoorrhoea* (*similis*), *Drepana falcataria*, *Hypena proboscidalis*, *Zanclognatha grisealis*, *Hydriomena furcata*.

At Wisley, on June 23rd, *P. argus*=*aegon* was still common, *A. aglaia*, *V. urticae*, *P. brassicae*, *P. gamma*. *A. myrtilli*, appeared to be over, as I did not see one.

On July 30th I spent a couple of hours at Box Hill, and the following species were noted:—*Angiades sylvanus*, *Zygaena filipendulae*, very abundant everywhere, *Epinephele jurtina* and *C. pamphilus*, also abundant, *P. rapae*, *O. bipunctaria* and *A. aglaia*.

The evening at Oxshott, on July 31st, produced *Hepialus sylvina*, which I found rather difficult to capture, *A. secalis* and ab. *leucostigma*, *Noctua baja*, *Triphaena pronuba*, *Ennomos elingvaria*, *Leucania impura* common, and *Petilampa arcuosa* common. I found *P. brassicae* quite commonly asleep on the bushes, a most conspicuous object in the rays of the lantern.

On August 1st I again tried Shoreham, in Kent. *Polyommatus* (*Agriades*) *coridon* was most abundant in a grass field close to the station. *A. aglaia* was also quite common, but seemed to be getting worn. In the same field I noticed *P. rapae*, *P. napi*, *P. brassicae*, *Coenonympha pamphilus*, *E. jurtina*, *A. sylvanus*, *Z. filipendulae*, *O. limitata* and *O. bipunctaria*.

At Oxshott, on August 2nd, I found a small willow bush covered with the secretions of aphids, it simply swarmed with Noctuae, mostly common, for about a couple of nights. The following were in abundance:—*T. pronuba*, *N. baja*, *I. impura*, *Caradrina morpheus*, *H. nictitans*, *A. ab. leucostigma*, and also *T. comes*=*orbona*, *T. janthina*, *T. interjecta*, *M. maura*, *A. secalis* and *X. monoglypha* not common.

On August 8th I again went to Bramshott. I found *Vanessa io*

swarming on thistles, with a few *G. rhamni* ♂ ♂ and ♀ ♀, *P. brassicae*, *A. urticae*, *D. paphia*, which was very worn; I only saw two specimens of *Hipparchia semele*, when last year it was abundant; also a few *P. icarus*. Up to now *P. icarus* has been conspicuous by its absence, I have seen only about four specimens of it this season.

I paid another visit to Oxshott on the evening of August 28th. I found *X. fulvago* common, just emerged. This moth seems to like sitting on tall grass stems in the vicinity of willow bushes, and is a most conspicuous insect in the rays of the light.

During the first fortnight in September I was again in Shropshire, and have never seen *V. io* in such abundance as I did between the 6th and 10th, every field that had scabious growing in it simply swarmed with this insect. *Polygonia c-album* was found more frequent than usual; this species seems to like scabious growing just outside a wood, and the individuals seem to stick to the same spot day after day. I also noticed a few *Pyrameis cardui*, *P. atalanta* and *Aglais urticae*. *P. icarus* was common, the first time I have found it commonly this year.

I spent an hour or two pupa digging, getting a few dozen pupae, the only ones to emerge so far being *Hadena protea* and *Cidaria miata*, which appeared on the 16th of September.

This practically ended the season as far as I was concerned.

Geographical Variation in *Hipparchia semele*, L.

By ROGER VERITY, M.D.

(Concluded from page 156.)

Let us now examine the races which constitute the various grades of lines A and E, classifying them according to the average intensity and extent of the network on the underside of the hindwing. One finds these two lines divide in corresponding grades, and that roughly the corresponding ones often are found in about the same regions, and follow each other from north to south, so that a very natural and convenient classification is obtained. The same order is suggested by the tone of the suffusion, which turns, as already stated, from dark grey to light grey and then to tawny, according to the general rule in Lepidoptera that dry heat turns black into tawny. This of course is much more conspicuous in line E than in A, because in the latter the suffusion is limited in extent.

Grade I.: Line A is represented in this grade by race *scota*, Vrt., *Bull. Soc. Ent. France*, 1911, p. 313, pl. I., fig. 10, one of the most distinct of the species; it is the smallest in size: the fulvous is so extensive, it is only surpassed by *aristaeus* and equalled by *siciliana*, but it is of an extremely dull, pale yellowish tone: the network of the underside is very thick and very deep black in tone and uniformly spread all over the wing, so that the narrow, white, band-like space only just shows through it vaguely; the black streak, which usually marks its inner outline in all the other races is obliterated here. My "types" are from the northern coast of Scotland. It is remarkable that the greatest amount of fulvous exhibited by the species should thus be produced in the extreme north and in the extreme south of Europe (Corsica, Sardinia, and Sicily). The English race is larger than *scota*, but always smaller than the continental ones, and, in other

characters too, it answers the designations either of race *scota trans. ad jubaris* and *ad semele* or of *jubaris* and of *semele trans. ad scota*, coming nearer one or the other of these races, according to latitude and localities.

Tutt, in his *Handbook of Brit. Butts.*, p. 398 (1896), points out the difference of upperside between the male of line A and that of line E, and names *suffusa* the extreme individual form of the latter, describing it as "almost unicolorous without pale bands." This name should, I think, be used as Tutt meant it to be, for the particularly melanic individuals of any race they may occur in. One must make a very clear distinction between this sort of name and those which apply to an entire race or generation, taken on the whole, and which stand, as rule, for a combination of various characters. These must all be taken into account when the name is used. It was very misleading of Tutt to apply the name of *aristaeus*, Bon., to British females "with rich fulvous transverse bands." As to the two English races of lines A and E, I have hesitated as to whether they should be named or not. The fact they are so much collected and handled and that they represent entities of particular interest to the numerous British entomologists has, however, pushed me to suggest a less cumbersome way of designating them than the "*trans. ad*" form. I thus propose the names of **angliae**, mihi, for the race describable, in size and pattern, as intermediate between *scota* and *jubaris*, and of **anglorum**, mihi, for that of line E, smaller than nymotypical *semele* and with an average darker underside.

Line E is found in grade I. in race *cadmus*, Frühstorfer, *Int. Ent. Zeit. Guben*, April, 1908, p. 10, described from Klausen in South Tyrol, and recorded in the original description also from the Valais, the Simplon route, Zermatt, and Geneva. I possess it from Oropa in Piedmont, from Moravia (transitional to *semele*), from Mt. Sumbra, m. 1,200, in the Apuane Alps (N. W. of Tuscany), and from Saint Come Bazas (S.-W. of France), so that its range is very extensive in the southern part of Central Europe. The characteristics of line E, described above, are exhibited by this race to their highest degree (fulvous very limited and very warm in tone on upperside; very reddish also on underside of forewing; underside of hindwing dark suffusion, very black and extensive, greatly restricting and often nearly abolishing the white band-like space, which, anyhow, is always covered over by the thick black network of streaks). All these characters are evidently the result of warm, damp surroundings.

Grade II. consists of the races found in the northern part of Central Europe. They are very variable, individually and locally, and they are only surpassed in this respect by *aristaeus*. In size they range from that of the English races to the larger size of more southern ones, and the average is about intermediate. In pattern and colour they culminate in two widely different forms, very characteristic of line A and of E respectively. The former has been called *jubaris* by Frühstorfer (*l.c.*) from "types" of Eastern Prussia, described as having "very prominent bands of a light ochre yellow on all the wings." It should be added that in this form the underside of the hindwings is very light in general tone; network thin; quite absent

on the broad, white, band-like space, which is left uncovered by the very limited suffusion; the latter is also of a very light gray or tawny. The specimens I have from the northern coast of France (Paris-Plage, in the Pas-de-Calais) are the most characteristic I have seen. The form of line E, which belongs to grade II., is that which I take to be the nymotypical one of *semele*, although I cannot affirm that this is its proper name, because I am not acquainted with the Swedish race. This last is certainly nymotypical, Linneus's first quotation being his own description in *Fauna Svecica*. By naming *jubaris*, Frühstorfer has restricted the Linnean name to the darker form, with no fulvous on the forewing of the male (or only two or three small spots), with this colour more limited generally in both sexes, and of a warmer tone, and with a much darker underside to hindwings; the network is thicker and more extensive, although less so than in *scota*; the suffusion is blackish; in the male they both leave, as a rule, a complete, and sharply outlined band-like space of a pure white, which stands out boldly on the darkened remaining parts of the wing; in the female this space is entirely obliterated or vaguely visible through the network. I possess this race from the Pont-de-l'Arche (Eure) and from Les Boutardières (Maine-et-Loire). It evidently is found in some localities and *jubaris* in others of the same regions. There remains to establish definitively whether it is found in Sweden, and whether it thus really is nymotypical *semele*.

Grade III. is exhibited, in line A, by race *teres*, Frühstorfer (*l.c.*), described from Digne in the Basses Alpes, which takes the place of *jubaris* in the south of Europe. It is on the whole larger than the latter, of a slightly warmer tone of fulvous, and distinctly a grade lighter on the underside; the white ground colour has often a slightly golden hue and it is broadly uncovered, forming a very wide band, because the dark suffusion is very limited and of a very pale transparent gray, or yellowish-gray; the net-work is very thin and in some individuals obliterated on extensive areas; in others it spreads all over the wing, but the white band is not much obscured by it, owing to the extreme slenderness of the little streaks. Near Florence the race is found on Mt. Conca, m. 400, on the northern slopes of Mt. Morello, whereas, only a few miles away, on the blazingly hot and parched Mt. Fanna, 600 m., one finds the race I am about to describe.

Grade III. of line E is the race which replaces *cadmus* in peninsular Italy; the fulvous of the upperside is perhaps a little less saturated, and more vivid, but otherwise that surface resembles it exactly in the male sex by the total, or nearly total, absence of fulvous on the forewing and by the small triangular patches of the hindwing; the forewing of the female exhibits broad spots, clean-cut in outline and of a clear, brilliant fulvous, which stand out boldly, and confer a strikingly finer appearance to this race than to the other continental races. The underside of hindwings is distinctly different from *cadmus*, because the general tone is much lighter; this is due to the fact that the network is thinner and the suffusion is of a very pale gray (it will be observed that this is the very character which distinguishes the race of *Pararge megera*, L., of this region, from those found further north and west); the central white band-like space is never entirely abolished in the male, as is often the case in the darkest *cadmus* individuals, but it is always narrow, irregular in outline, and usually most of it is veiled over by the

thin network, so that it does not stand out, as it does on the darker wing of nymotypical *semele*. Individual variation, however, is considerable, because the darkest individuals point to *calmus*, whereas the lighter ones approach *teres* in some cases, and recall distantly the uniform gray of *mersina* in others; the first mentioned are met with chiefly in Tuscany; apart from these, I detect no differences between my series of Tuscany and those collected in the Aspromonte, at 1,200 m., in southern Calabria. I name it **paeninsulitaliae**. "Types," from Mt. Fanna, 600 m., near Florence.

Grade IV. in line A is the culminating degree of reduction of the network of the underside, because in this line it is never entirely abolished, as it can be in B, C, and E. It is exhibited by race *siciliana*, Obth., *Et. Lép. Comp.*, X., p. 130, fig. 2315-6 (March, 1915), described from specimens "collected in Sicily by Bellier." I possess several collected by Ragusa at the Ficuzza and other localities. It is the largest race of the species, and one of the most striking. On the upper-side the fulvous is only surpassed in extent by *aristaeus*, but it is not as bright and reddish as in the latter; in both sexes there is a very broad band across all the wings, but its inner outline is sharply defined and never shades off towards the base as in that race; in the female there is always a diffused patch in the middle of the forewing, usually more extensive than in *algerica*, but never blending completely with the band, as in *aristaeus*. On the underside of the hindwings the dark suffusion is very pale and limited, so that a very broad central strip and a basal patch of the white ground colour are left uncovered. It is interesting to remark that the features of this Sicilian race and those of *aristaeus* exactly correspond to those of *Pararge megera*, L., from the same regions: in both cases the greatest extent of fulvous produced by the species is found in Corsica and Sardinia, but the Sicilian race only just falls short of reaching it; in both cases it is combined with a very dark underside in the former region, and with the lightest produced by the species in the latter region. The parallelism is carried on also in Greece by the dark upper-side combined with a light underside (in *senhes*, as in *lyssa*), and in the transitional race of Peninsular Italy (in *paeninsulitaliae*, as in *praeaustralis* and in *paeninsulitaliac*). One wonders how local causes can produce such resemblances in all these regions in two species so little like each other! It shows to what an extent surroundings influence some variations, whereas others are evidently, to a considerable degree, produced independently of this influence, the characters of line A and those of line E occurring in the same regions, and even on the same grounds, as individual variations. In Sicily the differences between the races of these two lines A and E are more accentuated than in any other region:—

Grade IV. of line E consists, there, in a race I have from the Caronie Mts., at high altitudes, which contrasts very markedly with *siciliana* by its smaller size, very limited extent of fulvous above (none on forewing of male), which is also more saturated and reddish in tone, and by the remarkably dark underside of the hindwings, with a narrow, but very clear white and sharply outlined band-like space standing out on them. At first sight all this seems quite as in nymotypical *semele* of the north; further observation shows instead that in the Sicilian race the black network is as limited in extent as in *siciliana*, but that it is replaced here by the dark suffusion, which is usually black, and very extensive,

absorbing what little network there is. This race seems to be the one Frühstorfer has described by a few vague words, from the female alone, in the *Entom. Zeitschr.*, 1908, p. 93, under the name of *blachieri*. In 1914 I made the mistake of describing in the *Bull. Soc. Ent. Italiana*, XLV., p. 219, the male of *siciliana*, Obth., as that of *blachieri*, but, now I am acquainted with the two Sicilian races, I can see that the darker one is that named by Frühstorfer. Both these authors are wrong in stating their race is a near ally of *algirica*. Stauder, too (*Zeit. wissen. Insektenbiol.*, 1916, p. 59), is not correct when he refers his *semele* of Sorrento and of Calabria to *blachieri* or a transition to it; they, of course, are *paeninsulitaliae* and thus, if anything, they point distantly to *mersina*, and on the underside rather to *siciliana*, on account of the light gray tinge of the suffusion.

As grade V. of line E I consider race *mersina*, Stdgr., *Cat. Lep. Pal.* II. ed., p. 28 (1871), described from Mersina in Cilicia, and found in the north of Asia Minor generally and in Syria, either in well characterised forms or in others transitional to the races of Greece. In the former case the upperside has very limited fulvous spots in the male and those of the female resemble *paeninsulitaliae*. The characteristic of this race, however, consists in the absence of network and in the nearly uniform gray, or brownish-gray suffusion on the underside of the hindwings of the male, which thus stands well as the culminating degree of line E. Race *maderensis*, Baker, of Madeira, described as extremely dark on both surfaces, I cannot place, because I am not acquainted with it. I can only say the same of *diffusa*, Butler, from Asia, also described as very dark.

The relationship of the different lines of variation just described is an interesting subject, but it can only be developed well by dealing more generally with the variations of other genera. The following table may be found useful as a summary and as a help to one's memory, but I cannot claim it to be a true representation of the positions the lines occupy as compared with each other, because they cannot be shown on a single plane. If one places on the plane of the page the lines I have called A and E, because they consist in the two groups of races, whose features differ more widely from each other, the other lines should not stand between them, but on other planes. The space between A and E is filled up by the numerous individual forms of transition one meets with continually in nature, and which do not in the least pass through B and C. Line D, if anything, is a combination of upperside and underside characters, which is actually found amongst them. Line B of *aristaeus*, by the extent of fulvous on the upperside, should stand before A, but the underside of many individuals swings the balance so far towards E, that one feels obliged to place it between these lines, and the resemblance of some females to some of *algirica*, also suggests that these two lines, B and C, should be kept close to each other. Line C certainly stands quite apart on account of the shape of the fulvous spots on the forewing of the male above; their similarity to those of the female and consequent lesser sexual dimorphism suggests that the more extensive and continuous band of the male in line A and the tendency, on the contrary, to obliteration of the fulvous in line E, might be two divergent variations, which have sprung from it. That is why I have placed *algirica* in a central position. Its underside, however, brings it markedly nearer to line E than to A.

	A	B	C	D	E
I. :	<i>scota</i>	...			<i>cadmus</i>
II. :	<i>jubaris</i>	...			<i>semele</i>
III. :	<i>teres</i>	<i>aristaens</i>		{ <i>senthes</i> <i>apenninigena</i> }	<i>paeninsulitaliae</i>
IV. :	<i>siciliana</i>	...	<i>libera</i>		<i>blachieri</i>
V. :		...	{ <i>pallidalairica</i> <i>algorica</i> }		<i>mersina</i>

The Roman figures indicate decreasing grades in the extent and thickness of the black network on the underside of the hindwings. In column B the dots are meant to show that individual variation is so unusually broad as to cover all the grades in a single race. It must be borne in mind that individual variation does in most races embrace more than one grade, but to a much lesser extent than in *aristaens*. In A line of variation the fulvous of the upperside is extensive, and its tone is not saturated, although it does become slightly warmer and brighter from I. to IV.; on the forewing of the male it forms a broad continuous band; on the underside of the hindwings the dark suffusion is limited and pale, as compared with the other lines, and it becomes increasingly so from I. to IV.

In B the fulvous of the upperside is more extensive than in any other line, and it spreads to the base of the wings; its tone is very warm and bright; on the underside of the hindwings the dark suffusion is always very extensive, whatever extent the network has.

In C the fulvous of the upperside is intermediate in extent between A and E; on the forewing of the male it is divided, in grade V., into spots, as in female; its tone varies as in A; suffusion of the underside very extensive, and particularly so in grade V., but tawny rather than black.

In D the fulvous of the upperside is as limited as in E, but as cold in tinge as in A; the underside suffusion is limited and pale, as in the corresponding grade of line A.

In E the fulvous of the upperside is very limited in extent, especially in the male sex, in which it is more or less entirely obliterated on the forewing; it is of a very saturated, warm tinge, and often very bright; the underside suffusion is dark and usually very extensive, but more particularly so in grade V.; from I. to V. it turns on broad lines from dark gray to light gray, and then to tawny, except in *blachieri*, where it is quite as black as in *cadmus*.

NOTES ON COLLECTING, etc.

BOARMIA ABIETARIA AT GRAVESEND.—In August, 1922, I captured two *B. abietaria*, a male in fair condition on August 14th, beaten from a yew, and a female on August 17th in perfect condition on the trunk of a beech tree close to the same yew tree, when sugaring.

This insect is new to this district. Is it new to Kent?—F. T. GRANT, 37, Old Road West, Gravesend.

AN EARLY APPEARANCE OF EUPITHECIA PUMILATA.—On January 25th, I saw an apparently recently emerged example of *E. pumilata* resting on the wall of my sitting-room. Our authorities tell us that it can be

found from April to November, but January is certainly an unusual month for the species.—HY. J. T.

NEW SPECIES TO GREAT BRITAIN.—We have recently seen no less than six species of Micro-lepidoptera already this year which our best authorities have been unable to identify with any hitherto known British species. Even in the best well-worked orders no doubt novelties will still reward the persistent workers.—HY. J. T.

BRENTHIS EUPHROSYNE, L. AB. PLUMBKA, COCKAYNE.—I owe an apology both to Dr. Cockayne and to readers of the *Ent. Record*. for a slight error in the note on this form on p. 8 of this volume. My specimens were taken, one in 1916 (which is now in Dr. Cockayne's collection), the other (the type, which is in my own collection) on May 27th, 1922. In communicating the facts verbally to Dr. Cockayne I doubtless failed to make these dates clear.—H. B. WILLIAMS, Briar Cottage, Claygate, Surrey.

LADYBIRDS HIBERNATING IN THE HOUSE.—I have also experienced this phenomenon in a somewhat spectacular form this autumn. During September, 1923 (I have not noted the exact date), the species referred to in the note on p. 9 of this volume, entered my house in great numbers. In almost every room in the house there were hundreds on the walls and ceilings, mostly in small groups of a dozen to twenty. Many hundreds were swept up and ejected, but they are still present in crevices, etc. Recently the removal of a hollow curtain rod revealed the presence of a great number, in fact my wife tells me it was almost full.—ID.

DASYCHIRA FASCELINA IN SURREY.—In May, 1921, I found upwards of sixty of the larvae of this species sitting on the top sprigs of heather on Hankley Common, near Elstead, Godalming. They were apparently confined to quite a small area. The pupae were chiefly found in pairs, and the silken pads, on which they change their skins, made the task of finding them considerably easier. Exceptionally small moths emerged and a very large number died in the pupa stage. Despite repeated attempts I have been unable to find the species since 1921.—H. B. D. KETTLEWELL, Pageites, Charterhouse, Godalming.

PHILOPHORA PLUMIGERA IN SURREY.—On November 12th, 1923, a friend of mine noticed what he took to be a dead moth in an electric-light in the road at Godalming. On closer examination it was found that it was a specimen of *P. plumigera* and not quite dead. On November 18th I took two other ♀s at the electric-light, one at rest on the standard and the other flying round the lamp. The Charterhouse Records for the District show that two males were taken in 1888 and this points to the fact that this species is well established here.—ID.

NOLA CONFUSA IN HYDE PARK.—I took one specimen, newly-hatched, of the "Least Black Arches" on April 14th, 1923, sitting head-upmost on a poplar tree. Both the dates and the localities seem unusual.—ID. [Flies in May-June.—H. J. T.]

SESIA ANDRENAEFORMIS.—Few people seem to be aware that this Clearwing, generally considered a rarity, is particularly common in certain localities along the Hog's Back, especially the Guildford end. The "Wayfaring Trees" there are riddled with the larvae to such an extent that whole limbs of bushes die down because the interior is eaten out. By cutting the stems in late May, wherever the well-known round hole is to be seen, as many specimens can be collected in a single day as will ever be needed for the collection. The time of the emergence varies with the season; only about half of the collected twigs produce the required results as the life-cycle lasts two years and a good proportion of the larvae may be in their first year only.—Id.

CALYPTA TRAPEZINA.—Mr. G. B. C. Leman sent me a specimen of this moth which he had taken, while beating for *Coccinellidae*, on an oak in a friend's garden. His capture rather approaches *ab. nigra* in form. The species is not rare, but the locality (Putney) seems to me most unusual. It was taken in July, 1923.—Id.

CURRENT NOTES AND SHORT NOTICES.

The Annual "Verrall Supper" took place on January 15th, as usual on the day before the Annual Meeting of the Entomological Society of London, and was a most successful gathering; no doubt the improved weather was no small factor in the large attendance, for more than 130 were present out of the 140 acceptances. Among those present were, B. W. Adkin, J. H. Adkin, R. Adkin, H. W. Andrews, E. B. Ashby, S. R. Ashby, J. B. Ashworth, E. C. Bedwell, G. Bethell, G. T. Bethune-Baker, K. G. Blair, S. Blenkarn, Col. W. Bowater, L. A. Box, H. Britten, R. T. Bowman, F. B. Carr, Prof. J. W. Carr, G. C. Champion, C. A. Cheetham, Dr. E. A. Cockayne, J. E. Collin, Joseph Collins, B. H. Crabtree, Capt. Crocker, Dr. J. Davidson, L. E. Dunster, J. H. Durrant, H. Donisthorpe, H. M. Edelman, F. W. Edwards, Stanley Edwards, E. Willoughby-Ellis, Dr. H. Eltringham, E. Wylie Fenton, Dr. Fremlin, L. T. Ford, G. F. W. Fox-Wilson, G. E. Frisby, F. W. Frohawk, J. C. F. Fryer, Dr. C. J. Gahan, F. Gilliatt, C. T. Gimingham, E. E. Green, A. de B. Goodman, O. R. Goodman, T. H. L. Grosvenor, A. T. J. Gedye, H. M. Hallett, A. H. Hamm, B. S. Harwood, P. Harwood, H. C. Hayward, Capt. A. F. Hemming, T. F. P. Hoar, H. Hodge, Dr. D. Hunter, H. C. Huggins, G. L. R. Hancock, Prof. S. Image, Dr. A. D. Imms, O. E. Janson, C. F. Johnson, D. C. Johnstone, Dr. K. Jordan, W. J. Kaye, F. A. Labouchere, L. Lacey, F. Laing, H. A. Leeds, G. C. Leman, Prof. J. J. Lister, R. W. Lloyd, T. A. Lofthouse, W. J. Lucas, G. T. Lyle, A. H. Macmurdo, H. Main, W. Mansbridge, H. H. May, A. W. Mera, Dr. Chalmers Mitchell, J. P. Mutch, L. Nell, W. G. F. Nelson, L. W. Newman, C. Nicholson, F. A. Oldaker, J. Peed, F. N. Pierce, Prof. E. B. Poulton, R. M. Prideaux, W. Rait-Smith, Col. Rattray, Capt. N. D. Riley, A. H. Ruston, A. Rymer-Roberts, Lord Rothschild, P. F. Skinner, L. G. Saunders, J. W. Saunt, Dr. R. F. Scharff, W. Schmassmann, Hugh Scott, Lieut. Seabrook, V. E. Shaw, W. G. Sheldon, C. E. Stott, R. Stenten, E. Step, E. E. Syms, G. Talbot, W. H. Tams, Rev. J. E. Tarbat, M. L. Thompson, Rev. A. Thornley, A. E. Tonge, H. J. Turner, C. J. Wainwright,

Commander J. J. Walker, S. Walker, J. D. Ward, G. E. R. Waters, J. H. Watson, B. S. Williams, E. J. Winstanley, L. Bonaparte-Wyse, and H. B. Williams.

The Annual Reports of the London Societies seem to be of a most excellent nature. Both the Entomological Society of London and the South London Entomological Society have higher membership than ever before in their history. The former has in the past three years paid off more than three-fifths of the debentures issued to purchase their freehold premises at 41, Queen's Gate, and the latter have successfully found funds to pay for the extremely good proceedings recently issued. The Treasurers of the Societies are to be heartily congratulated for their persistent intensive work on behalf of their respective society.

SOCIETIES.

THE SOUTH LONDON ENTOMOLOGICAL SOCIETY.

November 22nd.—ANNUAL EXHIBITION.—MESSRS. O. R. and A. de B. Goodman exhibited butterflies taken by them this year on the continent: in the Riviera (spring), *Zerynthia polyxena* var. *cassandra*, *Euchloë crameri* and var. *ausonia*, etc.: in the Basses Alpes, *Melitaea parthenie*, *Argynnis niobe* ab. *orientalis*, bleached *Epinephete jurtina* var. *hispulla*, etc.; at Digne, *Leptosia duponcheli*, *Hesperia sidue*, *Thestor ballus*, etc.: near L. Maggiore (summer), *A. cydippe* ab. *cleodoxa*, *Neptis lucilla*, *Dryas paphia* ab. *valesina*, etc.; at Reazzino, *Heteropterus morpheus*, etc.; and at Pontresina and in the Engadine, *Paruassius delius*, *Brenthis thore*, *Melitaea varia*, *Erebia alecto*, *Colias palaeno*, *Plebeius donzelii*, etc.; and a worn *Syntarucus telicanus* from the Val de Fain.

Mr. A. E. Stafford, series of aberrations of *Polygonmatus (Agriades) coridon* from Royston.

Mr. Worsley Wood, three hybrids of *Xanthia (Mellinia) ocellaris* and *X. (Citria) fulvago* bred in 1922; and gave notes on the brood and on his other attempts to hybridise these species.

Mr. J. J. Fisher, series of Lycaenids illustrating striate forms of aberration and variants of *T. ballus*, *T. polyxena* and a melanic *Melitaea dictynna*.

Mr. Leeds, a very large number of aberrations of British butterflies taken this season largely in Herts and Hants, worked out and named on the basis of the nomenclature in Tutt's *British Lepidoptera*, vols. I.-IV., and Courvoisier's *Die Schmett. Schw.*, *Polygonmatus (A.) coridon* was especially dealt with.

Mr. R. Adkin, representative series of *Diacrisia mendica*, two broods of a second generation of race *mistura*, and gave notes on the breeding. Also a *Pyrameis atalanta* with the large white blotch much obscured by black.

Mr. Holford, a remarkable and unique aberration of *Triphaena pronuba* with black-brown suffusion and suppression of the bright orange.

Mr. R. T. Bowman, a striate *Abraaxas grossulariata*.

Mr. Greer, of Tyrone, aberrations of *Pieris napi*, light, dark, extra spots, pale yellow, *Euchloë cardanines*, abs. *scheepdaeli*, ab. *caulosticta*, ♀ streaked with orange, etc., *Melitaea aurinia*, extra spotted *P. magera*, several ab. *addenda* of *E. jurtina* and one near var. *hispulla*, spotted *Coenonympha pamphilus*, a number of ab. *icarinus* of *P. icarus* with a streaked ♀, etc.

Mr. D. Pearson, *E. jurtina*, bleached and ab. *addenda*, gynandromorph of *P. (A.) coridon*, dark *M. aurinia* and an obsolete underside, a black *Limenitis sibilla*, *E. cardamines* ♀ with orange patches, streaked and obsolete *P. (A.) thetis*, a white *R. phlaeas*, etc., and from the Simplon area *Plebeius sephyrus* race *lycidas*, *Erebia christi*, *M. dictynna* forms, *E. pronœ* var. *pitho*, *L. arion* var. *obscura* with British *L. arion* for comparison, etc.

Capt. Crocker for Mr. Sperring, variable series of bred *P. aegeria*, black suffused *Brenthis euphrosyne*, with *P. aegon (argus)* showing range from leaden to violet-blue.

Mr. C. H. Williams, aberrant series of *R. phlaeas* and *P. (A.) coridon*.

Mr. Tonge, series of *P. (A.) coridon* aberrations, including a fine striated ♂, and ab. *cinnus*, unusually common this season, series of *P. (A.) thetis*, including an *obsoleta* and blue suffused ♀s, spotted *C. pamphilus*, an extreme aberrant and suffused *Cleora jubata (glabraria)*, and two ab. ♂ *polonus* of *P. (A.) thetis*, etc.

Mr. A. A. W. Buckstone, a series of the recently differentiated *Anaitis efformata*, and pointed out the facts of its differentiation.

On behalf of Mr. and Mrs. Castle-Russell, aberrations of British Lepidoptera 1922-3, melanic ♀s of *D. paphia*, *E. jurtina* ♂ resembling ♀, a striated *B. euphrosyne*, series of abs. of *B. selene* and *M. aurinia*, a pale yellow *P. (A.) coridon*, and forms striate and obsolete, etc.

Mr. A. W. Vernon, Rhopalocera from the Austrian Tyrol *B. thore*, *E. lappona*, *E. pronœ* var. *pitho*, *M. aurinia* var. *merope*, etc.

Mr. A. W. Mera, species that have developed, in recent years, a marked tendency to melanism, *Epirrita (Oporabia) christyi*, *E. (O.) autumnaria*, *L. multistrigaria*, and *Hybernia defoliaria*.

Capt. Hemming, striate aberrations of British Lycaenids showing two forms assumed, internal and external, according to their origin and direction.

Mr. L. W. Newman, an *Arctia caja*, brown forewings with zigzag markings near apex.

Mr. H. Candler, eggs of the Blackheaded Gull from Scoulton Mere, showing remarkable extremes of coloration.

Mr. Garrett, a fine ab. *schmidtii* of *R. phlaeas* from Bexley.

Mr. Grosvenor, the wonderful ab. of *Z. jilipendulae* taken by him at Royston, with a duplicated forewing in place of a right hindwing, with other Zygaenid aberrations.

REVIEWS AND NOTICES OF BOOKS.

“SOCIAL LIFE AMONG THE INSECTS”; being a series of Lectures delivered at the Lowell Institute in Boston, in March, 1922, by William Morton Wheeler, Ph.D., Sc.D., Harcourt, Brace and Co., New York. Pp. i.-vii. + 375, with 116 text figures. 1923.

This splendid volume is undoubtedly a work of the first importance; extremely interesting; most carefully thought out; and a most valuable contribution to the science of both Entomology and Natural History in general.

It is well known to most people that ants, bees, and wasps, and also termites, live in social communities; but not that such phenomena occur also with other insects. Here, however, they will learn, not only that such is the case, but will also obtain a good idea of the origin and development of such a mode of life.

Anyone who carefully reads this book is obliged to take a much larger and broader view of social life among insects, and to regard the subject as a whole from quite a new standpoint.

Let us now proceed to examine the contents of this attractive book. In the preface the author points out that he has endeavoured to throw emphasis on the fundamental nutritive *motifs* in the phylogeny, ontogeny, and maintenance of insect societies, and he gives generous thanks to all those to whom he is indebted for the loan of photographs and drawings for some of the beautiful illustrations with which the book is freely embellished. The work is then divided into six lectures; a Documentary Appendix; an Index of Subjects; and an Index of Authors.

Lecture I. "General Remarks on Insect Societies. The Social Beetles." The first nineteen pages are devoted to the General Remarks and space will only allow us to deal with them very briefly. We are not entirely in agreement with all the views expressed by Prof. Wheeler, as we are considerably more of a Darwinian than he is, and also we do not much believe in "the greater mutual helpfulness," or "the drawing together of nations," etc.; but as these are purely matters of personal opinion, and have nothing to do with facts, we will leave it at that.

The immense age of insects—some 300 million years!—is commented on; and the author finds that social habits have arisen no less than 24 different times, in as many different groups of solitary insects. A list of the groups that form these various societies is given in the accompanying table.

COLEOPTERA. (<i>Gynandvarchie</i>).	}	1. Scarabaeidae (<i>Copris</i> , <i>Minotaurus</i>).
		2. Passalidae (<i>Passalus</i>).
		3. Tenebrionidae (<i>Phrenapates</i>).
		4. Silvanidae (<i>Tachigalia</i> Beetles).
		5. Ipidae (<i>Ambrosia</i> Beetles).
		6. Platypodidae (<i>Ambrosia</i> Beetles).
HYMENOPTERA. (<i>Gynarchie</i>).	}	<i>Sphecoidea</i> .
		7. Sphecidae (<i>Spheex</i>).
		8. Bembicidae (Digger Wasps).
		<i>Vespoidea</i> .
		9. Eumeninae (<i>Synagris</i>).
		10. Zethinae (<i>Zethus</i>).
		*11. Stenogastrinae (<i>Stenogaster</i>).
		*12. Epiponinae (<i>Chartergus</i> , <i>Belonogaster</i> , etc.).
		*13. Rhopalidiinae (<i>Rhopalidia</i> , etc.).
		*14. Polistinae (<i>Polistes</i>).
		*15. Vespinae (<i>Vespa</i>).
		<i>Apidae</i> .
		16. Halictinae (<i>Halictus</i>).
		17. Ceratininae (<i>Allodape</i>).
		*18. Bombinae (Bumble-bees).
*19. Meliponinae (Stingless Bees).		
*20. Apinae (Honey Bees).		
*21. Formicidae (Ants).		

DERMAPTERA.	{	22. Forficulidae (Earwigs).
(<i>Gynarchic</i>).		
EMBIIDARIA.	{	23. Embiidae (<i>Embia</i>).
(<i>Gynarchic</i>).		
ISOPTERA.	{	*24. Termitidae (Termites, or "White
(<i>Gynandrarchic</i>).		Ants".

In this list those marked with an asterisk are definitely social, the rest being incipiently social or subsocial. In the Termites and all the beetle groups the colony consists of a male and female parents and their offspring of both sexes; in all the Hymenoptera, Dermaptera, and Embidaria, the female alone founds the colony, which is developed by her daughters. The former groups are, therefore, gynandrarchic, the latter gynarchic.

The rest of the lecture is devoted to the six beetle societies which have been developed by species belonging to as many different natural families.

Space will only allow us to touch on a few points of interest; but where all is so interesting it is difficult to know what to mention and what to leave out. It may be stated here that throughout the book the author gives full credit to all other observers for their work on the life-histories and habits of the insects mentioned.

The life-histories of the Sacred *Scarabæus* and other dung-rolling beetles are thoroughly explained, and the illustrations show them trundling their pellets and fashioning the dung in their subterranean chambers. The stridulating of the larvae of *Passalus* sps. is described and figured, and their colonies are shown to consist of a male and female and their progeny. In the "Tachigalia Beetles," Wheeler recapitulates his most interesting discovery, made in the jungles of British Guiana in 1920, of a couple of Silvanid beetles, which occur in the hollow leaf-petioles of young trees of a *Tachigalia* (*T. paniculata*). Both the adult beetles, and their larvae in all stages, have learned to stroke certain mealy-bugs, which find their way into the leaf-petioles, with their antennae as ants do, and feed on their excreta.

The author summarises the main points of interest in connection with the social beetles. To briefly mention a few of them:—

The six unrelated families are all very ancient; the substances on which they feed are remarkably diverse; the father beetle co-operates to a greater or less extent with the mother beetle in providing for the young.

Lecture II. "Wasps Solitary and Social."—This is an extremely interesting chapter, and one feels that any extracts one can give, or any remarks one may make in the space of a review, can but feebly represent the beauty of this lecture. It must be read as a whole to be really appreciated as it deserves. As the lecturer truly observes, wasps have attracted fewer investigators than the ants and bees, though they are of even greater interest to the student who is tracing the evolution of specialised instincts and social habits. He divides the enormous Wasp group into two great complexes, the Sphecoids and the Vespoids, and he establishes some seven generalisations of which the following are the chief points:—

(To be concluded.)

Subscriptions for Vol. XXXVI. (10 shillings) should be sent to Mr. Herbert E. Page, "Bertrose," Gellatly Road, New Cross, S.E. 14 [This subscription includes all numbers published from January 15th to December 15th, 1924.]

Non-receipt or errors in the sending of Subscribers' magazines should be notified to Mr. Herbert E. Page, "Bertrose," Gellatly Road, New Cross, S.E. 14

ADVERTISEMENTS of Books and Insects for Sale, or Books wanted will be inserted at a minimum charge of 2s. 6d. (for four lines). Longer Advertisements in proportion. A reduction made for a series Particulars of Mr. Herbert E. Page, "Bertrose," Gellatly Road, New Cross, S.E. 14

Subscribers who change their addresses must report the same to Mr. H. E. PAGE "Bertrose Gellatly Road, New Cross, London, S.E., otherwise their magazines will probably be delayed.

Desiderata.—Foreign examples, local races, vars. and abs. from all parts of the world of any butterflies included in the British list. Setting immaterial; exact data indispensable. Liberal return made.—*W. G. Pether, "Thelma," 4, Willow Bridge Road, London, N. 1.*

Duplicates.—*Cinxia*, *Bellargus*, *Coridon*, *H. Comma*, *Lineola*, *Galathea*, *Moneta*, *Nupta*, and many others. *Desiderata*.—*Blandina*, *Irish Icarus*, *Carmelita*, *Cuculla*, *Gonostigma*, *Ashworthii*, *Templi*, *Australis*, *Undulata*, *Smaragdaria*, *Testacea*.—*W. Gifford Nash, Clavering House, Bedford.*

Duplicates.—*Cinerea* ♀, fine forms, grey, brown and blackish, *Maritima* and vars. *Immorata* and other East Sussex species.

Desiderata.—Pupæ. *Luteago* (*Barrettii*), *Caesia*, *Albimacula*, *Alpina*, *Xanthomista*, *Sparganii*, *Dissoluta* (*Arundineta*), *Graphalii*. Also imagines of extreme forms *Noctuæ* in fine condition only.—*A. J. Wightman, 35, Morris Road, Lewes.*

N. American Lepidoptera in papers in exchange for ditto from any part of the world. *J. C. Woodward, Training Ship "Cornwall," Purfleet, Essex.*

CHANGE OF ADDRESS.—*E. W. Morse, 4, Wortley Road, Upper Armley, Leeds.*

Commander J. C. Woodward, Training Ship "Cornwall," Purfleet, Essex.

J. H. Durrant, from 17 to 20, Burstock Road, Putney, S.W.

R. S. Bagnall, F.E.S. c/o F. Milton, 30-31, St. Swithin's Lane, E.C. 4.

MEETINGS OF SOCIETIES.

Entomological Society of London.—41, Queen's Gate, South Kensington, S.W. 7. 8 p.m. March 5th, March 19th, 1924.

The South London Entomological and Natural History Society, Hibernia Chambers, London Bridge. Second and Fourth Thursdays in the month, at 7 p.m. February 28th, *W. J. Lucas, B.A., "The caudal lamellae of the Naiads of the British Agrionid Dragonflies."*—*Hon. Sec., Stanley Edwards, 15, St. German's Place, Blackheath, S.E. 3.*

The London Natural History Society (the amalgamation of the City of London Entomological and Natural History Society and the North London Natural History Society) now meets in Hall 40, Winchester House, Old Broad Street E.C. 2, first and third Tuesdays in the month, at 6.30 p.m. Visitors welcomed. *Hon. Sec., W. E. GLEGG, 44, Belfast Road, N. 16.*

All MS. and editorial matter should be sent and all proofs returned to **HY. J. TURNER, 98, Drakefell Road, New Cross, London, S.E. 14**

We must earnestly request our correspondents **NOT to send us communications IDENTICAL with those they are sending to other magazines.**

Lists of **DUPLICATES** and **DESIDERATA** should be sent direct to **Mr. H. E. Page, Bertrose, Gellatly Road, New Cross, S.E. 14**

OVA, LARVÆ, AND PUPÆ.

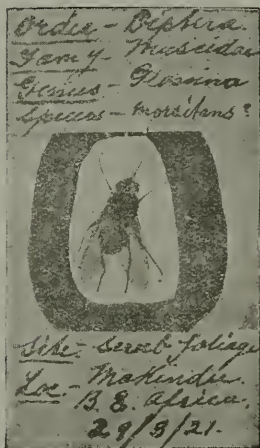
The Largest Breeder of Lepidoptera in the British Isles is

H. W. HEAD, Entomologist,
BURNISTON, Nr. SCARBOROUGH.

Full List of Ova, Larvæ, and Pupæ, also Lepidoptera, Apparatus, Cabinets
etc., sent on application.

Many Rare British Species and Good Varieties for Sale.

Thymoplas



MOUNTING OUTFITS.

A simple and permanent method for
mounting insects, &c.

Adapted by the Entomological Dept. Royal
College of Science, London.

Price 3/- (postage 6d.) and 6/- (postage 9d.)

HARBUTT'S PLASTIGINE, LTD.
56, LUDGATE HILL, E.C.4, and
BATHAMPTON, nr. BATH.

AGENT—

G. A. BENTALL, F.Z.S.,
Naturalist,
392, Strand, W.C.2.

BACK VOLUMES OF

The Entomologist's Record and Journal of Variation.

(Vols. I-XXXV.)

CONTENTS OF Vol. I. (Most important only mentioned.)

GENUS *Acronycta* and its allies.—Variation of *Smerinthus tiliæ*, 3 coloured plates—
Differentiation of *Melitæa athalia*, *parthenie*, and *aurelia*—The Doubleday collection—
Parthenogenesis—Paper on *Taeniocampidae*—Phylloxera—Practical Hints (many)—
Parallel Variation in Coleoptera—Origin of *Argynnis paphia* var. *valesina*—Work for the
Winter—Temperature and Variation—Synonymic notes—Retrospect of a Lepidopterist
for 1890—Lifehistories of *Agrotis pyrophila*, *Epunda lichenea*, *Heliophobus hispidus*—
Captures at light—Aberdeen-Lire notes, etc., etc. 360 pp.

To be obtained from—

Mr. H. E. PAGE, "Bertrose," Gellatly Road, New Cross, London, S.E. 14
to whom Cheques and Postal Orders should be made payable

The Entomologist's Record

AND

Journal of Variation

EDITED BY

RICHARD S. BAGNALL, F.L.S., F.E.S.

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

M. BURR, D.SC., F.L.S., F.Z.S., F.E.S.

(REV.) C. R. N. BURROWS, F.E.S.

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

JAS. E. COLLIN, F.E.S.

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

JOHN HARTLEY DURRANT, F.E.S.

ALFRED SICH, F.E.S.

(REV.) GEORGE WHEELER, M.A., F.E.S.

and

HENRY J. TURNER, F.E.S.,

Editorial Secretary.

CONTENTS.

	PAGE.
Teratological Legs in Lepidoptera, <i>E. A. Cockayne, M.D., F.R.C.P., F.E.S.</i> (with Plate II.)	83
New British Cecidomyiidae, <i>R. S. Bagnall, F.L.S., F.E.S., F.R.S.Ed., and J. W. H. Harrison, D.Sc., F.R.S.Ed.</i>	36
The Variation in <i>Larentia (Thera) variata</i> , Schiff., <i>Carl Höfer.</i>	39
CURRENT NOTES AND SHORT NOTICES	41
SOCIETIES:—The Entomological Society of London; The South London Entomological Society.	41
REVIEWS AND NOTICES OF BOOKS:—"Social Life among the Insects," <i>H.D.</i> ; The Proceedings of the South London Entomological and N.H.S., 1923-23, <i>C.R.N.B.</i>	30 42
SUPP.:—List of Races of the Rhopalocera of Peninsular Italy, <i>Roger Verity, M.D., and Orazio Querci</i>	(25)–(28)

MARCH 15th, 1924.

Price ONE SHILLING AND SIXPENCE (NET).

WITH ONE PLATE.

Subscription for Complete Volume, post free
(including all DOUBLE NUMBERS, etc.)

TEN SHILLINGS.

TO BE FORWARDED TO

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

"BERTROSE," GELLATLY ROAD, NEW CROSS, S.E.14.

Communications have been received or have been promised from Messrs. H. Donisthorpe, Dr. Verity, J. H. Durrant, Rev. C. R. N. Burrows, Wm. Fassnidge, Orazio Querci, H. J. Turner, Karl Höfer; R. S. Bagnall, F.R.S.E., F.L.S., F.E.S., J. W. H. Harrison, D.Sc., F.R.S.E., T. F. Marriner, F.E.S., O. R. Goodman, F.Z.S., F.E.S., Lieut. E. B. Ashby, F.E.S., W. Hawker-Smith, F.E.S., with Reports of Societies and Reviews.

WATKINS & DONCASTER

(ESTABLISHED 1879)

36, Strand, London, W.C.2.

Telephone: GERRARD 9451.

:: **Manufacturers and Suppliers of** ::
Natural History Requisites of all Kinds.

Cabinets. Best quality and finish. All sizes at lowest prices on view at above address.

Lepidoptera. Large stocks kept of British Palæarctic and Exotic Species. Lists on application.

Bird's Eggs. Large selection of British and European Eggs, singles and in sets with data, always on hand.

Books. A varied and extensive stock on Entomology and all Branches of Natural History.

GENERAL CATALOGUE SENT POST FREE.

ENTOMOLOGICAL NEWS.

An illustrated magazine, published monthly—except August and September—devoted to the study of **INSECT LIFE**. It contains a list of the titles of the current Literature on American Entomology, articles by the leading authorities in the United States and Canada, and is a necessary journal of reference for working entomologists. Valuable information for economic and systematic students.

Annual subscription price \$2.50. Foreign (except Canadian) subscriptions \$2.70. Single copies 30 cents. Address

ENTOMOLOGICAL NEWS, 1900 Race Street, Philadelphia, Pa.

Bexley]

L. W. NEWMAN

[Kent

Has for sale a superb stock of 1920 specimens in fine condition, including Varleyata; Bicuspis; Pendularia var. Subroseata; Melanic forms Lariciata, Consortaria, Consonaria, Abietaria; Irish forms Aurinia and Napi, fine vars. Tiliae, Yellow Dominula, etc., etc. Quotations and Insects sent on approval with pleasure.

Also a huge stock of fine PUPÆ and OVA.

Write for latest price lists.

Relaxing Tins are now 4/- small and 6/- large, pos free **Re-fills, 2/3** small, 3/3 large, post free.

Teratological Legs in Lepidoptera. (With Plate II.)

By E. A. COCKAYNE, M.D., F.R.C.P., F.E.S.

Descriptions of abnormalities in the structure of the legs of Lepidoptera are few in number. It is probable that they are rarer than in Coleoptera, in which the legs are more exposed to injury during the pupal period. But frequently they must be overlooked, owing to the fact that they are concealed by the wings, by the long hair on the abdomen, and by their own covering of scales. Specimens of *Smerinthus ocellatus* and *Plusia iota*, each with an extra leg, have been described by Schultz and Blense. An extra tarsus has been recorded in *Cosmotriche potatoaria* by Barrett, in *Catocala nupta* by Chapman, in *Parnassius apollo* by Blense, and in *Ocneria dispar* by Forbush and Fernald. A *Zygaena anthyllidis* described by Chapman affords the only example of reduplication in a lepidopterous leg which follows Bateson's Law. It has three tarsi on the left meta-thoracic leg, the two extra ones being arranged in secondary symmetry. Although the abnormalities, which I am describing below, are not so striking, I think they are different from any previously noted. They include a tarsus with the terminal joint double, tarsi with three claws, and a tarsus with the claws partially fused at the base, but ending in three and five tips respectively.

Apocheima hispidaria.—Female. Loughton, bred from a full grown wild larva. II., 1923. The tarsus of the left metathoracic leg is very short, measuring only 1mm., the corresponding tarsus on the right side being 3.75mm. long. It has only three joints, the second of which bifurcates at the distal end. From the anterior, or internal portion, arises a terminal joint with two small claws and paronychialia. From the posterior or external portion, which is more heavily chitinised, arises a thinner, longer joint formed of very weak chitin, and devoid of claws, pulvillus, and all the other structures which form the foot. Fig. 1.

Lasiocampa trifolii.—Female. S. Cornwall. Bred IX., 1923.

The right prothoracic leg has a five-jointed tarsus 4mm. instead of 5mm. long. The terminal joint bears three claws. The plate, from which the pulvillus springs, is abnormal in shape and lies toward the outer side. The outer paronychium is small, and is very nearly in the usual position, but the one on the inner aspect is further out than usual, and is separated from the plate of the pulvillus by a piece of smooth chitin. The pulvillus itself, well formed, of black and polished chitin, is displaced outwards. Of the three claws the central one is obviously supernumerary, but bears no appearance of being double. The outer one, on the other hand, is very wide, and may be a fused double one. If so the specimen may conform to Bateson's Law. The inner half of this claw may be a mirror image of the outer, and each may represent a complete claw, whereas the central claw may be a mirror image of the inner half of the double claw. The two last would be supernumerary. The long bristle of the empodium is present, but is omitted from the figure. Many spines are absent from the ventral surface of the last joint of the tarsus. Figs. 2 and 3.

Lycia hirtaria.—Female. London.

From a family of inbred larvae, many of which produced weak, MARCH 15TH, 1924.

crippled imagines. The tarsus of the right prothoracic leg has only two joints, and measures 1mm. in length instead of 3·25mm. It has on the last joint a small narrow pulvillus, two small paronychialia, two lateral claws and a third abnormally broad claw lying almost midway between and a little dorsal to them. Its tip is bent upwards. Its width makes it probable that it is a fused double claw. If so, this may be regarded as an example of Bateson's Law. The distal extremity of the last tarsal joint is slightly longer on the inner and wider on the outer side, and the latter is probably the side on which reduplication has occurred. The outer part of the double claw may be a mirror image of the external lateral claw and the inner part of a mirror image of the outer.

The external lateral claw would be the original claw and the double central claw would represent the two extra ones. In addition to the tarsus the tibia of this leg is short, being 2mm. instead of 3·25mm. long. Figs. 6 and 7.

Lasiocampa trifolii.—Female. S. Cornwall. Bred IX., 1923.

The right prothoracic tarsus is very small, being 1mm. in length, and has only two joints. The terminal joint is so abnormal that I cannot identify the different parts. There appears to be one minute paronychium, but the other one and the pulvillus are absent. It ends in a most peculiar single claw, which terminates in a sharp point and a small blunt process, and has another sharp pointed process projecting from it laterally.

There was another dense chitinous process arising from the ventral aspect of the last joint at a point much nearer to the base. Thin at its origin it became swollen distally, and the swollen part was deeply grooved and ended in two sharp points. I made a drawing of it in the dry state, but broke it off and lost it when making a microscopical preparation. Apparently there are two claws, one bifid or trifid and the other bifid. The penultimate joint of the tarsus has only three spines. Figs. 8 and 9.

Apocheima hispidaria.—Female. Buddon Wood. W. G. Blatch-22.III.1895. Canon C. T. Cruttwell's collection.

Of the six legs four have abnormal tarsi. The left prothoracic tarsus terminates in two large normal claws, but it has only three joints, and measures 1·75mm. in length. The left mesothoracic tarsus measures 2mm., has four joints, and ends in a normal foot. The left mesothoracic leg has a tarsus 1·8mm. long, with four joints. The claws are fused for about one-third of their length and do not diverge in the usual way. A lateral view shows that the posterior or internal claw is partially separated into three by deep grooves and terminates in three distinct tips, an upper, a middle, and a lower one. (Fig. 4.) The external or anterior claw is also partly divided by a groove. The upper part ends in a sharp tip turned inwards at right angles, and the lower part ends in four separate tips, three of which are bent inwards. (Fig. 5.) The normal claws in this species are much longer, quite separate, and each ends in a single sharp point turned outwards and downwards. The spines on the penultimate joint of this abnormal tarsus are reduced in number to three. The right metathoracic leg has a tarsus with four joints, measuring 1·75mm. The last three joints are very short. The penultimate has a rounded lateral outgrowth, and the last a dorsal outgrowth ending in two sharp pointed pieces of chitin projecting over the spines. The remaining two legs are normal with tarsi between 3 and 4mm. long.

Lasiocampa trifolii.—Female.

The left prothoracic leg has a tarsus with four joints, the last three being very short. It has two small but perfect claws. Its length is 3mm., that of the corresponding tarsus on the right side being 5mm.

Apocheima hispidaria.—Female.

The left metathoracic leg has a four-jointed tarsus 3mm. instead of 4mm. long, and the right prothoracic leg has a three-jointed tarsus 2mm. instead of 4mm long.

A. hispidaria.—Female.

The right mesothoracic leg has a three-jointed tarsus slightly more than 1mm. in length.

A. hispidaria.—Female.

The tibia of the left mesothoracic leg measures 1.5mm. instead of 3mm. in length. The tarsus is normal.

L. trifolii.—Female.

The left prothoracic leg has single-jointed tarsus devoid of scales, spines, claws, pulvillus and paronychia.

Lycia hirtaria.—Female.

The right mesothoracic tarsus has five joints but is 3 instead of 4mm. long.

L. hirtaria.—Female.

The left metathoracic tarsus has five joints, but is half a millimetre shorter than the right.

L. hirtaria.—Female.

The left mesothoracic tarsus has only four joints and one claw is missing.

Xanthia ocellaris.—H. Worsley-Wood. Thames Valley.

The right prothoracic tarsus has only two joints and measures 1.5mm. instead of 4mm. All the structures on the terminal joint are present but much reduced in size.

Erannis defoliaria.—Female.

The left prothoracic leg has a very thin four-jointed tarsus without scales or claws.

Fidonia atomaria.—Male. Bred L. W. Newman. X. 1910. Dr. Chapman's teratological collection.

The right prothoracic leg is very small but perfect. The following are the measurements of the two legs in millimetres. R. femur, 1.1, L. 2.4; R. tibia .5, L. 1.8; Epiphysis of R. tibia .3, L. 1.1; Tarsal joints R. .9, .5, .36, .24, .4, with claws, L. 1.3, .6, .5, .3, .52. From them it will be seen that the greatest reduction in length has occurred in the tibia and femur.

Barrett, C. G.—*Ent. Month. Mag.*, 1899, Vol. XXXV., p. 270.

Blause.—*Bull de la Soc. Ent. de France*, 1900, p. 52.

Chapman, T. A.—*Proc. Ent. Soc. Lond.*, 1914, p. lxxxiv., and *Trans. Ent. Soc. Lond.*, 1917, p. 173.

Forbush and Fernald.—*The Gypsy Moth*. Report of Massachusetts Board of Agriculture, 1896, p. 341, pl. li., fig. 8.

Schultz, O.—*Illustr. Wchenschr. f. Ent.*, 1897, II., pp. 631-2.

[*Melitae maturna*.—“Among the specimens taken by Mr. Fison in the Engadine, in 1901, is a most remarkable ♂, in which the middle left leg is replaced by a tiny wing, having the appearance of the inner margin of a hindwing with the fringe, about 8mm. in length and 2mm. in breadth. It is quite detached from the normal wing, which is per-

fect without it. It is more curious, as the leg is a true limb, which the wing structures, correctly speaking, are not."—G. W.]

New British Cecidomyiidae. 5.

By RICHARD S. BAGNALL, F.L.S., F.R.S.ED., F.E.S., and J. W. HESLOP HARRISON, D.Sc., F.R.S.ED.

(Continued from Vol. XXXIV., p. 154.)

The present lengthy list of additions to the British Fauna is due to the unequalled opportunities we have had this year of working districts producing plants, either new to us or not previously accessible in any quantity. In particular, our visits to Shropshire and to Blakeney Point were exceptionally profitable; on the contrary, much hard work was done in the Norfolk Broads with a minimum of success. Equally noteworthy was the detection, at points well worked by us in the past, of such species as *Rhopalomyia baccarum*, *Contarinia fagi* and *C. pisi*.

All of this demonstrates that much remains to reward the labours of Cecidologists in the British Isles.

Clinorrhyncha tanaceticola, K.

Affecting achenes of *Tanacetum*.

SHROPSHIRE, near Cross House, October, 1923.

Prolasioptera cerealis, Lind.

On various grasses and cereals, a depression in the stem containing a yellowish orange larva, concealed under a shining black "scale" or "lid."

DURHAM, Gibside, on *Avena*, *Agropyrum* and *Dactylis*. Also other records.

Lasioptera populnea, Wachtl.

A leaf pustule greater in diameter and less convex, or rather of less depth, than that of *Harmandia pustulans*.

SHROPSHIRE, Pulley Common, near Shrewsbury, on *Populus tremula*, October, 1923. Rare.

Rhopalomyia baccarum, Wachtl.

On *Artemisia vulgaris*. Prominent spherical gall, chiefly situated at the roots.

DURHAM, Birtley and Lamesley, August, 1923. the midge just emerging. Rarer than in 1922, when it abounded in September and October.

Stenopatha eriophori, K.

Pale pinkish to orange-yellow larvae, in the leaf-sheath of cotton grass (*Eriophorum* spp.).

SCOTLAND, Bavelaw Moss, September, 1922.

SHROPSHIRE and CHESHIRE, Whixall Moss near Ellesmere, October, 1903.

Mayetiola lanceolata, Rübs.

On *Calamagrostis lanceolatus*, white larvae, usually solitary, in stem near node, causing a shortening of of the terminal internodes.

SHROPSHIRE, Hencott Pool, near Shrewsbury; not uncommon; October, 1923.

Mayetiola calamagrostidis, K.

On *Calamagrostis lanceolata*, under leaf-sheath, mostly basally, galling the stem much as *M. holci* on *Holcus*.

SHROPSHIRE, Hencott Pool, near Shrewsbury, about a dozen old galls in one clump; apparently local, October, 1923.

Arthrocnodax coryli-gallarum, Targ-Tozz.

Inquiline in gall of *Eriophyes avellanæ*; larvae yellow.

SOMERSETSHIRE, near Bath, July, 1923.

SHROPSHIRE, Bayston Hill, near Shrewsbury, October, 1923.

Harmandia globuli, Rübs.

On *Populus tremula*, gall somewhat like that of *H. tremulæ*, but smaller in diameter.

SHROPSHIRE, Pulley Common, near Shrewsbury, October, 1923.

Rhabdophaga oculiperda, Rübs.

On *Salix aurita*, slight swelling at base of bud.

DURHAM, Gibside.

Jaapiella clethricola, Rübs.

Yellow larvae in twisted leaves of alder (*Alnus*).

SHROPSHIRE, Shomere Pool, near Shrewsbury; occasionally; October, 1923.

Perrisia auricomi, K.

Gregarious yellow larvae amongst the seeds, which are swollen, of *Ranunculus auricomus*.

NORTHUMBERLAND, near Stocksfield-on-Tyne.

Perrisia myosotidis, K.

On *Myosotis palustris*, flower swollen and remaining closed.

SHROPSHIRE, Berrington Pool, near Shrewsbury; a few empty galls. NORFOLK, Hempstead, with larvae.

Perrisia socialis, K.

Perrisia sp. H. 5579. Flower head remaining closed and swollen somewhat basally; larvae red; on *Erigeron acris*.

SHROPSHIRE, Harley Hill, near Much Wenlock, October, 1923.

Perrisia subterranea, K.

On *Silene maritima*, in swollen buds formed from reduced leaves exposed at sand level.

NORFOLK, Blakeney Point.

Contarinia pisi, Winn.

In flowers, shoots and pods of cultivated peas; whitish gregarious larvae. Has been recorded by other writers as *Diplosis pisi*, Kalt.

NORTHUMBERLAND, Hexham.

NORFOLK, Baconsthorpe.

Contarinia fagi, Rübs.

Beech, young terminal leaves malformed; larvae white and gregarious.

SCOTLAND, near Abbotsford.

NORTHUMBERLAND, Hexham and Corbridge.

NORFOLK, Cromer and Hempstead.

Contarinia schlechtendaliana, Rübs.

Sonchus oleraceus, flower heads closed, swollen and deformed; larvae vitelline, gregarious and leaping.

NORFOLK, Baconsthorpe. Rare.

Sitodiplosis mosellana, Gehn. (*aurantiaca*, B. Wagner).

Orange larvae on rye, affecting ovary, which is arrested in its development.

DURHAM, Gibside.

Endopsylla agilis, Meijere.

An endoparasite of *Psylla forsteri*, the larvae living in the abdomen.

NORTHUMBERLAND, Stocksfield-on-Tyne.

Lestodiplosis liviae, Rübs.

Inquiline in gall of *Livia juncorum* on *Juncus* spp.

DURHAM, near Winlaton Mill.

Hormomyia kneuckeri, K.

At roots of *Carex*.

SCOTLAND, Bavelaw Moss, September, 1922, on *Carex* sp.

DURHAM, Sunniside, on *Carex goodenowi*, rare, October, 1923. In this latter locality *Dichrona gallarum*, *Hormomyia tuberifica* and *H. cornifex* occurred in extraordinary profusion, with an occasional *H. frireni*.

Amerhapha gracilis, Rübs.

Orange-red to red larvae in deformed galls of *Schizomyia pimpinellae* on *Daucus*. The galls lose their seed shape and spines, being usually smooth and glossy. The larvae may be found full fed in mid-October, after the larva of *Schizomyia* has left its gall.

SHROPSHIRE, near Pulley Common, locally plentiful.

(To be continued.)

The Variation in *Larentia (Thera) variata*, Schiff.

By CARL HÖFER of Klosterneuburg (Vienna).

(Translated by H. J. TURNER, F.E.S.)

At the meeting of the Zool.-bot Gesellschaft of December 5th, 1919, I discussed this question and there was inserted in the Proceedings [Vol. LXX., H. 1-2. p. (19)] in 1920, a summary with the addition of figures of which the further use was unfortunately not possible, owing to the subsequent loss of the blocks.

This *Larentia* species was named nearly 150 years ago by the Viennese professors Schiffermüller and Denis in a very appropriate way as "*variata*." In the name which this Geometer bears, the fact of its great variability has been well retained. Unfortunately we possess neither a description nor a figure of that form, which the authors had in front of them for their determination in 1776 [5]. But since *variata* is indigenous near Vienna, we have a well-founded right to take for the so-called stem-form, that form, which occurs as the commonest in our neighbourhood, as the original type, of which we are accustomed to take into consideration the extreme variability of the colour markings. The first figure of *variata* which we find under fig. 293 in Jacob Hübner's work issued in 1785, represents this form tolerably well. Among the material lying before me, consisting of some 500 specimens from Lower Austria, many examples agree very well with this figure, and I chose some of these and placed them at the top of my series which I exhibited.

First of all concerning the variation in colour, I must mention the following forms:—

ab. *nigrofasciata*, Gmppbg.—In his work *Syst. Bearb. der Spanner der nördl. gemäss. Zone*," 1887, von Gumpfenberg established this form with the short diagnosis "*Area media nigra*," as a variety. He refers it to Rössler, who in his "*Fn. des Reg. Bez. Wiesbaden*" in 1881 writes of *variata*, "There is a variety, not figured, with black median area, while the remainder of the forewing is greyish, white, or wood-colored." Rössler himself refers again in the year 1866 in his *Verz. Schm. Herz. Nassau* to this variety with black median area, but without giving it a name.

As a synonym of ab. *nigrofasciata*, Gmppbg., ab. *medionigricans*, Reutti, has been recognised, of which the latter author writes in his *Uebers. Lep. Gross-herz. Baden*, in 1898 as follows, "Brownish white, with unicolorous blackish median area." I have before me two males and two females of ab. *nigrofasciata*.

ab. *scotica*, Stdgr.—This form was described by Staudinger as a dark, Scottish, local form of *variata* and as an aberration occurring in Central Italy. Prout in Seitz, placed this quite noteworthy form under *obeliscata* and determined it as a synonym of ab. *obliterata*, B. White. He did this in spite of his having announced in a contribution by himself appearing in August, 1912, in the *Ent.* concerning the English *variata*, the occurrence of our typical continental form in England, so that already, the appearance of a dark *variata* race in Scotland as mentioned by Staudinger, was undoubtedly established.

The occurrence of true *variata* appears to have been reported in England, as in Vol. 46 of the *Ent.* for 1913, and established over and

over again by breeding from larvae found on pine (See Notes by C. E. Raven of Cambridge).

I have before me two males and one female of this form to which the description of Dr. Staudinger exactly applies. Moreover Herr Dr. Schawerda has allowed me to examine from his rich collection an example of ab. *scotica* from England, which I pronounced as our native ab. *scotica*. This form also agrees well with the figure given as a male on plate 8 in Seitz, and the placing of ab. *scotica*, Stdgr., to *obeliscata* may in all probability be considered as correct. At the same time I can establish ab. *obscura* as the darkest of our *variata* forms, as well as an aberration of the Wienerwald.

[Since the above was written, I again considered the specimen from Dr. Schawerda's collection, and since it was an old and somewhat damaged example and really difficult to recognise, I doubted whether it could have exactly the same appearance as true var. *scotica*, and endeavoured to obtain some actual and perfectly true examples from Scotland. In 1923 I succeeded in getting these and at once saw that var. *scotica*, Stdgr., was indeed the more or less dark form of the (brown) *L. obeliscata* and not of the (greyish) *L. variata*. The few true var. *scotica* I now have before me are very fine examples of English melanism and I much doubt whether similar typical *scotica* have been found on the Continent. I do not know a Continental fauna which lists this form. Count Turati has written to me that neither *scotica* nor any transitions to it are in his extensive collection from either Central or any other part of Italy.

It therefore arises that the dark, uniform, greyish-black form of our *L. variata* which I wrongly considered to be Staudinger's var. *scotica* is unnamed, and at the meeting of the Zool.-bot. Gesell. Wien on January 4th, 1924, I introduced it as *Larentia variata*, Schiff., ab. **obscura**, clearing up the matter.—C.H.]

Var. *cembrae*, Kitt. The appearance of a form analogous to var. *cembrae* Kitt., among our Wienerwald *variata* is interesting. I have three examples before me, which in their uniform mouse-grey colour agree fully with the type of var. *cembrae* from the Tyrol, according to an examination of the few in the Hofmuseum by Prof. Rebel and myself. The specimens before me—all females—descended from an equally mouse-grey female obtained by me in the summer of 1921 at Rekawinkel, which, since it was already worn, I reserved for egg-laying. This ♀, enclosed in a linen tag, was fastened in a pine tree in the open, and the larvae grew up therein splendidly. At the beginning of September, besides quite small larvae, a few pupae were found, which in the middle of September, gave me a partial 2nd generation, to which the three specimens I have, belong. But these are distinctly smaller than the type-form found in the Hofmuseum.

Herr Prof. Kitt describes this form in the *Proceed. zool.-bot. Ges.* October 4th, 1912. He considered it a high-elevation form, living on the stone pine and says of it. "All the wings are pure grey without brownish suffusion which otherwise occurs in *variata*. The disposition of the markings are as in typical *variata*, the central area darkened." But, in Seitz, Prout writes var. *cembrae*, Kitt is probably a synonym of ab. *nigrofasciata*, Gumpfenberg; but Kitt describes the

ground colour as *pure white*, without brownish suffusion." Hence there must arise to the readers of this work a perfectly false idea of var. *cembrae*, and it is incomprehensible why Prout has given the ground-colour white.

Fritz Hoffmann in his Styrian Fauna accepts the wrong description of Seitz, for therein he gave the pure white ground as the distinguishing characteristic of var. *cembrae* and then arranged his other forms accordingly.

From the examples of ab. *nigrofasciata* and var. *cembrae* before me it is seen how distinct these two forms are from one another.

It is probable that var. *cembrae* is a synonym of var. *coniferata*, Curt., which is also described as grey. Var. *coniferata* has also been obtained by Müller-Rutz at Grüben in Turtmantal in Switzerland.

(To be continued.)

CURRENT NOTES AND SHORT NOTICES.

We regret to record the death at the ripe age of 84 of Mr. A. H. Jones, who from 1904 to 1917 was Treasurer of the Entomological Society of London. For 30 or more years he was a familiar figure in the meetings at Chandos Street: a genial and kindly gentleman. The robust health, which he enjoyed almost to the end, enabled him to journey to many parts of Europe in search of rare butterflies until quite late in life. At the age of 74 he went to Sarepta, on the Volga, in S. Russia, to become acquainted with the interesting and peculiar forms which exist in that rich and remote area. We understand that his collection of European butterflies is bequeathed to the Hope Museum, Oxford.

SOCIETIES.

THE ENTOMOLOGICAL SOCIETY OF LONDON.

January 16th, 1924.—ANNUAL MEETING.—Mr. E. E. Green, President, in the chair.

Dr. H. Eltringham read the Report of the Council, which was adopted on the motion of Commander J. J. Walker, R.N., seconded by Mr. Stanley Edwards.

Mr. W. G. Sheldon, the Treasurer, read his Report and gave some details of the highly satisfactory condition of the Society. The Report and Accounts were adopted unanimously on the motion of Mr. G. T. Bethune-Baker, seconded by Mr. W. J. Kaye.

The President announced that the Fellows nominated as Officers and Council for the ensuing year had been duly elected in accordance with the Bye-Laws.

The President then read his Address on "Some Episodes and Aspects of Insect Life in Ceylon," and at its conclusion a vote of thanks to the President, coupled with a request that it might be printed in the Proceedings, was moved by Professor E. B. Poulton, F.R.S., seconded by Mr. K. G. Blair, and carried unanimously.

A vote of thanks to the Officers for their services was then passed on the motion of Mr. H. Willoughby-Ellis, seconded by Mr. W. Rait-Smith, and Mr. W. G. Sheldon. Dr. H. Eltringham, and Mr. H. J. Turner briefly replied.

THE SOUTH LONDON ENTOMOLOGICAL SOCIETY.

December 13th.—Mr. H. Willoughby-Ellis, of Hampstead, and Mr. G. Vredenburg, of Maida Vale were elected members.

Mr. H. Main exhibited a whip-scorpion, *Phryxus reniformis*, sent by Dr. Withycombe from Trinidad, an Arachnid nearly related to the true scorpions.

Mr. Sevastopulo, *Pyrameis atalanta* with the second sub-apical spot missing; an asymmetrical *Abraxas grossulariata*, right forewing normal, right hindwing traces of a yellow band, left forewing with yellow patch only, left hindwing with three extra black spots.

Mr. Rayward, *Epirrita (Oporabia) autumnata* and *E. dilatata*, and pointed out their distinctions, referring to preparations of the genitalia; he also exhibited *Anaitis plagiata* and *A. efformata* and by preparations showed the complete distinction of the species.

Mr. R. Adkin, a bred series of *Arctia villica* and read notes on its occurrence at Eastbourne, its breeding, its parasites and the variation the specimens showed. Compared with *A. caja* it was quite common in the larval state.

Mr. Andrews, the very rare Dipteron, *Agyathomyia elegantula* from Farningham, September 1st.

Mr. Parker, an absolutely black form of *Aphantopus hyperantus*; one of a rich mahogany colour; a radiated *Brenthis euphrosyne*; a rich chocolate-coloured *Mimas tiliae*, and *Euchloë cardamines* ♀ with streaks of orange.

Mr. Blenkarn, a long series of aberrations of British Coleoptera including a form of *Apion aestivum (trifolii)*, var. *ruficrus*, with dark yellow legs, and black tibiae, which was new to Britain.

Mr. Adkin read a report of the Meeting of the British Association at Liverpool, which he attended as a delegate of the Corresponding Societies Section.

Subsequently a Special Meeting was held when after a short statement it was unanimously agreed to raise the ordinary subscription to 12s. 6d., the country members subscription to 7s. 6d., and the Life Composition to £8 8s. 0d., to cover the increased rent of their rooms.

REVIEWS AND NOTICES OF BOOKS.

“SOCIAL LIFE AMONG THE INSECTS.”—(Continued from page 32.)

1. The structure and behaviour of these two complexes show that they must have arisen from the Parasitic Hymenoptera.

2. The groups of social wasps have evolved independently from primitive solitary Vespoidea.

3. Both complexes are primarily predaceous and feed upon freshly captured insects.

4. The mutual exchange of food between adults and their young (“Trophallaxis” of Wheeler) can be observed more clearly in the social wasps than in other social insects.

5. The study of wasps and their ancestors furnishes a key to parthenogenesis and dominance of the female sex (gynarchy) in the whole group of stinging Hymenoptera.

6. The first gradual development of a worker cast, of polygyny, and swarming, is witnessed in the social wasps.

7. Wasps exhibit a high degree of modifiability of behaviour and an extraordinary development of memory. Notwithstanding some exaggeration which has occurred, Wheeler considers that "the wasp's psychic powers, compared with those of most other insects, or even of many of the lower Vertebrates seem to me, nevertheless, to be sufficiently remarkable."

All these generalities are then more closely examined, and a thorough account is given of the life-history and habits of many solitary, parasitoid, and social wasps. A fine Phylogenetic Tree of the various genera and families of Vespoidea is given on page 71. On page 55 a beautiful illustration is given of *Sphex urnarius* using a selected pebble to pound down earth over the burrow. On this remarkable fact Wheeler writes:—"This astonishing behaviour, which has been observed by no less than nine investigators, can hardly be reduced to simple physiological reflexes."

In conclusion he points out that the *Vespinæ* and most of the *Polistinæ* are monogynous, their colonies being annual developments begun by a single fecundated queen, and that they perish at the end of the season, with the exception of the annual brood of queens, which after fecundation hibernate and start new colonies during the following spring. Many tropical *Epiponinae* (and *Ropalidiinae*) are polygynous and send off swarms to form new colonies. This behaviour is evidently as perfect an adaptation to the continuously favourable food and temperature conditions of the tropics, as is that of *Vespa* and *Polistes* to the pronounced seasonal vicissitudes of the temperate regions.

Wheeler supports the view that polygyny is the more primitive condition, and as he justly says the species of *Vespa* and *Polistes* each year produce a swarm of females and workers, but that the advent of cold weather destroys the less resistant workers and permits only the dispersal queens to survive and hibernate till the following season.

Lecture III. "Bees Solitary and Social."—This lecture is divided into two parts. The author first discusses man's interest in the honey-bee in pre-historic times, and he informs us that the price of strained honey some 3,500 B.C., in Egypt under the Pharaohs, was five cents a quart! Many of the innumerable myths and superstitions are recorded, and it is pointed out that the very abundance of literature—the Bureau of Entomology at Washington has a working bibliography of 20,000 titles on the honey-bee—is an obstacle to the clear understanding of this insect. Less than 5% of the bees from all parts of the world are social, these consist of about 500 species and are contained in only five genera—*Trigona*, *Melipona*, *Bombus*, *Psythirus* and *Apis*. Bees taken as a whole may be regarded merely as a group of wasps which have become strictly vegetarian, and feed exclusively on pollen and nectar of flowers. It is noted that very many flowers have been modified in structure, arrangement, colour and perfume, in adaptation to the bees, and for the purposes of insuring cross-pollination; and the adaptation of all the organs and habits of the bees to flowers are described. It is pointed out that many of the solitary species tend towards social habits, as in *Halictus*, *Allodape*, etc. The following remark taken from Dr. Hans Brauns is well worth repeating:—"Most of the descriptions drawn from single captured specimens have little value. Fanati-

cal describers, merely make the work of the monographer more difficult, or more unattractive, or even well nigh impossible, in a genus which is almost as monotonous as *Halictus*."

An account of many solitary species is given; and then the bumblebees are dealt with very thoroughly. They are shown to be very primitive and to represent an interesting transition from the solitary to the social forms.

Part 2 is devoted first to the *Meliponinae*, or stingless bees (the latter name being not strictly accurate, because a vestigial sting is present); their habits, etc., being discussed in a most interesting manner. Finally, to quote an earlier remark in this lecture, the honeybee is relegated to its proper place at the end of a large series of developments.

In conclusion Wheeler refers to the absence of that peculiar interchange of nutriment between the adult and larva, or "Trophallaxis," which constitutes a powerful factor in maintaining the colonies of the social wasps. He suggests that the abundant storage of food may be one of the reasons why such exchanges of nutriment as we observe among the social wasps and see again in a more exaggerated form among the ants (as discovered by himself) and termites, were either never developed or were long ago discontinued by the social bees.

Lectures IV., "Ants, Their Development, Castes, Nesting and Feeding Habits," and V., "Parasitic Ants and Ant Guests," are, as their titles show, devoted to the study of ants and their habits. It is no exaggeration to say that these two lectures comprise, in a compact form, almost everything that is known about these most interesting of all insects, from the earliest times right up to date. The subject, moreover, is developed and expounded in a most able and entertaining manner. Wheeler gives a summary of what he conceives to be the fundamental peculiarities of ants. Space will only allow us to briefly mention the salient points.

The whole family *Formicidae* consists of social insects. The number of described species of ants is approximately 3,500. Ants are the dominant social insects. Their geographical distribution is world-wide. All authorities agree that ants had their origin among the Scolioids, an offshoot of the primitive Vespoidea. Ants are eminently terrestrial insects. All three castes (male, female, and worker) are more highly specialized than in the social wasps and bees. Ants are singularly plastic in their nesting habits. The young are not reared in separate cells, but in clusters, and lie freely in the chambers and galleries of the nest. Their intimate acquaintance with their young, in all stages, has been an important factor in the development of the *Formicidae*. As a group they feed on an extraordinary range of substances. This plasticity in nesting and feeding habits has resulted in the formation of a vast and intricate series of relationships between ants and other organisms, including man.

The seven subfamilies of the *Formicidae*:—*Ponerinae*, *Cerapachyinae*, *Dorylinae*, *Pseudomyrminae*, *Myrmicinae*, *Dolichoderinae*, and *Formicinae*—are shown to be clearly established, and an ingenious figure of an ancestral tree, showing the phylogenetic relations of the family as a whole, is given. The different kinds of workers and females are described; the various methods of colony founding are discussed;

and the feeding of the larvae, including his celebrated discoveries of the feeding of the larvae of *Pseudomyrmicinae* with the pellets rejected from the infrabuccal pockets of the adults, and the mutual feeding (trophallaxis) of larvae and adult are explained.

The carnivorous habits of some of the more primitive species; the association with plant-lice, etc.; the very interesting honey-ants, who have hit upon the ingenious device of using the crops of certain of their workers to act as living honey-pots; the harvesting ants, who collect and store seeds; and the extraordinary group of mushroom growers, all receive due attention.

The second lecture on ants is devoted to parasitism, both on and by ants; the author preferring the word "parasitoidism." The following table is given for the Relations of ants to other organisms:—

- I. Social Parasitism. (Ants as Parasites.)
 - A. *Compound Nests*. (Broods reared separately.)
 - *1. Brigandage. (Cleptobiosis.)
 - *2. Thievery. (Lestobiosis.)
 3. Neighbouring. (Plesiobiosis.)
 4. Tutelage. (Parabiosis, Phylacobiosis.)
 5. Hospitality. (Xenobiosis.)
 - B. *Mixed Colonies*. (Broods reared together.)
 - *1. "Slavery." (Dulosis.)
 2. Temporary Social Parasitism.
 3. Permanent Social Parasitism.
- II. Myrmecophily. (Ants as hosts.)
 - *1. Persecuted Intruders. (Synecthrans.)
 2. Indifferently Tolerated Guests. (Synocketes.)
 3. Mess-mates. (Commensales.)
 4. True Guests. (Symphiles.)
 5. External Parasites. (Ectoparasites.)
 6. Internal Parasites. (Entoparasites.)
- III. Trophobiosis. (Relations of Ants to Phytophethora, etc.)
- IV. Phytophily. (Relations of Ants to Plants.)

It is truly remarkable how very much information, on nearly all the above associations, the author has been able to compress into the space of one lecture. This subject has occupied the greater part of our own study and attention during the last thirty years, and we can only feel unbounded admiration for the able manner in which Prof. Wheeler marshals his facts. We do not quite agree with all the theories advanced by him, but that again, as we mentioned before in the beginning of this review, is only a matter of personal opinion, and need not be enlarged upon.

Lecture VI. The Termites or "White Ants." The title of this lecture is as above, but the other two of the most ancient and primitive orders, the Dermaptera and the Embidaria, are first dealt with. The third order, the Isoptera, which of course consists of the termites, coming last.

The Dermaptera, or earwigs, are included among the subsocial

* Each series, including the myrmecophiles, begins with predatory (indicated by asterisks), and terminates in definitively parasitic, relations.

insects, because the female carefully guards, rearranges, and licks her eggs, and even remains with the young for a short time after they hatch.

The Embidaria are a very small order of even more archaic habitus than the earwigs, and are confined to the tropics. They live in small colonies in peculiar silken webs which they spin in cavities of the soil, under stones, and on the bark of trees. The female shows very marked solicitude for the welfare of her offspring after her first eggs have been deposited.

What is known of the habits of both orders is described; in both there is a feeble tendency to a social organisation like that of the dung beetles; and they are interesting mainly as showing that social tendencies may have been rather prevalent among the ancient carboniferous orders.

The social organisation of the Isoptera, or Termites, is considered to be of unusual interest, both because it is so elaborate, though exhibited by insects of a very primitive anatomical structure, and because it parallels in so many of its features the social organisation of the most highly specialized Hymenoptera. The order is naturally divided into four families, the *Mastotermitidae*, *Protermitidae*, *Mesotermitidae*, and the *Metatermitidae*. All the species are social, and the four families show a progressive development in all ways from primitive to specialized forms, in the order mentioned. Wheeler regards the termites as primitive cockroaches; he refers to the fossil forms, and traces their descent. The vast numbers that occur in the colonies of the more specialized forms are mentioned, and they are shown to be both extremely helpful and extremely injurious. He carefully characterises the five castes, the first three of which are fertile and the last two sterile. These are briefly:—

1. *First form adults*: Kings and queens. Deeply pigmented; large compound eyes, brain, frontal gland; well developed reproductive organs and wings. The latter break off at their basal sutures.

2. *Second form adults*: Substitutional kings and queens. Less pigmented; smaller compound eyes, brain, frontal gland, and reproductive organs; wings incipient.

3. *Third form adults*: Also substitutional kings and queens. Scarcely pigmented; brain small; eyes and frontal gland vestigial; reproductive glands smaller; entirely wingless.

4. *Workers*: Unpigmented; brain small; eyes and frontal gland extremely small or absent; reproductive organs embryonic; wingless.

5. *Soldiers*: Head large and somewhat pigmented; brain very small; compound eyes vestigial; wingless. This form varies in different genera.

The sequence of these forms also varies in some of the families, and it is noted that there are males and females (unlike the ants) in all the castes; some sixteen different kinds of individuals being present, though probably no single colony ever produces all of them. The origin and meaning of these various castes is touched upon, and it is noted that probably all of them may be distinguished at the time of hatching. All the various problems arising out of this extraordinary state of things are discussed, and the author remarks, ". . . we shall have to revise our views on caste differentiation in the ants. It is, in fact, not improbable that the caste of a particular ant is likewise de-

terminated in the egg, but special feeding of the larva may be necessary to bring it to maturity. The passively fed ant-larvae are certainly very different from the active termite nymphs, which soon after hatching are able to run about and seek their own food."

The social functions of the various termite castes; the dispersion flights; colony founding; different kinds of nests and nest building; and the extraordinary fact that they also grow fungus, as do the ants, are all described and figured.

Finally the various associations of termites with alien insects presenting a striking parallelism with the condition in ants, though with some significant differences, are related. The most characteristic feature is the extraordinary physogastry, or excessive enlargement of the abdomen in many of their guests, belonging to different orders. Of perhaps more importance to the lives of the termites than the above guests, are the numerous intestinal infusoria, which have been found to be present in so many species, and which are considered to assist these insects in digesting crude cellulose. In his concluding remarks Wheeler points out that the amount of degeneration accompanying social evolution is much greater than in the ants, and this degeneration is brought about very largely by an increasing need of protection.

As an aid to the reader who may care to extend his studies of the social insects, the author has added a documentary appendix containing considerable bibliography and several notes on special topics which could not be adequately treated in the lectures.

We may add he has done this in a very thorough and generous manner.—HORACE DONISTHORPE.

THE PROCEEDINGS OF THE SOUTH LONDON ENTOMOLOGICAL AND NATURAL HISTORY SOCIETY, 1922-1923, pp. xxviii-152. With eight Plates.—Upon comparing this Volume with its immediate predecessors, seven of which lie before us, we notice at once with great satisfaction, that this is larger than the largest, showing that the years of depression following the War Period are passing away, and that more normal conditions have been restored.

This evidence of recovery, and progress, is to be found also in the increase in the number of members, from 200 last year, to 225, in spite of the loss of 5 by death, and 7 by resignation.

The Treasurer puts the financial position thus—"We are still over £20 short of being in a self-supporting condition." This is healthy, but would be better still if the 28 "slow payers" could be induced to remember their obligations.

The 50th anniversary of the Society did not pass unmarked. A Supper was held at the Holborn Restaurant, in commemoration of the event; a social gathering which emphasizes the happy comradeship which has always marked the "South London," and we are pleased to read that the result of the venture was a very satisfactory addition to the funds. A delicate attention was also paid to a, if not the only, surviving Founder of the Society in 1872, Mr. G. C. Champion, by electing him an Honorary Member.

Six of the papers read at the Meetings are printed in full. An unusual local list "Spiders found in the Neighbourhood of Oxshott," but extended to the whole County of Surrey in an accompanying list, is contributed by Mr. W. S. Bristowe. This carries on the work of

O. P. Cambridge, who however it must be remembered never professed to exhaust the Fauna of this particular district. Of the 244 Species listed, 50 have not been recorded hereabouts previously, and one, *Conops domesticus*, in the male sex, was previously unknown to Science. To his paper Mr. Bristowe adds a complete list of all the Species of the nearly related *Phalangidae*, and "Pseudo-Scorpions" taken. This Paper is illustrated by two Plates.

Mr. E. E. Green follows with "A Brief Review of the indigenous *Coccidae* of the British Islands." This, which is accompanied by four Plates, includes all the Species yet recorded in Britain, with descriptions, and life-histories, so far as are known.

Mr. R. Adkin gives a very interesting account of "The Lepidopterous enemies of man." Quoting Dr. L. O. Howard's remark upon "the enormous forces of injurious insects which attack man at every point, and constitute to-day his greatest rivals in the control of Nature," Mr. Adkin gives interesting details as to the tremendous destruction wrought by these tiny adversaries.

The same contributor gives "a History of *Diacrisia mendica*, and its varieties," a complete monograph of the insect.

Mr. W. J. Lucas supplies notes upon the mouth organs of the Paraneuroptera (Dragon-Flies), a further contribution to his well known studies in this group of insects.

Mr. T. H. L. Grosvenor continues his work amongst the *Zygaenidae*, touching upon the evidence of the working of the Mendelian Law, in the rearing of these insects from selected parents. He finds that confluence of spots, does not follow the law, and ascribes this rather to temperature, and atmospheric conditions. He records also his experiences, and disappointments, in rearing, the treatment which has proved most successful during the very critical period of hibernation, the food plants, and distribution. He mentions, in connection with the extreme vitality of these insects, their ability to resist the "Cyanide Bottle," which power it recurs to one, is shared with the butterfly Genus *Acraea*, at least in South Africa.

The President's Annual Address is an account of his experiences during a trip to Canada, entitled, "Some Notes on the Natural History of Manitoba." This reminds us of our experiences in that country many years ago, and we are not at all surprised to find him complaining about the attentions of the "Mosquitoes," which would appear to be as abundant and persistent, as ever. Whether these pests will ever be exterminated remains to be proved. Pinning Microlepidoptera, with head and arms inside the net, and enveloped in the sometimes far from fragrant smoke of the inevitable "Smudge," is not an easy business. The "Abstract of Proceedings" contains a wealth of interesting notes. Three Field Meetings were reported, more encouraging it would appear than those of the previous year, when these "outings" were spoiled, we remember by unfavourable weather conditions.

Copious Indices, both General and Special, are provided, occupying nearly twelve pages.

The Proceedings include the report of the Society's Delegate (Mr. R. Adkin) to the meeting of the British Association at Hull.—C.R.N.B.

Subscriptions for Vol. XXXVI. (10 shillings) should be sent to Mr. Herbert E. Page, "Bertrose," Gellatly Road, New Cross, S.E. 14 [This subscription includes all numbers published from January 15th to December 15th, 1924.]

Non-receipt or errors in the sending of Subscribers' magazines should be notified to Mr. Herbert E. Page, "Bertrose," Gellatly Road, New Cross, S.E. 14

ADVERTISEMENTS of Books and Insects for Sale, or Books wanted will be inserted at a minimum charge of 2s. 6d. (for four lines). Longer Advertisements in proportion. A reduction made for a series Particulars of Mr. Herbert E. Page, "Bertrose," Gellatly Road, New Cross, S.E. 14

Subscribers who change their addresses must report the same to Mr. H. E. PAGE "Bertrose Gellatly Road, New Cross, London, S.E., otherwise their magazines will probably be delayed.

Desiderata.—Foreign examples, local races, vars. and abs. from all parts of the world of any butterflies included in the British list. Setting immaterial; exact data indispensable. Liberal return made.—*W. G. Pether, "Thebna," 4, Willow Bridge Road, London, N. 1.*

Duplicates.—*Cinxia*, *Bellargus*, *Coridon*, *H. Comma*, *Lineola*, *Galathea*, *Moneta*, *Nupta*, and many others. *Desiderata*.—*Blandina*, *Irish Icarus*, *Carmelita*, *Cuculla*. *Gonostigma*, *Ashworthii*, *Templi*, *Australis*, *Undulata*, *Smaragdaria*, *Testacea*.—*W. Gifford Nash, Clavering House, Bedford.*

Duplicates.—*Cinerea* ♀, fine forms, grey, brown and blackish, *Maritima* and vars. *Immorata* and other East Sussex species.

Desiderata.—Pupæ. *Luteago (Barrettii)*, *Caesia*, *Albimacula*, *Alpina*, *Xanthomista*, *Sparganii*, *Dissoluta (Arundineta)*, *Graphalii*. Also imagines of extreme forms *Noctuae* in fine condition only.—*A. J. Wightman, 35, Morris Road, Lewes.*

N. American Lepidoptera in papers in exchange for ditto from any part of the world. J. C. Woodward, Training Ship "Cornwall," Purfleet, Essex.

MEETINGS OF SOCIETIES.

Entomological Society of London.—41, Queen's Gate, South Kensington, S.W. 7, 8 p.m. March 19th, April, 2nd, May 7th, 1924.

The South London Entomological and Natural History Society, *Hibernia Chambers, London Bridge.* Second and Fourth Thursdays in the month, at 7 p.m.—*Hon. Sec., Stanley Edwards, 15, St. German's Place, Blackheath, S.E. 3.*

The London Natural History Society (the amalgamation of the City of London Entomological and Natural History Society and the North London Natural History Society) now meets in Hall 40, Winchester House, Old Broad Street E.C. 2, first and third Tuesdays in the month, at 6.30 p.m. Visitors welcomed. *Hon. Sec., W. E. GLEGE, 44, Belfast Road, N. 16.*

All MS. and editorial matter should be sent and all proofs returned to **HY. J. TURNER, 98, Drakefell Road, New Cross, London, S.E. 14**

We must earnestly request our correspondents NOT to send us communications IDENTICAL with those they are sending to other magazines.

Lists of DUPLICATES and DESIDERATA should be sent direct to Mr. H. E. Page, Bertrose, Gellatly Road, New Cross, S.E. 14

OVA, LARVÆ, AND PUPÆ.

The Largest Breeder of Lepidoptera in the British Isles is

H. W. HEAD, Entomologist,
BURNISTON, Nr. SCARBOROUGH.

Full List of Ova, Larvæ, and Pupæ, also Lepidoptera, Apparatus, Cabinets, etc., sent on application.

Many Rare British Species and Good Varieties for Sale.

GREAT REDUCTION IN PRICES.

Cabinets.

Hardwood finished rich mahogany, panelled or glass doors. Drawers, $17 \times 16 \times 2\frac{1}{4}$ " on hidden runners.

Lift-off glazed tops. Camphor cells. Lined cork or peat.

40-drawer, 12/6 per drawer. 20-drawer, 1/- per drawer extra.

Store Boxes.

10×8 13×8 14×10 16×11 17×12
3/11 5/- 6/6 7/9 9/-

G. A. BENTALL, 392, Strand, W.C.2.

IMPORTANT
TO ENTOMOLOGICAL SOCIETIES and MUSEUMS.

BACK VOLUMES OF

The Entomologist's Record
and Journal of Variation.

(Vols. I-XXXV.)

CONTENTS OF Vol. I. (*Most important only mentioned.*)

GENUS *Acronycta* and its allies.—Variation of *Smerinthus tiliae*, 3 coloured plates—Differentiation of *Melitæa athalia*, *parthenie*, and *avrelia*—The Doubleday collection—Parthenogenesis—Paper on *Taeniocampidae*—Phylloxera—Practical Hints (many)—Parallel Variation in Coleoptera—Origin of *Argynnis paphia* var. *valesina*—Work for the Winter—Temperature and Variation—Synonymic notes—Retrospect of a Lepidopterist for 1890—Lifehistories of *Agrotis pyrophila*, *Epunda lichenea*, *Heliophobus hispidus*—Captures at light—Aberdeenshire notes, etc., etc., 360 pp.

To be obtained from—

Mr. H. E. PAGE, "Bertrose," Gellatly Road, New Cross, London, S.E. 14
to whom Cheques and Postal Orders should be made payable

Subscriptions for 1924 are now due.

E. D.

MAY 8 1924

Vol. XXXVI.

13,820

No. 4.

The Entomologist's Record AND Journal of Variation

EDITED BY

RICHARD S. BAGNALL, F.I.S., F.E.S.
GEORGE T. BETHUNE-BAKER, F.I.S., F.E.S.
M. BURR, D.Sc., F.I.S., F.Z.S., F.E.S.
(REV.) C. R. N. BURROWS, F.E.S.
E. A. COCKAYNE, M.D., F.E.S.

JAS. E. COLLIN, F.E.S.
H. ST. J. K. DONISTHORPE, F.Z.S., F.E.S.
JOHN HARTLEY DURRANT, F.E.S.
ALFRED SICH, F.E.S.
(REV.) GEORGE WHEELER, M.A., F.E.S.

and

HENRY J. TURNER, F.E.S.,
Editorial Secretary.

CONTENTS.

	PAGE.
Myrmecophilous Notes for 1923, <i>H. Donisthorpe, F.Z.S., F.E.S.</i>	49
New British Cecidomyiidae, <i>R. S. Bagnall, F.I.S., F.E.S., F.R.S.Ed., and J. W. H. Harrison, D.Sc., F.R.S.Ed.</i>	53
A Society in the High Alps, Névache-le-Chateau, <i>Wm. Fasnidge, M.A.</i>	55
NOTES ON COLLECTING:—A Note on <i>Cionus woodii</i> , Donis., <i>H. Donisthorpe</i> ; The Cannibal Coccinellid, <i>G. C. Leman</i> ; Habits of <i>Lycia hirtaria</i> , <i>Dr. G. S. Robertson</i> ; The Season in S. Hants, <i>Wm. Fasnidge.</i>	60
CURRENT NOTES AND SHORT NOTICES	62
SOCIETIES:—The Entomological Society of London; The South London Entomological Society.	62
SUPP.:—List of the Macro-lepidoptera of Hampshire and the Isle of Wight, <i>W. Fasnidge, M.A.</i>	(21)–(24)

APRIL 15th, 1924.

Price ONE SHILLING (NET).

Subscription for Complete Volume, post free
(Including all DOUBLE NUMBERS, etc.)

TEN SHILLINGS.

TO BE FORWARDED TO

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

“BERTROSE,” GELLATLY ROAD, NEW CROSS, S.E.14.

Communications have been received or have been promised from Messrs. H. Donisthorpe, Dr. Verity, J. H. Durrant, Rev. C. R. N. Burrows, Wm. Fasnidge, Orazio Querci, H. J. Turner, Karl Höfer; R. S. Bagnall, F.R.S.E., F.I.S., F.E.S., J. W. H. Harrison, D.Sc., F.R.S.E., T. F. Marriner, F.E.S., O. R. Goodman, F.Z.S., F.E.S., Lieut. E. B. Ashby, F.E.S., W. Hawker-Smith, F.E.S., Alfred Sich, F.E.S. with Reports of Societies and Reviews.

C.

WATKINS & DONCASTER

(ESTABLISHED 1879)

36, Strand, London, W.C.2.

Telephone: GERRARD 9451.

:: Manufacturers and Suppliers of ::
Natural History Requisites of all Kinds.

Cabinets. Best quality and finish. All sizes at
lowest prices on view at above address.

Lepidoptera. Large stocks kept of British
Palæarctic and Exotic Species.
Lists on application.

Bird's Eggs. Large selection of British and
European Eggs, singles and in
sets with data, always on hand.

Books. A varied and extensive stock on Entomology
and all Branches of Natural History.

GENERAL CATALOGUE SENT POST FREE.

FOR SALE.

The Plaquet, Arlington.
Abbotswood, Sussex.

T.S. has for Sale some good vars. and a fine lot of
set Lepidoptera.

Also vars. of Blues and vars. of *A. grossulariata*.

Fine wild Pupae, Larvae and Ova always on hand

—mostly own collecting.

LIST FREE from

THOMAS SALVAGE.

Bexley] L. W. NEWMAN [Kent

Has for sale a superb stock of 1920 specimens in fine condition, including Varleyata; Bicuspis; Pendularia var. Subroseata; Melanic forms Lariciata, Consortaria, Consonaria, Abietaria; Irish forms Aurinia and Napi, fine vars. Tiliae, Yellow Dominula, etc., etc. Quotations and Insects sent on approval with pleasure.

Also a huge stock of fine PUPÆ and OVA.

Write for latest price lists.

Relaxing Tins are now 4/- small and 6/- large, pos free **Re-fills, 2/3**
small, 3/3 large, post free.

Myrmecophilous Notes for 1923.

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

Most of my time in the field in 1923 was again spent with researches in connection with Coleoptera. It is possible, nevertheless, to record a certain number of interesting facts and observations concerning ants and myrmecophiles. I have taken this opportunity in mentioning any ants, to record when the species in question has been discovered in any new county or vice-county, since the publication of *British Ants*, in 1915. The knowledge of the distribution of our species has not been added to as much as I should have liked since that date. I am hoping that all entomologists, botanists, etc., will be so good as to send me ants when collecting in the less worked counties. A glance at the British distribution of the species in my book will show that many counties are still without records for even some of the commonest and most widely distributed of our ant fauna.

FORMICIDÆ.—*Ponerinae*.

Ponera coarctata, Latr.—A dealated ♀ and five ♂♂ were found in a nest of *Formica fusca* at Box Hill, on May 4th. These were taken home and put into a small plaster observation nest; but they unfortunately escaped during my absence from home. As I have before mentioned (*Brit. Ants*, p. 70), colonies of this species have not been kept in captivity with much success. On August 8th a few ♂♂ were dug up with seed potatoes at St. Peter's, Kent. There are no new county records for this ant.

Myrmicinae.

Myrmecina graminicola, Latr.—A ♂ was found in a nest of *F. fusca*, as is often the case, at Box Hill, on May 4th. The only new county record for this species is Sully, Glamorgan, where it was discovered by Hallett, in 1916. My colony of this ant, which I have kept in captivity for thirteen years and ten months, continues to flourish and prosper. No further fighting has taken place, and very few ants died during the year. February 11th.—The first eggs laid in 1923, and several of the many larvae present being large (♀?). February 25th.—The large larvae had pupated and prove to be ♀♀. April 22nd.—A winged ♀ present. May 21st.—Many ♂ and ♀ pupae. May 27th.—A second winged ♀. June 24th.—Two winged ♂♂ and five winged ♀♀. July 3rd.—Many ♂♂ and winged ♀♀. August 1st.—All ♀♀ had lost their wings. September 30th.—Two large bunches of eggs in different parts of the chamber, surrounded by many ♂♂, many larvae, ♂ pupae, and several ♂♂ still present.

Monomorium pharaonis, L.—On September 26th ♂♂ were observed on the plates at breakfast, at the Park Hotel, Preston, Lancashire (Mid.). This is a new vice-county record. Other new county records are—Salisbury, Wilts., S. (O.P. Cambridge Coll.); Nottingham, Notts (Thornley); and Dublin, Co. Dublin (Stelfox).

Myrmica scabrinodis, Nyl.—Was found at Wicken in August; its first record for Cambridgeshire. Other such records are—Trelleck, Monmouth (Hallett); Church Stretton, Salop (Leman); Weedley, S.E. Yorks (Stainforth); Bunawe, Main Argyle (Waterston); Emyvale,

APRIL 15TH.

Monaghan (Morton); near Kilkenny, etc., Co. Kilkenny (Phillips); Brosna, etc., King's County (Phillips); Abbeyleix, Queen's County (Phillips); Kilrush, etc., Clare (Phillips); and Coolmore, Cork (Janson).

Myrmica scabrinodis v. *sabuleti*, Mein.—A dead ♀ was found in a nest of *A. (D.) niger*, at Dover, Kent, E., on May 1st, and Hodson sent me ♂ ♂ to name, taken fighting with *M. laevinodis*, at Sharpenhoe, Beds; being new records for these two counties. Others since 1915 are—Flax Burton, Somerset, N. (Bacchus); Savernake Forest, Wilts, N. (Butler); Bloxworth, Dorset (O. P. Cambridge Coll.); Cavenham, Suffolk, W. (Harwood); Loddington, Northampton (S. O. Taylor); Bristol, Gloucester, W. (Bacchus); Trelleck, Monmouth (Hallett); Bewdley, Worcester (Donisthorpe); Church Stretton, Salop (Leman); Grassington, Yorks. Mid W. (Butterfield); Howth Head, Dublin (Stelfox); Devil's Glen, Wicklow (Stelfox); and Rosslare, Wexford (Phillips).

Leptothorax nylanderi, Först.—A large colony was found at Padworth, on August 31st, occupying the burrows of *Priobium castaneum* in an old holly tree in a hedge. Dr. Joy also found the species this year at Windsor Forest, in an old oak tree, tenanted by *A. (D.) brunneus*. The only new county records are—Bosham, Sussex, W. (Harwood); Billericary, Essex, S. (Box); Chepstow Castle, Monmouth (Hallett); Shrewsbury, Salop (Hodson).

Formicinae.

Acanthomyops (Dendrolasius) fuliginosus, Latr.—On September 30th a number of ♂ ♂ of this ant was swept up in a turnip field near Colby Glen, Isle of Man: As no trees occurred near by the ants must have been nesting in the ground. This is a very interesting capture, on account of the fact that it is the furthest north in which the species has yet been found in the British Isles; moreover, all problems connected with the fauna and flora of the Isle of Man are of considerable importance. The island has been demonstrated to have been covered with a vast sheet of ice during the Glacial period; but whether it was connected with England or Ireland, or both, after the disappearance of the ice, or whether it was isolated before that epoch, is unknown.

It appears to me that the fortuitous arrival of *A. fuliginosus*, either by air or by water, or by human agency, is very improbable. We have proved that colonies of this ant extend their range by branch nests, or by the return of fecundated ♀ ♀ after the marriage flight to their own colonies, or by such ♀ ♀ being accepted into nests of *A. (C.) mixtus*. The marriage flight takes place on, or near, the parent nest, and the fecundated ♀ ♀ get rid of their wings at once. It is very doubtful if they could be carried so far by the winds as the Isle of Man (the nearest lands are Scotland 16 and 20 miles, Cumberland 30 miles, County Down 30 miles, Anglesea 45 miles); and even if they were, it is extremely improbable if such a ♀, who is unable to found her colony unaided, would find a nest of *A. umbratus* or *A. mixtus*, even if they occur on the Island, which is at present unknown. Secondly, if by water she would surely perish; and it is inconceivable that a carton nest of this species could be drifted over without all the inhabitants being drowned. This would tend to prove that the Isle of Man was still connected with the mainland after the disappearance of the ice.

Other new county records for *A. fuliginosus* are—Wotton-under-Edge, Gloucester, E. (Perkins); and Glan Conway, Denbigh (W. Gardner).

A. (Donistorpea) niger, L.—On June 10th, when at Eastbourne, Mr. Blair picked up on the downs a large snail shell, occupied by a small colony of this ant, which he handed to me. On August 4th marriage flights occurred from several nests in my garden at Putney, at 4.30 p.m. summer time. August 30th, two solitary deaLATED ♀ ♀ were found in the empty pupal chambers of *Criocephalus polonicus*, under bark on pine stumps, at Padworth. After a marriage flight they must have selected these situations in which to bring up their brood. This species was abundant under stones on an island in the river Swale, near Richmond, Yorks, N.W., on August 15th, a new vice-county record. The only other new records are—Trelleck, Monmouth (Hallett); and Byrford, Hereford (Leman).

A. (D.) alienus, Först.—This species was very abundant in July at Hunstanton, all over the sand hills, in flowers, under refuse and stones. The new records are—Savernake Forest, Wilts, N. (Butler); and Wallasey, Cheshire (Hallett).

A. (D.) brunneus, Latr.—It will be remembered that this ant was discovered in January this year, by Dr. Joy, at Theale, in Berkshire, and was introduced to the British list by me [*Ent. Record*, **35**, 21-23 (1923)]. On June 20th we visited the locality again, and found that the ants had deserted the felled poplar tree in which the colony was originally discovered. Another colony was found in a hawthorn tree near by (from it two young ♀ ♀, one with one wing and the other with a wing stump, some ♂ ♂, larvae, and ♂ cocoons were taken); and ♂ ♂ were also found on and under the bark of a large oak tree. The nest, however, of the latter could not be located. Joy subsequently discovered the species in Windsor Forest, on oak trees, and later I also found such colonies there, which could be detected by the presence of frass outside the bark; but again the actual nests were not traced, and the ants quickly disappeared. On August 30th I went again to look at the hawthorn tree at Theale, but the ants had departed. On breaking into the tree, the wood inside was found to be entirely riddled by the borings of the ants; the colony, therefore, must have been in occupation for a long time. I kept for sometime in observation nests, some of the ants and larvae from the poplar tree, and also those mentioned above as being taken from the hawthorn tree; but it appears to be a cowardly, stupid, and uninteresting species in captivity. I tried to induce the two colonies to amalgamate without success; nothing would induce the queenless colony to accept one of the young queens, she was eventually killed, as were all ♂ ♂ introduced from either colony into the other. The other young queen soon died in her own colony, and all the ♂ ♂ gradually died off. These ants frequently "salute" each other; they chewed up wood put into the nest, and would eat a little honey, but not readily. They take a long time to discover the presence of food when introduced into the nest; and when an ant had found it, it did not endeavour to acquaint its fellows with the fact.

Acanthomyops (Chthonolasius) flavus, F.—Marriage flights occurred at Wicken, on September 13th, in the afternoon. It occurred abundantly at Colby Glen, Isle of Man, in September, under stones on walls, etc. It was also sent to me from the Island by Mr. S. O. Taylor; its first record for the Isle of Man. Other new records are—Trelleck,

Monmouth (Hallett); Ystradfellte, Brecon (Hallett); Weedley, etc., Yorks, S.E. (Stainforth); Killkenny, etc., Co. Killkenny (Phillips); Maryborough, etc., Queen's County (Phillips); Birr, King's County (Phillips); and Thurles, Tipperary, S. (Phillips).

A. (C.) mixtus, Nyl.—♂♂ were taken at roots of grass and under stones, at Dover, on May 1st. The new records for this species are—New Forest, Hants, S. (Donisthorpe); Sharpenhoe, Beds (B. S. Williams); Mount Garret Wood, Wexford (Phillips); Graiquenamanagh Wood, Kilkenny (Phillips); Maryborough, Queen's County (Phillips); and Menlough, Galway, E. (Phillips).

In a valuable paper entitled "Eine interessante Instinktregulation bei Ameisen (*Lasius mixtus*, Nyl.)," Wasmann records that he found, in May, 1923, at Valkenburg, a mixed colony of *Lasius fuliginosus* and *L. mixtus*, and he points out at some length the importance of the fact that both species were seeking food and marching together in files above ground. As *mixtus* is, when by itself, a very subterranean species, it shows how it had learnt to break away from its instinctive and inherited habits. He refers to my paper on the colony founding of *fuliginosus*; and to a similar case as the one above mentioned, when I found the same two species marching together in England in 1918. [*Att. Pont. Acad. Romana*, 76, 255-59 (1923)]. It was on July 17th, 1918, in the New Forest, when I found the mixed colony which he refers to. Both species were walking together in files along a fence, near a railway bridge. I mentioned that—"I found that the tracks led right down the brickwork of the bridge to the ground beside the line. It was really a beautiful sight, when the sun was shining, to see the jet black *fuliginosus* and yellow *mixtus* marching in files up and down the wall of the bridge, and saluting each other when they met. As *mixtus* is very subterranean in its habits, it must have learnt from the *fuliginosus* to march in files in the open." [*Ent. Rec.*, 31, 4 (1919)].

Formica rufa, L.—When in Dean Forest, in June, this ant was found to be abundant, its nests being constructed of grass; holly twigs and leaves; and beech buds; respectively. Winged ♀♀ were observed walking about the roads in the Forest on the 13th and 16th, and a few dealated ♀♀ on the latter date. A ♂ was captured on the wing on the 14th; evidently marriage flights had recently taken place. It was on June 15th (1911), that I actually witnessed the coupling of the sexes of this species at Aviemore. New records for *F. rufa* are—Trelleck, Monmouth (Hallett); and Ystradfellte, Brecon (Hallett).

Formica sanguinea, Latr.—On May 26th a number of nests of this ant was dug up at Woking. In one of these about 7% of the ants present were pseudogynes, and over 20 queens occurred, but not a single *fusca* slave could be found. This nest was situated in the exact spot where I first discovered pseudogynes at Woking, in two nests situated near to each other, on May 12th, 1913; and I have never found them to be present in any other of the nests scattered over this district. Indeed I have only once found *sanguinea* pseudogynes in any other place in Britain, viz., in the New Forest, on May 22nd, 1908. The Woking pseudogyne colony has flourished for ten years to my knowledge, and I have recorded visits to it and experiments, etc., in the years 1913-1918. New records for *F. sanguinea* are—Westerham, etc., Kent, W. (Harwood); Southend, Essex, S. (O. Whittaker); Much

Wenlock, Salop (O. Whittaker); and Grange-over-Sands (O. Whittaker). Whether the last-named locality is in Lancashire or Westmoreland, I know not; and shall be glad of information on the subject.

Camponotus (Myrmothrix) abdominalis, F.—Miss Tassart gave me a ♂ and ♀ of a var. of this species, which she had found on some apples in her house at Clapham Common in January.

(To be concluded.)

New British Cecidomyiidae. 5.

By RICHARD S. BAGNALL, F.L.S., F.R.S.ED., F.E.S., and J. W. HESLOP HARRISON, D.Sc., F.R.S.ED.

(Continued from p. 88.)

[*Porricondyla phragmitis*, Giraud.]

On *Phragmites*, small depressions in face of stem, as a rule near the node, and each containing a single larva under, and therefore covered by the epiderm.

SHROPSHIRE, Upper Berrington Pool, near Shrewsbury, October, 1923; a few examples. The species is entered in square brackets (as above) in Houard.

We also saw evidence of what may be *Lasioptera flexuosa*, a species not yet recorded as British.

Stenodiplosis geniculati, Reut.

This is the *Cecidomyidarum* sp. we have recorded from *Alopecurus geniculatus*.

Cecidomyidarum sp.

Pale pink larvae, at the roots of *Carex stellulata*.
SCOTLAND, Bavelaw Moss, September, 1922.

Cecidomyidarum sp. (?=B and H 400).

Small white larva at base of leaf-sheath of *Carex stellulata*.
SCOTLAND, Bavelaw Moss, September, 1922.

Cecidomyidarum sp.

On *Rubus fruticosus*; leaf crinkled basally, containing creamy-yellow to pale orange larvae, gregarious.
DURHAM, Ravensworth, August, 1923.

Cecidomyidarum sp.

On *Betula*; parenchymatous leaf gall, not hypertrophied or discolored as in *Contarinia betulina*.
DURHAM, Ravensworth and Gibside, August, 1923.

Cecidomyidarum sp.

On *Poa* sp.; small yellowish larva in the seed.
DURHAM, Gibside, August, 1923.

Cecidomyidarum sp.

On *Pyrola rotundifolia* var. *arenaria*: flower remaining closed, larvae white.

LANCS., Freshfield, September, 1923.

Cecidomyidarum sp.

On *Chlora perfoliata*; flowers remaining small, closed, and sometimes twisted; larvae white.

LANCS., Freshfield, September, 1923.

Cecidomyidarum sp.

On *Ballota nigra*; crinkling of leaves basally, larvae pale yellow.

NORFOLK, Hindolvestone.

Cecidomyidarum sp.

Gall like that of *Asphondylia lathyri*, in pods of cultivated beans: larva red.

DURHAM, Birtley.

Cecidomyidarum sp.

On *Iris* pods; twisting the fruit.

YORKSHIRE, Hull, September, 1922.

SHROPSHIRE, Bomere and Shomere Pools, near Shrewsbury, October, 1923.

Cecidomyidarum sp.

Red to bright orange-red larvae in leaf-sheaths of *Catabrosa aquatica*.

SHROPSHIRE, near Edstaston, October 8th, 1923.

Cecidomyidarum sp.

On *Fraxinus*; parenchymatous leaf gall-like that of *Perrisia fraxinea*, but with an irregular purplish-black discolored patch. The larva is white and is later than *P. fraxinea*, occurring on the same leaf as the old galls of the latter.

Widely spread but not so common as *P. fraxinea*.

Cecidomyidarum sp.

On *Comarum palustre*; pink to blood-red larvae in head.

NORFOLK, Hindolvestone.

SHROPSHIRE, Bomere and Shomere Pools, near Shrewsbury, October, 1923.

Cecidomyidarum sp.

On *Epilobium angustifolium*; a small honey-yellow larva in galls of the Psyllid *Aphalara nebulosa*.

SHROPSHIRE, Shomere Pool, near Shrewsbury, October, 1923.

Cecidomyidarum sp.

Apparently predacious, feeding upon *Sciara* larvae under beech bark.

DURHAM, Gibside, October, 1923.

Cecidomyidarum sp.

Inquiline in juniper gall of *Rhopalomyia valerii*; larva yellow.
NORTHUMBERLAND, Eglingham, August, 1922.

Cecidomyidarum sp.

Inquiline in galls of *Rhopalomyia baccarum*; larva honey-yellow.
DURHAM, Birtley, August, 1922.

Cecidomyidarum sp.

(a) Naked pupa in gall of *Jaapiella veronicae* on *Veronica chamaedrys*.

NORTHUMBERLAND, Ratcheugh Crag, near Alnwick, August, 1922.

(b) White larva in gall of *Perrisia similis* on the same plant; probably the same species.

SCOTLAND, Kelso, August, 1923.

Cecidomyidarum sp.

On *Anagallis arvensis*; honey-yellow larvae in seed capsules.
LANCS., Poulton-le-Fylde, October, 1923.

New host plant for species already recorded. *Jaapiella floriperda*,
F. Loew.

Hypertrophied discolored flowers with pale red larvae on *Silene maritima*.

NORFOLK, Blakeney Point.

Jaapiella inflatae, Rübs.

With the preceding on *Silene maritima*.

Contarinia cucubali, K.

White jumping larvae in gall formed from terminal leaf-bud of
Silene maritima.

NORFOLK, Blakeney Point; much more abundant than the
preceeding.

A Locality in the High Alps, Névache-le-Château.

By WILLIAM FASSNIDGE, M.A.

Névache-le-Château (Hautes-Alpes), 21 kilometres from Briançon,
P.L.M. Altitude 1595 metres. Autobus service from Briançon in
summer. Staff map 1 : 80,000, Briançon 189 N.E. Hôtel de Névache;
Pension : "Les Sapinettes."

In such a disappointing season as that of 1923, when, at all events
in the south of England, there was little entomological work possible,
one's thoughts turn with longing to more favoured localities on the
continent, and apologies for this article seem hardly necessary. Most
English collectors have spent the summer vacation in the Alps at one
time or another, but of the large number who visit this "Playground

of Europe," few seem to stay in the same locality for any length of time, and fewer still seem to get far away from the beaten track. There is risk attached to this procedure, both with regard to the insects one may *not* take, and to the accommodation, which is not always of the most luxurious in a remote alpine village; but none the less, there is a decided charm in striking out into the unknown, for there are butterflies everywhere in the Alps, and our knowledge of their distribution is as yet far from complete.

The locality where the writer spent six weeks with his friend Mr. A. E. Burras, B.A., F.E.S., was the village of Névache, which nestles in the valley of the Clairé, 21 kilometres from Briançon, the nearest accessible point on the railway, and about 2 km. from the Italian frontier. The village is quite one of the highest in France, being about 5,000 feet above sea-level. It includes five scattered hamlets, and had before the war a population of 422 in the winter months. It is still practically unknown to the tourist. The valley of the Clairé, which stretches almost due north and south from Briançon, makes a bend to the west and widens out before Névache is reached, while beyond the village the valley rises steadily to the north-west, until the road beside the torrent degenerates into a mule-track and is almost lost among the mountains. Few cars attempt to climb beyond Névache, and of those that do, all return by the way they went. The visitor is completely cut off from civilisation and can only visit Briançon in the jolting autobus, that runs in the summer months, on pain of spending at least one night there. All excursions must be made on foot; there are no places of interest in the neighbourhood; the entomologist can give his undivided attention to the insects that abound on every hand, with no fear that time will ever lag, rather will he find, as we did, that the days are all too short.

After such dismal weather in England, it is a pleasure to record the glorious weather we experienced. We reached Névache at the end of July, and photographs taken then show fine masses of cloud high in the sky. After that for three weeks no cloud was seen, and the sun blazed down from a sky of the brightest blue, scorching up crops where irrigation was not possible, bringing forth grasshoppers innumerable, and causing us to shed all but the most essential garments. A sudden drop in the temperature, followed by 24 hours' rain, came as a welcome relief almost, after which the sun regained his power nearly, and the weather, except for one rainy morning, was fine for the remainder of our visit. High winds were not infrequent, and thunderstorms were often reported from neighbouring valleys, indeed almost every evening sheet lightning flashed above the mountain tops, but no storms came our way. Yet in spite of the abnormal drought, the countless streams and springs, fed by the mountain snows, kept the upland pastures green, and the cascades and torrents foamed and dashed amongst rocks and boulders almost as impetuously as ever.

From the time of our arrival at the end of July, until the fourth week in August, insects were to be taken in the greatest abundance, both in the valley and on the mountain slopes up to the snow-line; but as the pastures were successively shorn at ever greater altitudes, so the numbers of insects decreased, and a sharp temporary drop in the temperature round about the 23rd August, wiped out many species and put a sudden end to insect life at high altitudes. From that date to

the end of our stay hunting was restricted to sheltered localities and favoured spots below 6,000 feet, and most of those species that were abundant when we arrived, had completely disappeared. We were none the less astonished to note how some species seemed to spread their emergence over the whole period of our stay, while the vast majority lasted rarely more than three weeks. For instance *Polyommatus (Hirsutina) damon* was in full flight on July 30th, and on September 9th it was still possible to take a series in good condition; *Parnassius apollo* was for the most part somewhat worn at the end of July, but freshly emerged specimens were taken at the beginning of September; *Melitasa dictynna* appeared to have two distinct waves of emergence, one early in August, the other three or four weeks later. Probably the most productive time for localities at such high altitudes is from mid-June to mid-August, but unfortunately holidays are not fixed with any regard for the entomologist.

Staying as we did for some time in the same place, we were able to utilise every method of collecting known to us. By day we worked at flowers—Névache is nearly as famous as a hunting ground for the botanist—or followed the course of some dashing torrent right to its source in a patch of snow, rising 4,000 feet, and finding insects in plenty all the way. Such hot weather as we experienced made of every seeping spring on the hillside an amazing place of rendezvous for many species of blues, skippers, and Erebias. For two or three hours round about mid-day, such species as *Plebeius (Latiiorina) orbitalus*, *Plebeius (Arctia) donzelii* and *Hesperia alveus* settled on the moist ground in swarms, while the Erebias seemed more partial to boulders wet with the spray of the cascade. The runnels, by means of which the villagers irrigated their fields and gardens, especially where they crossed a dusty track, were at dusk the resort of numerous Geometers, which could be seen in the lamplight greedily imbibing moisture from the damp ground. Always after a hot day we found large numbers of Geometers around these wet places, but of Noctuae we only saw three specimens; and after the drop in temperature already referred to, either the Geometers ceased to be thirsty, or more probably, they were for the most part exterminated, for we saw very few around the puddles. One Geometer, *Halia brunneata*, was to be found by day, drinking at mud-patches amongst the pine forests that cover the slopes of the mountains on the southern side of the valley; and concerning this species we observed a curious fact: when it first appeared we tried hard to take a series, but with indifferent success, until we sat down in the shade of the pines to rest and to wipe the moisture from our brows. Then *H. brunneata* began to appear from all directions and to flutter around us in fair numbers. Not until we grew tired of taking them did we discover that they came attracted by the perspiration that covered us, which they would imbibe from a bare arm until literally driven away. Certain species which in England sometimes circle round, and even settle upon, the person, may conceivably be attracted by the same natural bait.

Every evening we went for a short stroll in the dusk after dinner, and hunted with lamps among the flowers upon the hillside. We did not begin to sugar until nearly a fortnight had elapsed, chiefly because we were too busy with other methods, and there was no very suitable sugaring ground in the district. Moreover, conditions throughout our stay were unfavourable to sugar, so far as we could judge, and for the

four weeks or so during which we sugared regularly, we did not once see more than four insects on any one patch at a time. Of the species that came to sugar very few were in any numbers, and quite a large proportion were represented by three or four or even single specimens only, while others, including *Laphygma exigua*, of which a few examples were netted, did not visit the sugar at all. The species taken serve to show how short the season must be in these altitudes, and how strangely times of emergence differ from those noted in England, for late autumn species were found in mid-August side by side with insects associated in England with July.

Beating for larvae was almost a complete failure. Although we persevered after the first check, we never found very many, and of those we took at least 90% were ichneumonid. The trees and bushes available were chiefly pines, aspen, willows, juniper, barberry, wild plum, and alpine rose, and none of them yielded results at all commensurate with the time and effort expended. Besides, a considerable number of the larvae taken we could not identify, and in some cases we never shall be able to do so for we failed to rear them even to the pupal stage. Searching was more profitable than beating, low-growing plants yielding rather better at this time of the year. But it remains to be seen whether the larvae of *Zygaena exulans*, found at 9,000 feet, can be successfully hibernated at sea level, or whether larvae of *Dasychira fascelina*, found wandering just before hibernation on and near clumps of alpine rose, will take kindly to a different foodplant in the spring. However this may be, it adds greatly to the fascination of a new and unknown locality to spend at least a few hours with the beating-tray at intervals of a week, even if the results are small.

It was not necessary to search for colonies of the larvae of *Evanesca antiopa*, which were easily to be found on the narrow-leaved willows that fringe the banks of the Clairé. Of some hundreds of larvae taken after the last moult, not one yielded a parasite, yet the chrysalids we found in odd places produced nothing but hosts of Chalcid flies. The same result is often obtained by those who have the patience to search in nature for chrysalids of other Vanessids, such as *Aglais urticae*, *Eugonia polychloros*, *Vanessa io*, which are unprotected, but chrysalids of *V. atalanta*, which are concealed in a kind of tent of spun-together leaves of nettle, rarely produce these parasites. An observation we were enabled to make seems to prove that the parasite attacks not the larvae but the newly formed chrysalis, while its skin is still too soft to resist its attacks. Two small flies were seen late one evening in attendance upon a larva of *A. urticae* that was hanging from the lintel of a wayside shrine, and the next morning one was observed apparently ovipositing through the soft skin of the newly changed chrysalis, in spite of the violent twists by means of which this latter was endeavouring to dislodge the larval skin, for the change had but just occurred. Thinking we could easily find chrysalids of *E. antiopa* in nature, and so gain some idea of the percentage that escaped this melancholy fate, we devoted some time to search around a tall willow bush on which, to judge by their ravages, at least five hundred larvae must have fed. Yet we could not find a single chrysalis. Later on a few were found by chance in various odd situations, but never anywhere near the bush on which the larvae must have fed. How a large brood scatters so far and hides so successfully is little short of wonderful.

Owing possibly to the abnormally hot and dry summer, the insects captured showed considerable range of variation, and a few notable aberrations. Amongst these latter should be recorded a specimen of *Argynnis niobe*, unfortunately badly battered, almost wholly black, with a single splash of tawny yellow on the upper surface of each wing; an underside aberration of *Plebeius argyrognomon* ♂, in which the markings are reduced to thin black streaks; an almost completely black specimen of *Nemeophila plantaginis*; a shining white *Brenthis pales*; a silvery white aberration of *Melitaea didyma*, which was not captured; and a wonderful aberration of *Gnophos serotinararia* having the nervures of the wings powdered with greyish, and the spaces between them filled in with brownish black.

It may upset our insular notions to talk about immigration in connection with a locality situated on the continent, yet there can be little doubt that certain species regularly spread each year over higher and more northerly regions, only to be cut off by the rigours of a normal winter. In an exceptional season such as has been experienced this year in south-eastern France, the range of immigrating species is presumably increased, as well as their numbers, and at the same time there is much greater likelihood of an unusual partial second brood in species normally single brooded in any given locality. Only in some such way can the presence of some of the insects observed be accounted for. For example, larvae and imagines of *Heliothis peltigera* were taken; a few specimens of *Leptosia sinapis* were taken in mid-August; larvae of *Hyles euphorbiae* were observed of varying size, at altitudes up to 6,000 feet; in the valley specimens of *Sphinx convolvuli* were seen, two of which were found dead, but in perfect condition, possibly killed by the night frosts, while another was observed to remain on the same post for three days and nights; two specimens of *Phryxus livornica* were taken by day at flowers on the hottest slope of the valley; a specimen of *Oyaniris argiolus* was taken on September 9th, together with *Limenitis camilla*; a few specimens of *Melitaea cinxia*, all males, were taken in August; *Lampides boeticus* appeared in fair numbers at the end of August; a single male of *Polyommatus (Agriades) thetis* was taken in September; strangest record of all, three specimens of *Euchloë euphenoides* were seen in the second week in August, one female only being captured. Not only among the Lepidoptera but in other orders the same phenomenon was observed, notably in the case of the Orthoptera. For the last few years only, the valley has been devastated by hordes of grasshoppers, the reason alleged by the peasants being that the winter mantle of snow has come to cover the ground before any very sharp frost has been experienced. The result is that the hibernators have been protected from the low temperatures of winter, and in the space of three years the grasshopper has become a serious pest. A well known French entomologist, Monsieur P. Chrétien,* relates that, during an expedition into this valley, he laid down his net for a short time to search for larvae, and found on his return little more than the iron rim left. We were not able to give much attention to orders other than the Lepidoptera, although many pleasant hours were spent observing the habits

* See *L'Amateur de Papillons*, I., 83.

of sand wasps, which provision their cells with lepidopterous larvae, or watching the graceful flight of that weird, predatory, and ferocious Neuropteran *Ascalaphus italicus*, whose captures seemed chiefly to consist of *Erebia tyndarus*. Of dragonflies only five species were captured, all in the valley; *Sympetrum scoticum* and *S. flareolum* in some numbers, *S. striolatum* not commonly, *Aeschna cyanea* commonly, and a single specimen of a species of *Lestes*, too faded to identify. That Névache is a fine hunting ground for the student of any branch of entomology and a paradise for the botanist we are convinced, and for those who wish to escape for a time from the exacting duties of life in a large town, no better spot could be found wherein to pass a few weeks in peaceful seclusion.

(To be continued.)

NOTES ON COLLECTING, etc.

A NOTE ON *CIONUS WOODI*, DONIS.—In the *Ent. Mo. Mag.* (1924, LIX., p. 34), Mr. Champion, when discussing the above named species, described by me in 1921, the types (♂ and ♀) of which are in the collection of the late Canon T. Wood, writes as follows:—"These insects, in my opinion, are undoubtedly a form of *C. scrophulariae*, L.," and further, "*Cionus woodi*, Don., must therefore be treated as a variety of *C. scrophulariae*, L." Mr. Champion is of course entitled to his opinion in the matter, but the following points appear to me to call for some comment.

1. The abbreviation for my name should be Donis., "Don." has always stood for Donovan.

2. It would perhaps have been treating me with greater fairness had mention been made of the fact that before describing these insects they were first sent to Major Sainte Claire Deville (who declared them to be quite unknown to him and undoubtedly new); and also submitted to Dr. G. K. Marshall, F.R.S., who makes a special study of the *Curculionidae*. The latter gentleman likewise expressed his entire agreement with the view that the species was new to science, and kindly helped me to work it out with Wingelmüller's table on the genus *Cionus*. He also read through and approved of my MS. description.

3. The point, however, which strikes me most of all, is this—the late Canon Wood's collection of British Coleoptera has only recently been presented to the British Museum (Natural History). In that establishment the Coleopterists are of long standing, merit, and recognised ability. Yet, almost before the insects in the collection in question can have been registered and arranged, a third party steps in and decides what certain insects shall be called, and publishes his views on the subject; thus greatly reducing their value. Is the staff of the Museum incapable of dealing with a collection of beetles placed in their care?—HORACE DONISTHORPE.

THE CANNIBAL COCCINELLID.—Those of us who have at any time bred *Coccinellidae* know from experience, the reprehensible habits of this species to cannibalism in their early larval days and Mrs. O. A. Merritt Hawkes, M.Sc. (Birm.), B.Sc. (Lond.), has given us her experiences of this painful trait in a racy article in a recent number of "*Conquest*" (August, 1923). I was not however aware till last year that these

unpleasant habits were continued after reaching years of discretion, or, in other words, after emergence from the pupa stage. It so happened however, that in the course of last year on two several occasions I had placed in separate boxes two Coccinellids (*A. 2-punctata*, L.), while still in the yellowish-white dress of emergence, to await the development of the elytral markings. By some accident I forgot to attend to these boxes for some time, and on opening them I found in one case, one Coccinellid had entirely eaten out his neighbour, leaving only thorax and elytra picked as clean as if they had been eaten out by ants, while in the other case, the stronger had attacked and was eating away the head of the weaker, who, when released, was able to stagger about till I put it out of its misery. I also observed on two occasions larvae attacking pupa, so that so far as this species is concerned, it is prepared to eat its brother Coccinellid at any stage.—G. C. LEMAN, F.E.S.

HABITS OF LYCIA HIRTARIA.—Sluggish habits of *Lycia (Biston) hirtaria*, have often been noted. The following may be of interest:—At West Dulwich on Monday, April 24th, 1922, at 10.30 a.m., a ♀ *hirtaria* was noticed about 5 feet up on the North East side of a lime tree, the wind was North West and cold, from Tuesday to Saturday it remained in exactly the same spot. On Sunday, April 30th, at 11 a.m., it was noticed to be *in cop.* At 6.30 p.m., they were separated, the ♀ being in the same spot, the ♂ about 3 inches away. On Monday, May 1st, at 11.30, the ♀ was again *in cop.*, the (?) other male being in the same place 3 inches distant.

On Tuesday the ♀ was alone but on Wednesday at 12.30 it was still at same spot with one male three inches away and 3 other females a foot or more below it on the South side of the tree. On Thursday, 12.30 noon, the ♀ was still apparently on the same spot, but on Friday, May 5th, it had gone.—G. S. ROBERTSON (M.D.), 72, Thurlow Park Road, Dulwich, S.E.

THE SEASON IN SOUTH HANTS.—The terrible sequence of bitterly cold east winds has not given us much chance to go hunting, but still we have been out. I have been collecting larvae of *Thera variata* (I hope the real *variata*) from spruce, and *T. obeliscata* (presumably) from Scot's pine, but I can find no point of difference in the larvae—in fact, I cannot be quite sure what I have got. *Hylaea (Ellopia) prosapiaria* larvae are very rare this year. *Malenydris multistrigaria* is well out and *Polyplocia flavicornis* has been almost abundant. *Panolis piniperda* is also out but I am afraid there is no *Apocheima hispidaria* again this year. We have managed to find a few mines of *Aegeria (Sesia) sphegiformis*, but they are not common. During the short warm spell of S.W. winds, quite a lot of insects emerged indoors. I got plenty of *Aegeria culiciformis* out (forced), some *Asphalia ridens*, one *Drymonia chaonia*, one *Pygaera curtula*, two *P. piniperda*, *Eupithecia abbreviata*, *Pygaera pigra* and *Hemerophila abruptaria*. I wonder what sort of a season is in store for us. It can hardly be worse than the last one. So far, I have not seen *Brephos parthenias* nor heard of it, yet there are plovers' eggs about and the woodcock are sitting already.—WM. FASSNIDGE, Southampton. April 4th.

CURRENT NOTES AND SHORT NOTICES.

Volume V. of Seitz *Macrolepidoptera of the World*, America Rhopalocera will be complete in about eight months from now. It will include about 1,140 pages and 203 plates. The publishers hope that within a year Volume IX., the Indo-Australian Rhopalocera, and Volume XIII., the African Rhopalocera, will also be finished. The parts are issued at the rate of about four per month; so far this year we have received twenty parts.

We are pleased to find the *Annalen Naturhist. Mus. in Wien* has recovered to a large extent its pre-war size and style. The current issue deals very comprehensively with the Tyrrhenian area of which the Islands of Corsica and Sardinia are the chief geographical features. An intensive study of the Coleoptera of the region is the basis of the investigation, with reference to the fauna of all the varied contiguous areas, lying between the Alps, Apennines, Sicily, Atlas, Iberian and Pyrenean Mts., not omitting that of the smaller islands such as Elba. First there is a systematic account of the Coleoptera of Corsica and Sardinian, then a statement of the area of distribution and possible origin of each species, an attempt to explain the absence or scarcity of widely distributed species of adjoining areas, a consideration of the probable influence upon the coleoptera of the nature of the land surface, elevation, etc., and finally the characteristics of the more local areas in the region such as, elevated areas, wooded mountains, Elba, etc. In a less intensive degree other orders are dealt with in a similar way, the Lepidoptera, the Mollusca, the Fish, the birds, etc. The consideration of the Gibraltar-bridge, the Adriatic-bridge, the Aegean area, the shores of the Black Sea, the island of Cyprus as sources of influence is also included. The writer is Dr. Karl Holdhaus of Wien.

SOCIETIES.

THE ENTOMOLOGICAL SOCIETY OF LONDON.

February 6th., 1924.—VICE-PRESIDENTS.—The President announced the Vice-Presidents for the coming year to be Mr. R. W. Lloyd, Dr. G. A. K. Marshall, C.M.G., F.R.S., and Mr. H. Willoughby-Ellis.

ELECTIONS OF FELLOWS.—The following were elected Fellows of the Society:—Leonard Eastham, M.Sc., Zoology Dept., The University, Birmingham; G. H. Simpson-Hayward, Icomb Place, Stow-on-the-Wold, Gloucestershire.

EXHIBITS.—Dr. E. A. Cockayne exhibited a pathological aberration of *Pyrameis dejeani* from Tosari, East Java, in which all the scales which should be cream coloured were devoid of pigment, very thin, and rolled up at the tip.

Dr. K. Jordan exhibited specimens of earwigs (*Arivienia*) which are found on bats in the Malayan Sub-region. Apparently a case of symbiosis and not of parasitism as the earwigs appear to feed on the bats' excreta, etc.

Lord Rothschild exhibited *Teinopalpus aureus*, a recently described species of the genus from Kuangtung, S.E. China.

Mr. E. B. Ashby exhibited a female *Leucaspis grandis* (*Chalcididae*) taken at Digne, July 16th, 1923, and called attention to the habit of carrying the long black ovipositor curved over the back.

Mr. H. Donisthorpe exhibited specimens of the Ant *Acanthomyops fuliginosus* taken in the Isle of Man, the most northern locality for the species yet recorded, and showed a map exhibiting the area of distribution of the species in Great Britain.

Dr. Gahan exhibited the dead larva of a Longicorn beetle which had lived in the Museum for the last six years. When deposited at South Kensington, it had presumably existed in a piece of wood which had been in use for domestic purposes for some 25 years, and thus the larva had in all probability lived for at least 31 years.

Mr. H. Willoughby-Ellis gave his experience with Longicorn larvae in confinement and said that he was of opinion that to attain success in breeding Coleoptera it was necessary to introduce dampness in such a way and in such amount that mould could not be introduced, and to produce longevity the minimum amount of food should be given just sufficient without causing death by starvation.

Dr. Gahan exhibited living specimens of a luminous Elaterid beetle *Pyrophorus punctatissimus* from the Argentine, and called attention to the two sets of light organs in these insects, one of which was only visible when in flight.

Mr. K. G. Blair considered that the chief function of luminosity in the *Lampyridae*, as a whole, was primarily a sexual one in securing the suitable mating of the species, and probably the same function was indicated in the *Pyrophorus*. He agreed that the luminosity might also be of some service as a warning of inedibility.

Mr. J. H. Durrant exhibited a specimen of *Tinea albicomella* from Torquay, July 17th, 1922, a species new to Britain. Nothing was yet known of its life-history.

Mr. Willoughby-Ellis exhibited the results of his examination of three "castings" of the owl (*Athene noctua*) sent to him from Cornwall by Dr. Cockayne. The remains were exclusively of some eight or ten species of Coleoptera.

Mr. H. Willoughby-Ellis exhibited specimens of *Boletophagus reticulata* (Col.), infested with Acarids, probably a species of *Gamasus*, which filled all the depressions in the elytra and suggested that it was a case of phoresy.

Mr. H. Willoughby-Ellis showed examples of the very rare Coleopteron *Agabus mellanarius* from its only British locality and referred to a teratological specimen of which the left posterior leg was extremely small although the parts were perfect.

Professor E. B. Poulton, F.R.S., exhibited the Longicorn beetle *Chlorophorus (Clytanthus) annularis*, which had bred in the wall of a bamboo waterpot from Burmah.

Professor E. B. Poulton, F.R.S., exhibited some of the actual specimens of *Libythea laius*, found congregating perhaps before, or during, migration, as observed by Mr. C. F. M. Swynnerton in S. Africa.

Professor E. B. Poulton, F.R.S., read the account of an invasion of "Siafu" or Driver-Ants at Nairobi, as related by Dr. V. H. L. van

Someren, and exhibited examples of the species *Dorylus nigricans*, sub-sp. *burmeisteri* var. *molesta*, identified by Mr. W. C. Crawley.

Professor E. B. Poulton, F.R.S., exhibited the Nymphaline butterfly *Antanartia hippomene*, with a dimorphic larva, one form of which mimics the orange and black banded larva of a Hypsid moth, *Amphicallia tigris*, and read Dr. van Someren's series of interesting observations on the various mimetic associations connected with this butterfly, in both the larval and imaginal stages.

THE SOUTH LONDON ENTOMOLOGICAL SOCIETY.

January 10th, 1924.—Miss Emily Chapman and Miss Laura Chapman of "Betula," Reigate, and Mr. Thos. Greer, of Stewartstown, Co. Tyrone, were elected members.

Mr. R. Adkin exhibited a short series of the recently introduced species *Blastobasis lignea* and gave a short account of what is known of it so far.

Mr. Enefer, fasciated stems of sycamore and of narcissus flower head.

Mr. S. A. Blenkarn, examples of the species of Coleoptera mentioned by Mr. H. Main in his paper on Provence read at the last meeting, including 5 species of *Onthophagus* and *Acanthosinus aedilis*.

Mr. H. J. Turner, yellow forms of *Pieris napi* from Mödling near Vienna, spring form *lutescens* and summer *napaeæ* form *flavescens*, the latter the deeper yellow. He showed a spring form of the Irish yellow *napi* which differed distinctly from the Mödling spring race; the Irish bright yellow summer form *flava* which was very rare was also quite distinct from the summer *flavescens*.

Mr. K. G. Blair, for Mr. Hirst, a living *Brachinus sclopeta* (Col.) from Corsica.

Mr. Rayward, females of *Anaitis eformata* and *A. plagiata* with microscopical preparations and pointed out the various differentiating characters.

Mr. Tonge, for Mr. Baker-Sly, *Sphinx ligustri* bred from a Cornish larva with the pink marking replaced by cream, and a male *Sterrha saccharia* taken at Lewes on August 11th last.

Mr. N. D. Riley, a var. *salmacis* of *Plebeius (Aricia) medon* from Castle Eden Dene, a locality which will soon be utterly destroyed by the making of roads and railway and by mining operations.

Notes were read from Mr. G. T. Porritt, (1) Scarcity of Lepidoptera, particularly Tortrices near Huddersfield. (2) A peculiar habit of *Satyrus semele* to settle on a scrap of newspaper at St. Anne's on Sea.

Reports of the Field Meetings at Ashtead and Ranmore Common were read.

January 24th, 1924.—The Annual Meeting. On this occasion the reports of the Council and Treasurer were read and passed, and the President, Mr. N. D. Riley, F.Z.S., F.E.S., read his Address. Subsequently Mr. Jacobs exhibited a remarkable, small, very pale coloured and practically markingless example of *Hybernia marginaria* taken last year, and Mr. Blenkarn exhibited a dwarf *Euchloris pustulata (bajularia)* taken years ago at the New Forest, of only half the usual expanse.

Subscriptions for Vol. XXXVI. (10 shillings) should be sent to Mr. Herbert E. Page, "Bertrose," Gellatly Road, New Cross, S.E. 14 [This subscription includes all numbers published from January 15th to December 15th, 1924.]

Non-receipt or errors in the sending of Subscribers' magazines should be notified to Mr. Herbert E. Page, "Bertrose," Gellatly Road, New Cross, S.E. 14

ADVERTISEMENTS of Books and Insects for Sale, or Books wanted will be inserted at a minimum charge of 2s. 6d. (for four lines). Longer Advertisements in proportion. A reduction made for a series Particulars of Mr. Herbert E. Page, "Bertrose," Gellatly Road, New Cross, S.E. 14

Subscribers who change their addresses must report the same to Mr. H. E. PAGE "Bertrose Gellatly Road, New Cross, London, S.E., otherwise their magazines will probably be delayed.

Desiderata.—Foreign examples, local races, vars. and abs. from all parts of the world of any butterflies included in the British list. Setting immaterial; exact data indispensable. Liberal return made.—*W. G. Pether, "Thelma," 4, Willow Bridge Road, London, N. 1.*

Duplicates.—*Cinxia*, *Bellargus*, *Coridon*, *H. Comma*, *Lineola*, *Galathea*, *Moneta*, *Nupta*, and many others. *Desiderata*.—*Blandina*, *Irish Icarus*, *Carmelita*, *Cuculla*. *Gonostigma*, *Ashworthii*, *Templi*, *Australis*, *Undulata*, *Smaragdaria*, *Testacea*.—*W. Gifford Nash, Clavering House, Bedford.*

Duplicates.—*Cinerea* ♀, fine forms, grey, brown and blackish, *Maritima* and vars. *Immorata* and other East Sussex species.

Desiderata.—Pupæ. *Luteago* (*Barrettii*), *Caesia*, *Albimacula*, *Alpina*, *Xanthomista*, *Sparganii*, *Dissoluta* (*Arundineta*), *Graphalii*. Also imagines of extreme forms *Noctue* in fine condition only.—*A. J. Wightman, 35, Morris Road, Leves.*

N. American Lepidoptera in papers in exchange for ditto from any part of the world. *J. C. Woodward, Training Ship "Cornwall," Purfleet, Essex.*

MEETINGS OF SOCIETIES.

Entomological Society of London.—41, Queen's Gate, South Kensington, S.W. 7. 8 p.m. May 7th, 1924.

The South London Entomological and Natural History Society, *Hibernia* Chambers, London Bridge. Second and Fourth Thursdays in the month, at 7 p.m.—*Hon. Sec., Stanley Edwards, 15, St. German's Place, Blackheath, S.E. 3.*

The London Natural History Society (the amalgamation of the City of London Entomological and Natural History Society and the North London Natural History Society) now meets in Hall 40, Winchester House, Old Broad Street E.C. 2, first and third Tuesdays in the month, at 6.30 p.m. Visitors welcomed. *Hon. Sec., W. E. GLEGG, 44, Belfast Road, N. 16.*

All MS. and editorial matter should be sent and all proofs returned to **HY. J. TURNER**, 98, Drakefell Road, New Cross, London, S.E. 14

We must earnestly request our correspondents NOT to send us communications IDENTICAL with those they are sending to other magazines.

Lists of **DUPLICATES** and **DESIDERATA** should be sent direct to Mr. H. E. Page, Bertrose, Gellatly Road, New Cross, S.E. 14

OVA, LARVÆ, AND PUPÆ.

The Largest Breeder of Lepidoptera in the British Isles is

H. W. HEAD, Entomologist,
BURNISTON, Nr. SCARBOROUGH.

Full List of Ova, Larvae, and Pupae, also Lepidoptera, Apparatus, Cabinets, etc., sent on application.

Many Rare British Species and Good Varieties for Sale.

Thymoplas

MOUNTING OUTFITS.

A simple and permanent method for mounting insects, &c.

Adapted by the Entomological Dept. Royal College of Science, London.

Price 3/- (postage 6d.) and 6/- (postage 9d.)

HARBUTT'S PLASTIGINE, LTD.
56, LUDGATE HILL, E.C.4, and
BATHAMPTON, nr. BATH.

AGENT—

G. A. BENTALL, F.Z.S.,
Naturalist,
392, Strand, W.C. 2.



BACK VOLUMES OF

The Entomologist's Record and Journal of Variation.

(Vols. I-XXXV.)

CONTENTS OF Vol. I. (Most important only mentioned.)

GENUS *Acronycta* and its allies.—Variation of *Smerinthus tiliae*, 3 coloured plates—Differentiation of *Melitaea athalia*, *parthenie*, and *aurelia*—The Doubleday collection—Parthenogenesis—Paper on *Taeniocampidae*—Phylloxera—Practical Hints (many)—Parallel Variation in Coleoptera—Origin of *Argynnis paphia* var. *valesina*—Work for the Winter—Temperature and Variation—Synonymic notes—Retrospect of a Lepidopterist for 1890—Lifehistories of *Agrotis pyrophila*, *Epunda lichenea*, *Heliophobus hispidus*—Captures at light—Aberdeenshire notes, etc., etc., 360 pp.

To be obtained from—

Mr. H. E. PAGE, "Bertrose," Gellatly Road, New Cross, London, S.E. 14
to whom Cheques and Postal Orders should be made payable

Subscriptions for 1924 are now due.

C.D.

Vol. XXXVI.

13,820

MAY 26 1924

No. 5.

The Entomologist's Record AND Journal of Variation

EDITED BY

RICHARD S. BAGNALL, F.L.S., F.E.S.
GEORGE T. BETHUNE-BAKER, F.L.S., F.E.S.
M. BURR, D.Sc., F.L.S., F.Z.S., F.E.S.
(REV.) C. R. N. BURROWS, F.E.S.
E. A. COCKAYNE, M.D., F.E.S.

JAS. E. COLLIN, F.E.S.
H. ST. J. K. DONISTHORPE, F.Z.S., F.E.S.
JOHN HARTLEY DURRANT, F.E.S.
ALFRED SICH, F.E.S.
(REV.) GEORGE WHEELER, M.A., F.E.S.

and

HENRY J. TURNER, F.E.S.,
Editorial Secretary.

CONTENTS.

	PAGE.
Larval habits of <i>Teichobia verhuellega</i> , Stain., <i>Alfred Sich, F.E.S.</i>	65
Myrmecophilous Notes for 1923, <i>H. Donisthorpe, F.Z.S., F.E.S.</i>	69
Further Records of Lepidoptera from the Witley District of Surrey, <i>W. Hawker-Smith, F.E.S.</i>	75
The Russian Entomological Society, <i>Malcolm Burr, D.Sc., F.E.S.</i>	78
CURRENT NOTES AND SHORT NOTICES	79
SOCIETIES:—The South London Entomological Society	80
SUPP.:—List of Races of the Rhopalocera of Peninsular Italy, <i>Roger Verity, M.D., and Orazio Querci</i>	(29)–(32)

MAY 15th, 1924.

Price ONE SHILLING (NET).

Subscription for Complete Volume, post free
(Including all DOUBLE NUMBERS, etc.)

TEN SHILLINGS.

TO BE FORWARDED TO

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

“BERTROSE,” GELLATLY ROAD, NEW CROSS, S.E.14.

Communications have been received or have been promised from Messrs. H. Donisthorpe, Dr. Verity, J. H. Durrant, Rev. C. R. N. Burrows, Wm. Fassnidge, Orazio Querci, H. J. Turner, Karl Höfer; R. S. Bagnall, F.R.S.E., F.L.S., F.E.S., J. W. H. Harrison, D.Sc., F.R.S.E., T. F. Marriner, F.E.S., O. R. Goodman, F.Z.S., F.E.S., Lieut. E. B. Ashby, F.E.S., with Reports of Societies and Reviews.

C

WATKINS & DONCASTER

GERRARD (ESTABLISHED 1879)

36, Strand, London, W.C.2.

Telephone: GERRARD 9451.

:: Manufacturers and Suppliers of ::
Natural History Requisites of all Kinds.

Cabinets. Best quality and finish. All sizes at lowest prices on view at above address.

Lepidoptera. Large stocks kept of British Palæartic and Exotic Species. Lists on application.

Bird's Eggs. Large selection of British and European Eggs, singles and in sets with data, always on hand.

Books. A varied and extensive stock on Entomology and all Branches of Natural History.

GENERAL CATALOGUE SENT POST FREE.

FOR SALE.

The Plaquet, Arlington.
Abbotswood, Sussex.

T.S. has for Sale some good vars. and a fine lot of set Lepidoptera.

Also vars. of Blues and vars. of *A. grossulariata*.

Fine wild Pupae, Larvae and Ova always on hand—mostly own collecting.

LIST FREE from

THOMAS SALVAGE.

Bexley]

L. W. NEWMAN

[Kent

Has for sale a superb stock of 1920 specimens in fine condition, including Varleyata; Bicuspis; Pendularia var. Subroseata; Melanic forms Lariciata, Consortaria, Consonaria, Abietaria; Irish forms Aurinia and Napi, fine vars. Tiliae, Yellow Dominula, etc., etc. Quotations and Insects sent on approval with pleasure.

Also a huge stock of fine PUPÆ and OVA.

Write for latest price lists.

Relaxing Tins are now 4/- small and 6/- large, pos free **Re-fills, 2/3** small, 3/3 large, post free.

Larval habits of *Teichobia-verhuellella*, Stainton.

By ALFRED SICH, F.E.S.

My first acquaintance with this species was made at Niton, near Ventnor, in the Isle of Wight, where I found the larvae on Hartstongue Fern, and subsequently bred several moths, but I did not then notice the interesting habits of the larva, which actually moves its dwelling from old pastures to new like a nomad. In 1923 I again met with the larvae in plenty at Badenweiler, in the Black Forest, where I spent the winter, and was pleased to find them again on the Bürgenstock, a mountain near Lucerne. Here they were living in an even more natural state than at Badenweiler, as they inhabited limestone rocks instead of stone walls made by man.

Teichobia verhuellella, Stainton, is on the whole a somewhat primitive species with an ill-developed tongue, two-jointed maxillary palpi, all veins present and separate, and unicolorous wings, while the larva mines in an ancient type of plant.* Rebel, in Staudinger and Rebel's Catalogue, 1901, places it in a subfamily by itself, the *Teichobiinae*, and it appears to have no very near relations. It appears to be distributed over Central and Western Europe, and I believe it has been recorded from the United States of America. Near Ventnor it occurred at a few feet above sea level, on the Bürgenstock at 3,000 feet, and Zeller found it at Bergün, in the Engadine, at over 4,000 feet. The larva mines in the fronds of certain species of fern in its earliest stages, and later lives under a cover of silk and fern spores. I will begin my observations on the larvae I found at Bürgenstock. On August 28th, 1923, the first mine was seen, but I could find no trace of the egg on this one, nor on any of those found subsequently.

The first mine is a blotch mine, more or less triangular in outline, quite flat, and pale brown in colour. The larva has a pale ochreous head and a pale greyish ochreous body, but my lens would not show me more of this creature, some 0.5mm. in length. It lives entirely in the mine, eating out the green tissue. Here I believe it undergoes its first change of skin, and then continues to feed for a time in the same mine. Whether in the first stage it can leave the mine and form a new one I do not know, but it certainly is able to do so in the second stage. These mines were in *Asplenium ruta-muraria*. On September 3rd I found a larva in the second stage on a leaflet of a frond of *Asplenium viride*. It had just mined out sufficient space to enclose its body. Above, on the opposite side of the stalk, was the leaflet containing the first mine which the larva had vacated. Three days later I left Bürgenstock, and was unable to make any further observations. As the leaflets of these *Asplenium* ferns are often very small, I should suppose that the larva makes two mines at least before hibernation. It may, however, be content with one mine when feeding in the large fronds of Hartstongue. Whether the larva passes the winter in the mine, as I think probable, or whether it leaves the mine and hides away till the spring, is a problem I have not yet solved. I will now go back to my observations at Badenweiler, in the spring of 1923. There was a fair amount

* Compare Meyrick, *Handbook*, p. 777.

of *A. ruta-muraria* on the walls of the villages in the neighbourhood, and I intended looking out for the larvae in April, as Tutt gives that month for finding it in England (*Practical Hints*, Vol. III.), and as Badenweiler is about 1,200 feet above the sea, I thought the species would not be earlier there. However, happening to be in the village of Niederweiler, on February 26th, I saw a good patch of the fern, and, on examination, I was surprised to find several larvae under their covers, all in the last stadium. From time to time others were found in various places, some on Hart's-tongue, which was not very common in the district, and a few on *Asplenium trichomanes*, which was abundant but is, I fancy, a less suitable food-plant than the other species above mentioned. It was not till March 22nd that I was able to find any larvae in the penultimate stage. These occurred on the highest and most exposed position that I searched, and on *A. trichomanes*. They had already left the mines and were living under their covers just like those in the last stage. In these two last stages the larvae live on the underside of the fronds, not in a case as some authors state, but under a tent or cover made of the spore capsules of the fern. It may not be wrong to call the dwelling a case, but I prefer the word cover, as it is entirely different from the cases of Coleophorids, Psychids, or Adelids. When examining the fern I first noticed, the pale patches on the upper-side of the leaflets where the larvae had been mining. On turning over the fronds I saw the covers spun on to the underside of the leaflets. They are formed of the spore cases of the fern and silk enough to hold them together, so that they are exactly the same colour as the groups of spores, and but for their size and irregular position they might be readily passed over. When on *Asplenium*, where the leaflets are small, the covers usually are spun across two leaflets, so that they are easily seen. The shape of the cover may be likened to that of a rowing boat in reversed position, but without a keel. At rest the larva is very plump and the cover appears to house it conveniently. The edges of the cover are fastened to the fern, but there is an opening at each end. With its body hidden under the cover, the larva bites through the lower cuticle of the leaf and mines patches out of the interior. It places its excrement outside the cover at the more exposed end. When the fronds in the tin box, where I kept the larvae, began to get dry, I put fresh ones in and took the larvae out of their covers, placing them on the fresh fronds. They soon began to form new covers by biting off the spore cases and spinning them over their bodies. One was quite hidden in three hours, while another was still half exposed at the end of that time. In my walks I frequently found the covers, and began to notice that these often occurred on leaflets where the spore groups had not been disturbed. This puzzled me, as I was still under the impression that when a larva moved to a fresh leaflet it there formed a fresh cover. I did not then know that it usually took its cover with it when it moved. Finding that the fern dried up rather quickly in the tin box, I gathered some fronds with long stalks and placed them in a small glass tube with a little water at the bottom, and as the larvae were sluggish no cork was needed. Here they did very well, and I could observe them without disturbance. One evening on looking at them I noticed two larvae crawling down the stalk of a frond and underneath each was a flat piece of their covers. The progress was slow, and in the failing

light I could not make out how the cover was carried and kept in position just below the larva. I thought that perhaps the larva had spun the cover to its body, but I induced one larva to crawl beyond its cover, and finally it fell into its cover. I then saw the cover was fastened to the stalk. The cover when carried by the larva is rather flat, more or less quadrilateral in shape, and rather stiff by reason of its silk lining. So far as I could see, the larva after spinning one corner of the cover to the stalk, seized the opposite corner in its strong jaws, pushed it forwards and fastened it. Then cutting loose the first corner moved that forward again. In this manner slow progress was made. The larva is strong for its size. Unfortunately I never saw the larvae on the move in a good light. On one occasion I placed a larva and its cover on a fresh frond, but the cover fell a short distance away from the larva. Being in a hurry I left it where it fell. When I looked again I found the larva had fetched its cover and spun it on to the fern in another place. When on the growing fern I do not suppose the larva moves frequently, as it is quite a small one when fully grown, and not of an active nature. When about to spin up, it either crawls down among the fern stalks or finds its way on to the wall or rock, as the case may be, and of course carries its cover with it, as this is made use of for the cocoon. In the open I have found one cocoon on the stone of a wall and two on the stalks of fern. Of those I had in captivity four spun up on the fern and two on the glass tube. The cocoon is firmly attached and has more silk on the floor than the cover. It retains the same colour and shape, but may be recognised by a ridge, which runs along the top. Its colour is light brown, its length about 7mm., and its width about 2mm. The larva lines the sides of the cocoon thickly with whitish silk, nearly up to the ridge. Thus, at the top of the rather stiff sides, there is a strip of loose material, which gets pinched up to form the ridge. My larvae spun up during the first fortnight in April, except one, which must have done so earlier, as the moth appeared on April 26th. This was abnormally early. The last one bred appeared on June 9th, and June and July are given as the usual months when the moth is on the wing. When the moth is about to emerge the pupal shell is thrust out of the cocoon as far as the third abdominal segment. I have not found the moth in the open, but those I have bred never showed any activity.

The full-grown larva is pale ochreous, short and stout when at rest, but when feeding the anterior segments are stretched out and become much flattened. Head black, clypeus marked out with yellow, prothoracic shield black with pale anterior collar, and divided by a yellow suture. Legs short, black. Four pairs of abdominal prolegs with complete ring of crotchets. The claspers have a horse-shoe of crotchets. There is a black anal shield. Length at rest about 5-6mm. On the meso- and meta-thorax tubercles i and ii are on a common plate. On the first and second abdominal segments the pair of tubercles i are closer together than the pair of ii, as in most lepidopterous larvae. On the third abdominal the pairs are of equal distance apart, but on the fourth and subsequent segments tubercles i are wider apart than tubercles ii. This arrangement is not uncommon in some of the *Tineina*. The larva in the penultimate instar has the head deep olive brown, without yellow marks, and the prothoracic shield olive brown,

very faintly divided by a paler line. Otherwise the larva resembles that of the final instar. Length about 3mm.

The pupa, about 4mm. long, is light ochreous and rather stout. In the ♂ the abdominal segments 3, 4, 5, 6 and 7 are free. The antennae, wings, and third pair of legs come down as far as the 7th abdominal. The prothorax is about double the size of the dorsal headpiece, showing that the pupa does not belong to the Adelid-Tineid series. The tongue is very short, maxillary palpi very conspicuous below the eyes. Some of the abdominal segments appear to have the upper row of dorsal teeth. On the dorsum of the ninth abdominal there is a pair of strong spines, slightly curved upwards, which probably help to hold the lower part of the pupal shell in the cocoon while the moth is emerging from the upper exposed portion. I could not with my lens make out any setae.

From the foregoing it may be gathered that the larva is purely a leaf-miner and does not eat the fructification of the fern, that it has four instars and hibernates in the second. I believe now that it leaves the mine before winter.

Of the food-plants *Phyllitis scolopendrium* is no doubt useful. Its large fronds provide ample mining space. A possible disadvantage may arise from its flat leaves offering little means of concealment. The larval cover is usually placed either between the long rows of spores or adjoining one of them. The larval mine is fairly conspicuous on the green upperside of the frond. The common Wall Rue, *Asplenium rutamuraria*, especially where it grows in thick tufts, is a convenient food-plant. The leaflets are sufficiently thick and sappy to afford good mining material, and the numerous fronds provide shelter for the larval covers, the cocoon, and the perfect insect. The fronds mostly remain green throughout the winter, except where they are exposed to severe frost; by June and July the young fronds are of sufficient size to accommodate a small mining larva. These plants sometimes grow on old walls in towns, but then are usually so covered with the webs of spiders as to be unsuitable to moths. Besides *T. verhuellera* I have found, not uncommonly, a yellow dipterous larva mining the leaves. One I bred was a slender gnat-like insect. *Asplenium trichomanes* is also an abundant fern in the limestone districts of Germany and Switzerland, and it often grows in fairly thick tufts. The leaflets are thin and rather dry, and do not appear to be so suitable for a mining larva as the leaves of the wall rue. The moth seems to prefer the latter plant for oviposition. *Asplenium viride* is a more local species and prefers higher elevations. The leaflets are also small, but they contain more sap than those of *A. trichomanes*. It is a delicate plant, and many of the fronds wither during the winter. *Ceterach officinarum* is quoted as a food-plant. It is rather a local species, but it looks suitable, though the mine would be conspicuous on the even green upperside of the frond. I should much like to find the larva on this in order to see if it used the scales, which thickly cover the underside of the fronds, in forming its habitation.

Bruand stated that the larva fed on "capillaire." This word seems to have puzzled the entomologists of the Staintonian period, but according to Frey it is a collective term for the species of the genus *Asplenium*.

Myrmecophilous Notes for 1923.

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

(Concluded from page 53.)

COLEOPTERA.

The following species were taken with ants in Dean Forest in June, all of which were new county records:—*Oxyptoda haemorrhoea*, Sahl., with *A. (C.) flavus* and *F. rufa*; *O. formiceticola*, Märk., *Thiasophila angulata*, Er., and *Notothecta flavipes*, Gr., with *F. rufa*.

Drusilla canaliculata, F.—This beetle, and two of its larvae, were found in a nest of *A. (D.) niger*, under a stone at Dover, on May 1st. I have found the larvae of *Drusilla* on several occasions in ants' nests ere this, and I recorded such an occurrence in the nest of *Myrmica ruginodis*, at Nethy Bridge, on July 20th, 1913 [*Ent. Rec.* 26, 42 (1914)]. My friend Mr. Keys, has also sent me this larva to name, which he had taken with ants at Plymouth. It is very like the perfect insect in appearance, though of course only superficially.

Mons. R. Stumper suggests that this beetle is only an accidental ant-guest, and he considers that further observations and experiments are necessary to settle the question [*Biol. Centralb.*, 85, 189 (1920)]. He is evidently unaware of the very numerous records of its occurrence with ants, and also of my experiments with the beetle. It would take up far too much space to give anything like a full list of all such records extant; but the following may be mentioned to demonstrate the points in question.

In 1837 Aubé records it with ants in France (*Ann. Soc. Ent. France*, 1837, 453-69), in 1843, F. Smith recorded it with *A. (C.) flavus* at Mickleham in Surrey (*Zool.* 1843, 268); in 1844 Märkel gives several species of ants as its hosts [*Germer*, 5, 193-271 (1844)]; in 1848 Bold says it tenants the nests of ants and preys on the inhabitants [*Cat. Col. North and Durh.*, 134 (1848)]. The italics are mine; Bold was a first rate observer, and this is as far as I know the first record of the beetle feeding on ants. Many field observations, such as the Phoresy of *Antherophagus*, etc., were first published by him. In 1876, Lucante and Bleuse record that they saw a *Drusilla* "run after an ant, which not having time to escape, was seized and carried off." [*Ent. Mo. Mag.* 13, 65, (1876)]. In 1890 Wasmann says it occurs commonly with *M. laevinodis*, *M. ruginodis* and *M. rugulosa* [*Tijd. v. Entom.* 33, 69 (1890)]. On May 3rd, 1893, Wasmann found at Linz a *Drusilla* running on a path in a field with a dead *Myrmica* in its mouth (*Deuts. Ent. Zeit.*, 1894, 274). On July 17th [not June], 1900, Donisthorpe captured a *Drusilla* which was running in the porch of a cottage at Chiddingfold with a dead ant [*Myrmica*] in its jaws. This he said helped to show of what the food of the beetle consisted, and why it occurred with ants [*Ent. Rec.*, 12, 238 (1900)]. In 1901 Donisthorpe brought up from Portland a number of this beetle taken in nests of *A. (C.) flavus* and *A. (D.) niger*, and on April 23rd, he introduced several into his large *F. rufa* observation nest. The beetles ran about, and entered the nest, appearing to avoid the ants by their quickness, and hiding under twigs, etc. When two *rufa* ♂♂ were placed in a small box with several of these beetles, the latter's defence proved to be the same as in *Dinarda*, *Myrmedonia*, etc. (i.e., by thrusting the tail

into the ant's face, and giving off the "Myrmedonia odour"). They were left with the ants in the small box all day, and none of the beetles were injured. When however a *rufa* ♂ was forced to seize a *Drusilla*, it did not let go as with *Myrmedonia*, but dragged the beetle into the nest. On June 30th, a *Drusilla* was seen to come out of the nest, and ran quickly about, hiding itself among the pine needles. This beetle therefore had lived in the *rufa* nest for nearly three months [*Ent. Rec.*, 13, 351 (1901)]. On May 30th, 1906, Walker captured at Cumnor Hill, near Oxford, a *Drusilla* carrying a *niger* ♀ in its jaws.

In 1909 Donisthorpe in a paper on the "Origin and Ancestral form of Myrmecophilous Coleoptera," after recapitulating some of the above facts, remarks that the defence of *Drusilla* was evidently not so perfectly developed as in *Myrmedonia*; and that as the glands which secrete the odour given off became better developed, the beetle would be able to inhabit the nests of ants with greater impunity, and gradually become a more regular guest. No doubt some such steps as these have taken place with the Myrmedonias (*Trans. Ent. Soc. Lond.*, 1909, 404).

On July 21st, 1910, Donisthorpe found a *Drusilla* at Hanwell carrying off a freshly killed *niger* ♀; and on September 6th, of the same year he took another at Ditchling with a dead *M. scabrinodis* ♀ in its jaws [*Ent. Rec.*, 23, 60 (1911)]. Again on May 18th, 1913, Donisthorpe captured at Bletchington a *Drusilla* with a half dead *M. scabrinodis* ♀ in its jaws [*Ent. Rec.*, 26, 42 (1914)].

I may mention that I have taken this beetle in the nests of the following species of ants in Britain:—*Ponera coarctata*, *Myrmica laevinodis*, *M. sulcinodis*, *M. ruginodis*, *M. scabrinodis*, *Leptothorax acervorum*, *Tetramorium caespitum*, *A. (D.) fuliginosus*, *A. (D.) niger*, *A. (D.) alienus*, *A. (C.) flavus*, *F. rufa*, *F. exsecta*, *F. sanguinea*, *F. fusca*, and *F. fusca* var. *glebaria*.

It is evidently quite clear that *Drusilla canaliculata* may be classed as a "hostile persecuted lodger" (Synechthran); its food consisting of ants and its larvae occurring in the nests as is the case with most of the Myrmedonias. Its defence is not yet as perfect as in *Myrmedonia*, and it has probably not been so long a dweller with ants.

DIPTERA.

Apiochaeta ciliata, Zett.—A specimen was taken with *A. (D.) brunneus* at Theale, on February 6th. I have previously taken it with *A. (D.) fuliginosus* in plenty at Wellington College, in 1906, and at Darenth Wood in 1910.

Limosina crassimana, Hal.—I took a specimen of this fly with *A. (D.) brunneus* at Theale on June 20th, some of the species of *Limosina* evidently show a tendency to inhabit ants' nests. *L. curtiventris* was taken with *A. (D.) fuliginosus* at Woking on May 26th, this year, and in the same nest in May and July 1920. It occurred with the same ant at Darenth Wood in September, and I bred it in plenty in a *fuliginosus* nest from Wellington College in 1906. I have taken *L. rufilabris* with *F. fusca*, and *L. fungicola*, and *Limosina* sp. with *fuliginosus*. I am indebted to Mr. Collin for the names of the above species of Diptera.

Phyllomyza.—In "Konowia" in 1923 [2, 44-7 (1923)], Schmitz published a table of the European species of *Phyllomyza*, and described

three new species, two of which, *P. formicae* and *P. donisthorpei*, are myrmecophilous.

P. formicae, Schmitz.—This is the species I have been recording for years from *Formica rufa* nests sub *P. formicae*, Collin MS. It was originally brought forward as British by the late Mr. Verrall in his second hundred new British species of Diptera, sub *P. securicornis*, Flin. [*Ent. Mo. Mag.* 30, 146 (1894)], on specimens swept by himself over nests of the wood ant [= *F. rufa*] at Braemar, on July 25th, 1873. He pointed out that his specimens had darker legs than continental types and descriptions, but that he was not well acquainted with the group. It was not taken again until 1901, when I discovered it at Oxshott in *rufa* nests. I have also taken it with the same ant at Weybridge and Nethy Bridge; and have bred it in my large *rufa* observation nests from the two former localities. I bred it from larvae which I brought back from *rufa* nests at the last named locality.

P. donisthorpei, Schmitz.—This species, which I have recorded as *Phyllomyza* sp. from *fuliginosus* nests, was first taken by me in a nest of that ant on the Birkdale sandhills on June 22nd, 1905. I subsequently found it at Wellington College, Darent Wood and Oxshott. Schmitz records a specimen (♀) sent to him by the British Museum, as having been taken in a *rufa* nest at Weybridge. This of course was given by me to the British Museum, and I cannot help thinking that either the Museum, or I, had mixed the data of the specimens up in some way, and that it was really taken with *fuliginosus*.

P. lasiae, Collin MS.—Unfortunately none of the ♂♂ of this fly sent to Father Schmitz by the Museum and myself were in good enough condition to be described. It was first taken by me at Oxshott, on April 26th, 1901, in a *fuliginosus* nest, and I subsequently found it in numbers with the same ant at Wellington College and Woking. I have also bred it from larvae and pupae taken in the two latter localities.

Microdon eggeri, Mik.—On May 14th Mr. Edwards kindly gave me two puparia of this species from Woking. I placed them in a chamber of one of my observation nests, and one hatched on May 21st, the second on May 26th.

According to Edwards all the specimens of *M. latifrons*, Lw., both adults and puparia, in British collections, are really *M. eggeri*, Mik. [*Ent. Mo. Mag.*, 59, 233 (1923)]. His reasons for this statement appear to be quite sound, and he mentions most of the British records. He appears to have forgotten, however, that the late Dr. Sharp brought *M. eggeri* forward as a British insect on the strength of a specimen captured by himself at Rannoch, early in June, 1910. [*Ent. Mo. Mag.*, 46, 274 (1910)]. Sharp mentioned that Wasmann had taken the species in Luxemburg, but he (Sharp) could not remember the reference. I pointed out that Wasmann published his notes on this species in the *Archiv. trimestr. d. v. Institut. R. Grand-Dukal, Luxemburg*, 1909, T. IV., Fascic. III., p. 50, and that the host was *Formica sanguinea*; etc. [*Ent. Mo. Mag.*, 47, 43 (1911)].

The occurrence of this species in Britain would appear to be as follows:—

LOCALITY.	DATE.	CAPTOR.	PHASE.	HOST.	REFERENCE.
1. Oxshott ..	May, 1895.	Grant.	Adult.	Unknown.	Verrall, <i>Brit. Flies</i> , 8, 1901.
2. Nethy Bridge..		Yerbury.	Adult.	Unknown.	<i>Proc. Ent. Soc. Lond.</i> , 1900, xiv.
3. New Forest ..	May 24th, 1902.	Gorham.	Adult.	Unknown.	<i>Ent. Mo. Mag.</i> , 38, 206 (1902).
4. Rannoch ..	June, 1910.	Sharp.	Adult.	Unknown.	<i>Ent. Mo. Mag.</i> , 46, 274 (1910).
5. Wimborne ..	1911.	Miss F. Collins.	Puparia.	Unknown.	<i>Ent. Mo. Mag.</i> , 59, 233 (1923).
6. Woking ..	March, 1921.	Champion.	Puparia.	Unknown.	<i>Ent. Rec.</i> , 35, 7 (1923); <i>Ent. Mo. Mag.</i> , 59, 233 (1923).
7. Ascot ..	May, 1922.	Main and Withycombe.	Puparia.	Unknown.	<i>Ent. Rec.</i> , 35, 7 (1923); <i>Ent. Mo. Mag.</i> , 59, 233 (1923).
8. New Forest ..	May 6th & 11th, 1922.	Domishorpe.	Larva and Puparia.	<i>A. (D.) niger</i> .	<i>Ent. Rec.</i> , 35, 7 (1923).
9. Woking ..	May 13th, 1923.	Champion.	Puparia.	<i>A. (D.) niger</i> .	<i>Ent. Mo. Mag.</i> , 59, 233 (1923).

Nos. 1, 3, 6, and 7 were recorded sub *M. latifrons*; No. 2, sub *M. devius*; Nos. 4, 5, and 9, sub *M. eggeri*; and No. 8, sub *M. rhenanus*, and *M. latifrons*?

The host of this species in Britain is, as far as is known at present, *A. (D.) niger*. It is almost certain that No. 6, and probable that Nos. 5 and 7, were also taken with this ant.

Peyerimhoffia subterranea, Schmt.—I am indebted to Mr. Edwards for the name of this apterous Dipteron, a specimen of which was taken in a nest of *F. fusca*, at Box Hill, on May 4th. As I have taken another species of this genus in ants' nests (*i.e.*, *P. brachyptera*, Kieff., with *A. (D.) alienus*, on Lundy Island, in June, 1913 [*Ent. Rec.*, 25, 268 (1913)], it would appear that they really have something to do with ants. A small soft-bodied apterous "fly" would not otherwise seem to have much chance of survival in an ants' nest!

APHIDAE.

Trama radidis, Kalt., and *Geocica formicina*, Buckt., occurred in some numbers in nests of *A. (D.) niger*, under stones, at Dover, on May 1st.

Forda formicaria, C. Heyd., and *Geocica carnososa*, Buckt., were found together in a nest of *A. (C.) flavus*, in Dean Forest, on June 13th.

Stomaphis quercus, L.—On June 18th I observed a number of ♀ ♀ of *A. (D.) fuliginosus* walking in files along a fence, in a ditch, and on two large oak trees, at the far end of Wimbledon Common. Some of the ants were noticed clustering round something on several places on the bark of one of the oak trees. Closer inspection proved that they were attending individuals of this curious aphid, which had their very long proboscis inserted into the bark of the tree. It will be remembered that I found this same aphid, attended by the same ant, at Woking, on September 22nd and October 7th, 1921 [*Ent. Rec.*, 34, 21 (1922)]. Forel, in Vol. III., p. 118, of his *Le Monde Social des Fourmis*, 1922, shows that this plant-louse is the usual species attended by *A. (D.) brunneus*.

COCCIDAE.

Ripersia subterranea, Newst., was found in nests of *A. (D.) niger*, at Dover, on May 1st; and *Newsteadia floccosa*, de G., with *P. rufa*, in Dean Forest, on June 16th.

ARANEINA.

Thyreosthenius biorata, Camb., occurred commonly in the nests of *P. rufa*, in Dean Forest, in June.

Harpactes hombergi, Scp.—An example of this spider was found with *A. (D.) brunneus* at Theale on February 6th. I believe this is not regarded as a myrmecophilous spider especially by those who only study these arthropods. Nevertheless, however, it is frequently found in company with ants, upon which it feeds, and may be regarded as a *synechthran*. The late O. Pickard Cambridge wrote—"It will not easily be mistaken for any other species on account of its linear form and creeping *ant-like movements*" [*Brit. Nat.*, 1, 65 (1891)]. The italics are mine. In my notes on Myrmecophilous spiders in 1908, I considered it belonged to my group II.—"Those species which hunt, and prey on ants. They are generally found outside and in the neighbourhood of the nests." [*Zool.*, 1908, 420]. I have constantly met with it in ants' nests; especially with *A. (D.) fuliginosus*, with which species Wasmann records it on the Continent.

COLLEMBOLA.

Cyphodeirus albinos, Nic.—This little creature was abundant in nests of *A. (C.) flavus*, at Colby Glen, Isle of Man, on September 19th; its first record for this island. This is another instance of an insect, which could hardly have reached the island except by crossing on dry land.

CRUSTACEA.

Platyarthrus hoffmanseggii, Brdt.—This little myrmecophilous woodlouse was abundant in nests of *A. (C.) flavus* at Colby Glen, I. of Man, on September 19th, its first record for the Isle of Man. Dr. Scharff writes as follows concerning the distribution of this species—"I have had occasion to mention once before an extremely interesting genus of Blind Woodlouse, viz., *Platyarthrus*. Like *Testacella* it lives underground, and also resembles it in its general range. It is difficult to conceive that *Platyarthrus*, from its peculiar mode of life, could have crossed any formidable barrier, such as even a narrow strait of sea. Its occurrence in Spain and North Africa indicates, therefore, that the straits of Gibraltar did not exist at the time when it undertook the migration southward, just as the English Channel and the Irish Sea could not have been there when it wandered to England and Ireland. The species which occurs in the South of England, has a wide range in Ireland, and reaches in Scotland its most northern European limit of distribution. *Platyarthrus* is only one of the Lusitanian genera of woodlice "If the presence of *Platyarthrus* in North-west Africa proves that the Straits of Gibraltar had come into existence after its southward migration, it also suggests that the ancestral home of the Woodlouse was in the Spanish Peninsula. Whether this supposition is correct or not, does not affect the Straits of Gibraltar problem, for in a migration northward into Spain from Morocco land-connection would be equally necessary. Almost every group of vertebrates, and invertebrates furnishes instances of species which must have crossed the Straits on dry land." (*The History of the European Fauna*, London, 1899, pp. 299-302.) These same arguments support what I have written above in connection with the presence of *A. (D.) fuliginosus* on the Isle of Man, and help to show that the Island was connected with Ireland or England after the disappearance of the ice.

A word about the British distribution of *Platyarthrus*:—It is not confined to the South of England, but is now known to occur in the Midlands, Yorkshire, Lancashire Mid., and Durham; it is found in the Isle of Wight and extends from Hampshire to Durham, without a break. In Scotland it appears to be very rare, I have never taken it there, and I have records only from Fife and Kinross, and Banff. In Ireland I know of its occurrence only in the South, and South-East, but no further north than Dublin County.

LACERTILIA.

Anguis fragilis, L.—On June 18th, a slow-worm was found in a nest of *Formica fusca* in Dean Forest. The ants' colony, which was a large one, was situated under a large flat stone, and the slow-worm was resting coiled up in the midst of the ants. It glided away into the grass by the side of the nest when the stone was lifted. I have on several occasions in past years found slow-worms in ants' nests, at

Weybridge and elsewhere. In 1902 I mentioned that the late A. J. Chitty frequently found slow-worms in nests of *F. fusca* at Dorington in Kent, and said that this was worth recording as the *Amphisbaena*, a blind, snake-like lizard lives in the nests of the leaf-cutting ants on the Amazons. In Guiana, a legless lizard, *Caecilia annulosa*, also lives in the nests of the fungus-growing ants [*Ent. Rec.*, 14, 15 (1902)]. Mr. J. Clark informs me that there are several species of snakes living with ants in Australia.

Further Records of Lepidoptera from the Witley District of Surrey.

By W. HAWKER-SMITH, F.E.S.

Since the publication of Mr. Tullett's "Notes and Observations on the Lepidoptera of the Witley District, 1912-1919," in the *Entomologist's Record*, Vol. XXXII., nos. 3, 5, 6, the following notes and records of additions to the List have come to hand. For these we are principally indebted to Messrs. H. T. G. Watkins and J. E. Eastwood, who kindly furnished us with lists of captures made in the district, either by the latter or by Mr. E. G. R. Waters, and which are not recorded in Mr. Tullett's paper.

But first of all I must dispel the illusive report of *Strymon pruni* and explain how it came to be recorded. We have lately discovered letters showing that some pupae of *S. pruni* had been purchased from a dealer in the same month and year in which the larvae were recorded to have been beaten, and it is clear that some of the purchased pupae (from Huntingdonshire) became accidentally mixed up with pupae of *Rurales betulae* from larvae beaten in May, 1919, and, emerging at the same time, were supposed to have been among the beaten larvae.

The List published by Mr. Tullett is a fairly long one considering the fact that the Pyrales, Tortrices and Tineae are omitted; so it is not surprising that few names have been added to the list in the four years since 1919, and that most of the following are records of species taken in this district by other collectors previously to the time covered by Mr. Tullett's paper.

PAPILIONIDAE.—Sub-family *Pierinae*.—*Colias hyale*, L. Eastwood records one at Eton in 1892.

NYPHALIDAE.—Sub-family *Nymphalinae*.—*Euranessa antiopa*, L. Two taken at ivy bloom, at King Edward's School, about 1870, by a gardener, were seen by Eastwood.

Argynnis aglaia, L. One, below Hambledon Common, recorded by Eastwood.

Melitaea aurinia, Rott. One in the Hill Museum, taken 3.VI.1914, Witley.

LYCAENIDAE.—Sub-family *Lycaeninae*.—*Strymon w-album*, Knoch. This species is recorded from Witley in Newman's *British Butterflies*. He lived at Godalming.

Polyommatus (Aricia) medon, Hufn. Recorded for Witley in plenty by Eastwood.

Polyommatus (Agriades) coridon, Poda. Waters records one on Witley Common (Rodborough), 1905; also several in a meadow at Chiddingfold, apparently freshly emerged, 1911.

- SPHINGIDAE.—*Manduca (Acherontia) atropos*, L. One, at Sweetwater. At rest in afternoon on grass, recorded by Eastwood.
- Mimas (Dilina) tiliae*, L. Recorded at Witley from pupa dug under elm. (Eastwood.)
- Agrilus (Protoparce) convolvuli*, L. Witley. Eastwood notes this as very plentiful in 1891.
- Eumorpha (Chaerocampa) elpenor*, L. Recorded from Witley by Eastwood.
- Theretra (Metopsilus) porcellus*, L. Also recorded from Witley by Eastwood.
- NOTODONTIDAE.—*Drymonia chaonia*, Hb. Witley (Eastwood).
- Phaeosia dictaeoides*, Esp. Witley (Eastwood).
- Notodonta ziczac*, L. Witley (Eastwood).
- Odontosia carmelita*, Esp. Recorded from Witley Common, April 10th, 1912, by Waters.
- Palimpsestis (Cymatophora) fluctuosa*, Hb. Witley. One at sugar (Eastwood).
- ENDROMIDAE.—*Endromis versicolora*, L. Mr. Eastwood's own note as regards this species is, "No—but I am fairly certain I saw a male flying on the Heath between Enton and the railway."
- ARCTIIDAE.—Sub-family *Arctiinae*.—*Parasemia plantaginis*, L. Witley (Eastwood).
- ARCTIIDAE.—Sub-family *Lithosiinae*.—*Lithosia deplana*, Esp. Witley Common, 1914 (Waters), also Hydon Ball.
- NOCTUIDAE.—Sub-family *Acrionictinae*.—*Acrionicta aceris*, L. Witley (Eastwood).
- Acrionicta megacephala*, Fab. Witley (Eastwood).
- NOCTUIDAE.—Sub-family *Triptinae*.—*Peridroma margaritosa*, Haw., (*sauvia*, Hb.). Recorded by Eastwood, at sugar in plenty, 1891. *Ent.* XXIV., p. 229.
- Agrotis agathina*, Dup. Witley Common, 1911 (Waters).
- Noctua serstrigata*, Haw. (*umbrosa*, Hb.). Witley (Eastwood).
- Noctua glareosa*, Esp. Witley Common, on heather, 1911 (Waters), also ab. *rosea*.
- Noctua stigmatica*, Hb. (*rhomboidea*, Tr.). Witley, recorded by Eastwood; Witley Common, near Lea Park, at Ragwort, 1908 (Waters).
- Aplecta advena*, Fab. Eastwood had six and Miss A. Evans one, taken at Witley.
- Eumichtis adusta*, Esp. Eastwood, who records this as quite common in some years, has a long series from Witley.
- Mamestra pisi*, L. Witley (Eastwood).
- Dianthoecia carpophaga*, Bkh. Eastwood took also abs. *capsophila* and *pallida*.
- Luperina (Melanchra) cespitis*, Fab. Taken at Witley, by Eastwood. Also one in the Hill Museum. August 30th, 1912.
- Miana literosa*, Haw. Witley (Eastwood).
- Xylophasia scolopacina*, Esp. Witley, in 1892 (Eastwood).
- Mamestra (Apamea) sordida*, Bkh. (*anceps*, Hb.). Witley in plenty, 1892 (Eastwood).
- Petilampa arcuosa*, Haw. Witley Common, 1910 (Waters).
- Neuria (Hadena) reticulata*, Vill. (*saponariae*, Bkh.). A few at Witley (Eastwood).

- Leucania impudens*, Hb. (*pudorina*, Hb.). Witley (Eastwood); Witley Common, in a bog, 1912 (Waters).
- Nonagria armudinis*, Fab. (*typhae*, Esp.). Witley (Eastwood).
- Tapinostola fulva*, Hb. Witley (Eastwood).
- Cerigo matura*, Hufn. (*cytherea*, Fab.). Witley (Eastwood).
- Pachnobia leucographa*, Hb. Witley (Eastwood).
- Taeniocampa populeti*, Fab. Enton, April 5th, 1917 (Eastwood); Witley Common, March, 1911, at Sallow (Waters); Enton, March 23rd, 1920, at Sallow, by the Hill Museum Staff.
- Taeniocampa opima*, Hb. Witley. Taken by Eastwood, April 11th, 1916.
- Calymnia affinis*, L. Recorded as taken every year at Enton, by Eastwood; also Witley Common, 1911-12 (Waters).
- Calymnia diffinis*, L. Witley Common, at end near Mousehill, at sugar, 1911-12 (Waters).
- Calymnia pyralina*, L. Three recorded at Enton, by Eastwood, Witley Common, at sugar, 1912.
- Dyschorista iners*, Germ. (*suspecta*, Hb.). Recorded at Witley by Eastwood; also Witley Common, 1910-12, by Waters.
- Aporophyla nigra*, Haw. Enton, bred from dock by Eastwood. One taken at The Hill, Wormley, October 17th, 1923.
- Xantholenca croceago*, Fab. Witley (Eastwood).
- Dasyecampa rubiginosa*, Fab. Witley seems a good locality for this rarity. Eastwood had a long series taken at ivy bloom. Waters took it at sallow in 1907-1908 and 1910.
- Chariclea umbra*, Hfn. (*marginata*, Fab.). Witley, 1913 (Eastwood).
- Eustrotia (Hydrelia) uncula*, Clk. Witley Common, in a bog, abundant in 1913-14 (Waters).
- Cucullia gnaphalii*, Hb. One at Witley, 1892, also larva between Witley and Grayswood, taken by the late Miss Ada Evans; also one near Chiddingfold, about 1911, by Mr. A. E. Tonge.
- Sub-family QUADRIFINAE.—*Ophiusa (Tococampa) pastinum*, Tr. Miss Evans took six.
- Sub-family HYPENINAE.—*Hypenodes costaestrigalis*, Stph. Witley Common, 1910 (Waters).
- Schrankia turfosalis*, Wocke. Witley Common, in sheltered boggy places, abundant, 1912 (Waters).
- GEOMETRIDAE.—Sub-family ACIDALIINAE.—*Eois (Hyria) muricata*, Hfn. (*auroraria*, Bkh.). Witley (Eastwood).
- Leptomeris immutata*, L. Two at Witley (Eastwood).
- Pylarge fumata*, Stph. Witley, at whortlebury (Eastwood).
- Ephyra orbicularia*, Hb. Witley (Eastwood).
- Sub-family HYDRIOMENINAE.—*Ortholitha cervinata*, Schiff. Eight in Miss Evans' collection.
- Anaitis efformata*, Guen. Several of these were picked out by Mr. L. B. Prout from among *A. plagiata* in The Hill Museum Collection, from Witley, dated June 11th, 1912, August 29th, 1912, August or September, 1913, and May 27th, 1918.
- Chesias rufata*, Fab. (*obliquaria*, Bkh.). Recorded from Witley (Eastwood).
- Philereme rhamnata*, Schiff. Four recorded from Witley (Eastwood).
- Cidaria siderata*, Hfn. (*psittacata*, Schiff.). Two in Miss Evans' collection.

- Cidaria miata*, L. Witley, taken by Miss Evans.
- Ochyria quadrifasciaria*, Clk. Witley (Eastwood). Recorded also by Barrett. Near Milford (Waters); also one or two specimens near Hambledon, taken by the writer.
- Xanthorrhoe rivata*, Hb. Witley (Eastwood).
- Mesoleuca bicolorata*, Hfn. Hambledon, July 10th, 1919. Taken by the writer.
- Hydriomena furcata*, Thunbg. (*sordidata*, F., *elutata*, Hb.). Common in woods between Hambledon and Chiddingfold.
- Anticlea rubidata*, Fab. Recorded, in *Victoria County History of Surrey*, as taken at Chiddingfold, by W. J. Kaye.
- Eupithecia subnotata*, Hb. Witley, 1910 (Waters).
- Eupithecia togata*, Hb. Witley, from spruce (Eastwood).
- Phibalapteryx vitalbata*, Hb. Witley (Eastwood).
- Phibalapteryx tersata*, Hb. Wormley Hill, 1910 (Waters).
- Caenocalpe vittata*, Bkh. (*lignata*, Hb.). Witley (Eastwood); Milford, 1914 (Waters).
- Sub-family BOARMIINAE.—*Ennomos quercinaria*, Hufn. Recorded from Witley by Eastwood.
- Ennomos erosaria*, Bkh. Witley, recorded by Eastwood.
- Epione apiciaria*, Schiff. Taken at Sandhills in 1911, by Waters.
- Cleora lichenaria*, Hufn. Enton, July 10th, 1915, taken by Waters.
- COSSIDAE.—*Zenzera pyrina*, L. (*aesculi*, L.) Witley, recorded by Eastwood; also a larva received at the Hill Museum, found in a piece of oak branch, from Hambledon, 1923.
- AEGERIIDAE.—*Aegeria (Sesia) tipuliformis*, Cl. Witley, recorded by Eastwood; also a pair taken by the writer's son, in 1922.
- Aegeria (Sesia) culiciformis*, L. Witley, recorded by Eastwood.
- Aegeria (Sesia) asiliformis*, Rott. (*cyripiformis*, Esp.). Witley, recorded by Eastwood.
- Aegeria (Sesia) myopiiformis*, Bkh. Recorded from Hambledon by Eastwood.

The Russian Entomological Society.

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

In spite of many difficulties and even hardships, the Russian Entomological Society is carrying on its fine tradition; in fact, the very difficulties to be overcome have, perhaps, stimulated the activities of its members, many of whom have been in actual want and distress, through which the sympathetic encouragement and material assistance of British entomologists has been an immense help, which has been fully appreciated.

The Society has very comfortable quarters allotted to it in the Zoological Museum. The President is A. P. Semenov-Tian-Shansky, Hon. F.E.S., whose name is familiar to readers of the *Ent. Record*. The Vice-President is Professor M. N. Rimsky-Korsakov, son of the famous composer: Hon. Secretaries are A. M. Diakonov and V. A. Lindholm; Editor, N. J. Kuznetsov; Curator, V. V. Barovsky; Treasurer, N. N. Ivanov, and Librarian R. N. Kirichenko; these officers, together with two elected members, G. G. Jacobson and N. N. Bogdanov-Katjkov, form the Council.

The Society has a special Section for Applied Entomology, which plays such an important part in Russian agriculture; the chairman si

V. V. Redikortsev, the Vice-President, N. N. Bogdanov-Katjkov, and Secretary, A. N. Reichhardt.

The Society is fortunate in having fine accommodation in the Zoological Museum allotted to it, but its financial condition leaves a good deal to be desired, there are from two to three hundred names on the list of members, but the whereabouts of many of these is unknown. The annual subscription is five roubles (about half a guinea) a year, with an alternative composition fee of fifty roubles (about five guineas) for life-membership, but the latter has now been abolished; the Society's budget in 1915 amounted to over 16,000 roubles, but is now about 1,000 only. This handicaps their publishing activity, but here they are helped by the Government, which grants them ten sheets per annum for printing towards their Review.

CURRENT NOTES AND SHORT NOTICES.

Readers of the *Entomologist's Record* are familiar with the name of Alexander Borisovich Shelkovnikov, the well-known Transcaucasian field naturalist, and of Geok Tapa, in the district of Aresh, which occur on innumerable labels in museum and private collections, wherever the fauna or flora of the Caucasus and Transcaucasus is studied. In the stirring events of the past 10 years, the beautiful estate has been destroyed, but the enthusiasm of its former owner has found a vent in the National Museum of Armenia.

A. B. Shelkovnikov, though educated as a Russian, and in his early years an officer in the former Artillery of the Guard, is an Armenian by birth, and a more appropriate field for his energies could hardly be found. The Republic of Armenia, one of the constituent members of the "Transcaucasian Socialistic Federation of Soviet Republics," which in its turn is the fourth member of the "Union of Soviet Socialistic Republics," which the western world knows better under the more familiar name of "Russia," has the advantage of being administered by educated men, and being protected from the inroads of the less cultivated and unruly neighbours from the highlands of Ararat and Kurdistan, by the energy of the army, and is consequently in the happy position of being able to develop its natural resources.

The capital is Erivan, where an Armenian University has been founded, and A. B. Shelkovnikov is the founder and Director of the National Museum attached to the University. He has thrown himself into this work with characteristic energy and enthusiasm, and last year, the first season available for peaceful work, he was able to carry out two well-equipped scientific expeditions. He is well supported by his Government and the University authorities, but they are, of course, not in a position to supply sufficient funds to do justice to the amount of work to be done, and it is to be hoped that wealthy fellow-nationals outside Russia, or indeed, anyone interested in the prosecution of scientific exploration in that interesting and little-worked district, will contribute to the support of the good work.

The field is wide, and the country of very great interest. It is worth noting that a few years ago, a German expedition in connection with the presence of German troops in the Caucasus, found a valuable deposit of Tertiary mammal remains, representing the Sewalik fauna, with a new species of elephant, *E. armeniacus*.—M.B.

The Annual Congress of the South-Eastern Union of Scientific Societies takes place at Guildford, on May 28th-31st. The recently established Zoological Section is responsible this year for a definite portion of the programme. Prof. E. B. Poulton gives his Presidential Address, "Some Modes of Protection in the Pupal Stage of Butterflies and Moths," Mr. Ray Palmer reads a paper "Observations on the Communal (or Social) Life of the Humble-Bee," and Rev. S. O. Ridley a paper "Some Problems of Life in the Deep Sea." All the papers are illustrated by the lantern.

SOCIETIES.

THE SOUTH LONDON ENTOMOLOGICAL SOCIETY.

February 14th.—Mr. Philip Harwood, of St. Albans, was elected a member.

Mr. K. G. Blair exhibited living specimens of a luminous Elaterid beetle, *Pyrophorus punctatissimus*, from the Argentine, and called attention to the two sets of light-giving organs.

Mr. Main, a living Mygale sent from Trinidad by Dr. Withycombe, and noted the delicate hairs on the lower side of the limbs.

Mr. Rayward, a nest of *Nygmia phaeorrhoea* from Eastbourne, where the species was again very common, and ova of *Polyommatus coridon*, found wild on stems near the food-plant of the species.

Mr. Blenkarn, *Dytiscus circumcinctus* from Wicken Fen, 1921.

Mr. Bunnnett, *Scardia boleti*, a Tineid bred from fungus.

Dr. Cockayne, *Pyrameis dejeani*, a pathological specimen with abnormal scaling.

Mr. Grosvenor, the various local races of *Zygaena transalpina* from France and Italy.

Mr. Enefer, a species of golden tortoise beetle, *Cassida*, found among bananas from Costa Rica.

Lantern slides were shown by Messrs Main, Bunnnett, and Dennis.

February 28th.—N. D. Riley, Esq., F.Z.S., F.E.S., President in the chair.

Mr. Wm. Fassnidge, M.A., of Southampton, was elected a member.

Mr. S. N. A. Jacobs exhibited an aberration of *Agrotis exclamationis* with a deep black cloud along the disc of the forewings uniting the lower portions of the stigmata.

Mr. Blenkarn, the somewhat rare beetle *Opilis mollis*, found near Kidderminster feeding on *Anobium* larvae.

Mr. W. J. Lucas read a paper, "The Caudal Lamellae of the Naiads of the British Agrionid Dragon-flies," and showed a large number of lantern slides.

March 13th.—The President in the chair.

Mr. A. W. Buckstone, a bred series of *Boarmia gemmaria* with much variation, and another series for comparison from Mickleham.

Mr. H. W. Andrews, the dead larva of *Charagris virescens*, a moth from New Zealand, and the fungus which had attacked and killed it, viz., *Cordiceps robertsii*.

Mr. R. Adkin read a paper and showed many slides in illustration, "Some Phases in the Parallel Variation in some British Lepidoptera."

Subscriptions for Vol. XXXVI. (10 shillings) should be sent to Mr. Herbert E. Page, "Bertrose," Gellatly Road, New Cross, S.E. 14 [This subscription includes all numbers published from January 15th to December 15th, 1924.]

Non-receipt or errors in the sending of Subscribers' magazines should be notified to Mr. Herbert E. Page, "Bertrose," Gellatly Road, New Cross, S.E. 14

ADVERTISEMENTS of Books and Insects for Sale, or Books wanted will be inserted at a minimum charge of 2s. 6d. (for four lines). Longer Advertisements in proportion. A reduction made for a series Particulars of Mr. Herbert E. Page, "Bertrose," Gellatly Road, New Cross, S.E. 14

Subscribers who change their addresses must report the same to Mr. H. E. PAGE "Bertrose Gellatly Road, New Cross, London, S.E., otherwise their magazines will probably be delayed.

Desiderata.—Foreign examples, local races, vars. and abs. from all parts of the world of any butterflies included in the British list. Setting immaterial; exact data indispensable. Liberal return made.—*W. G. Pether, "Thelma," 4, Willow Bridge Road, London, N. 1.*

Duplicates.—*Cinxia*, *Bellargus*, *Coridon*, *H. Comma*, *Lineola*, *Galathea*, *Moneta*, *Nupta*, and many others. *Desiderata*.—*Blandina*, *Irish Icarus*, *Carmelita*, *Cuculla*. *Gonostigma*, *Ashworthii*, *Templi*, *Australis*, *Undulata*, *Smaragdaria*, *Testacea*.—*W. Gifford Nash, Clavering House, Bedford.*

Duplicates.—*Cinerea* ♀, fine forms, grey, brown and blackish, *Maritima* and vars. *Immorata* and other East Sussex species.

Desiderata.—Pupæ. *Luteago* (*Barrettii*), *Caesia*, *Albimacula*, *Alpina*, *Xanthomista*, *Sparganii*, *Dissoluta* (*Arundineta*), *Graphalii*. Also imagines of extreme forms *Noctua* in fine condition only.—*A. J. Wightman, 35, Morris Road, Lewes.*

N. American Lepidoptera in papers in exchange for ditto from any part of the world. *J. C. Woodward, Training Ship "Cornwall," Purfleet, Essex.*

MEETINGS OF SOCIETIES.

Entomological Society of London.—41, Queen's Gate, South Kensington, S.W. 7. 8 p.m. June 4th, 1924.

The South London Entomological and Natural History Society, *Hibernia Chambers*, London Bridge. Second and Fourth Thursdays in the month, at 7 p.m. —*Hon. Sec., Stanley Edwards, 15, St. German's Place, Blackheath, S.E. 3.*

The London Natural History Society (the amalgamation of the City of London Entomological and Natural History Society and the North London Natural History Society) now meets in Hall 40, Winchester House, Old Broad Street E.C. 2, first and third Tuesdays in the month, at 6.30 p.m. Visitors welcomed. *Hon. Sec., W. E. GLEGG, 44, Belfast Road, N. 16.*

All MS. and editorial matter should be sent and all proofs returned to H. J. TURNER, 98, Drakefell Road, New Cross, London, S.E. 14

We must earnestly request our correspondents NOT to send us communications IDENTICAL with those they are sending to other magazines.

Lists of DUPLICATES and DESIDERATA should be sent direct to Mr. H. E. Page, Bertrose, Gellatly Road, New Cross, S.E. 14

OVA, LARVÆ, AND PUPÆ.

The Largest Breeder of Lepidoptera in the British Isles is

H. W. HEAD, Entomologist,

BURNISTON, Nr. SCARBOROUGH.

Full List of Ova, Larvae, and Pupae, also Lepidoptera, Apparatus, Cabinets, etc., sent on application.

Many Rare British Species and Good Varieties for Sale.

GREAT REDUCTION IN PRICES.

Cabinets.

Hardwood finished rich mahogany, panelled or glass doors. Drawers, $17 \times 16 \times 2\frac{1}{4}$ ", on hidden runners.

Lift-off glazed tops. Camphor cells. Lined cork or peat.

40-drawer, 12/6 per drawer. 20-drawer, 1/- per drawer extra.

Store Boxes.

10×8 13×8 14×10 16×11 17×12
3/11 5/- 6/6 7/9 9/-

G. A. BENTALL, 392, Strand, W.C.2.

IMPORTANT
TO ENTOMOLOGICAL SOCIETIES and MUSEUMS.

BACK VOLUMES OF

The Entomologist's Record and Journal of Variation.

(Vols. I-XXXV.)

CONTENTS OF Vol. I. (*Most important only mentioned.*)

GENUS *Acronycta* and its allies.—Variation of *Smerinthus tiliae*, 3 coloured plates—Differentiation of *Melitaea athalia*, *parthenie*, and *aurelia*—The Doubleday collection—Parthenogenesis—Paper on *Taeniocampidae*—Phylloxera—Practical Hints (many)—Parallel Variation in Coleoptera—Origin of *Argynnis paphia* var. *valesina*—Work for the Winter—Temperature and Variation—Synonymic notes—Retrospect of a Lepidopterist for 1890—Lifehistories of *Agrotis pyrophila*, *Epunda lichenea*, *Heliophobus hispidus*—Captures at light—Aberdeenshire notes, etc., etc., 360 pp.

To be obtained from—

Mr. H. E. PAGE, "Bertrose," Gellatly Road, New Cross, London, S.E. 14
to whom Cheques and Postal Orders should be made payable

Subscriptions for 1924 are now due.

E.D.

JUN 20 1924

Vol. XXXVI.

13,820

No. 6.

The Entomologist's Record AND Journal of Variation

EDITED BY

RICHARD S. BAGNALL, F.L.S., F.E.S.
GEORGE T. BETHUNE-BAKER, F.L.S., F.E.S.
M. BURR, D.Sc., F.L.S., F.Z.S., F.E.S.
(REV.) C. R. N. BURROWS, F.E.S.
E. A. COCKAYNE, M.D., F.E.S.

JAS. E. COLLIN, F.E.S.
H. ST. J. K. DONISTHORPE, F.Z.S., F.E.S.
JOHN HARTLEY DURRANT, F.E.S.
ALFRED SICH, F.E.S.
(REV.) GEORGE WHEELER, M.A., F.E.S.

and

HENRY J. TURNER, F.E.S.,
Editorial Secretary.

CONTENTS.

	PAGE.
Upon the suggested Relationship of Psychides, <i>Rev. C. R. N. Burrows, F.E.S. (cont.)</i> ..	81
The Cumberland Coccinellidae, <i>T. F. Marriner, F.E.S.</i>	85
The Variation in <i>Larentia variata</i> , <i>Carl Höfer (cont.)</i>	88
<i>Euchloë (Anthocharis) ausonia (belia)</i> and its second brood, <i>P. P. Graves, F.E.S.</i>	90
NOTES ON COLLECTING.—Variation on <i>Eüchloë cardamines</i> , <i>Thomas Greer</i> ; A Nigerian Ant imported into England, <i>W. C. Crawley, B.A., F.E.S.</i> ; <i>Camponotus perrisii</i> subsp. <i>nigeriensis</i> at Wembley, <i>H. Donisthorpe, F.Z.S., F.E.S.</i> ; Notes from Hampshire, <i>Wm. Fassnidge, M.A.</i>	91
CURRENT NOTES AND SHORT NOTICES	93
SOCIETIES:—The South London Entomological Society; The Entomological Society of London	94
REVIEW	96
SUPP.:—List of the Macro-lepidoptera of Hampshire and the Isle of Wight, <i>W. Fassnidge, M.A.</i>	(25)–(28)

JUNE 15th, 1924.

Price ONE SHILLING and SIXPENCE (NET).
WITH TWO PLATES.

Subscription for Complete Volume, post free
(including all DOUBLE NUMBERS, etc.)

TEN SHILLINGS.

TO BE FORWARDED TO

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

“BERTROSE,” GELLATLY ROAD, NEW CROSS, S.E.14.

Communications have been received or have been promised from Messrs. H. Donisthorpe, Dr. Verity, J. H. Durrant, Rev. C. R. N. Burrows, Wm. Fassnidge, Orazio Querci, H. J. Turner, Karl Höfer; R. S. Bagnall, F.R.S.E., F.L.S., F.E.S., J. W. H. Harrison, D.Sc., F.R.S.E., O. R. Goodman, F.Z.S., F.E.S., Lieut. E. B. Ashby, F.E.S., with Reports of Societies and Reviews.

G.

WATKINS & DONCASTER

(ESTABLISHED 1879)

36, Strand, London, W.C.2.

Telephone: GERRARD 9451.

:: Manufacturers and Suppliers of ::
Natural History Requisites of all Kinds.

Cabinets. Best quality and finish. All sizes at lowest prices on view at above address.

Lepidoptera. Large stocks kept of British Palæarctic and Exotic Species. Lists on application.

Bird's Eggs. Large selection of British and European Eggs, singles and in sets with data, always on hand.

Books. A varied and extensive stock on Entomology and all Branches of Natural History.

GENERAL CATALOGUE SENT POST FREE.

ENTOMOLOGICAL NEWS.

An illustrated magazine, published monthly—except August and September—devoted to the study of **INSECT LIFE**. It contains a list of the titles of the current Literature on American Entomology, articles by the leading authorities in the United States and Canada, and is a necessary journal of reference for working entomologists. Valuable information for economic and systematic students.

Annual subscription price \$2.50. Foreign (except Canadian) subscriptions \$2.70. Single copies 30. cents. Address

ENTOMOLOGICAL NEWS, 1900, Race Street, Philadelphia, Pa.

Bexley]

L. W. NEWMAN

[Kent

Has for sale a superb stock of 1920 specimens in fine condition, including Varleyata ; Bicuspis ; Pendularia var. Subroseata ; Melanic forms Lariciata, Consortaria, Consonaria, Abietaria ; Irish forms Aurinia and Napi, fine vars. Tiliae, Yellow Dominula, etc., etc. Quotations and Insects sent on approval with pleasure.

Also a huge stock of fine PUPÆ and OVA.

Write for latest price lists.

Relaxing Tins are now 4/- small and 6/- large, pos free **Re-fills, 2/3** small, 3/3 large, post free.

Upon the suggested Relationships of Psychides. (With two plates.)

By REV. C. R. N. BURROWS, F.E.S.

The question as to the position of the Psychides with reference to the rest of the Lepidoptera, would appear to be still an open one. Looking into the matter it would seem that all, who have taken up the enquiry, have been led more, or less, by guess work, and to have solved it by throwing them into one, or other, of those classificatory "Lumber Rooms" which, even in our present state of knowledge, form the very useful receptacles for doubtful Groups, Genera and Species.

I must acknowledge, at the outset, that the more I have studied the subject, the less have I been able to make of it, and also, that had it not been for my promise, I should have been very much inclined to let it alone.

I am indebted to Tutt for all the information I possess upon the point. In *British Lepidoptera*, Vol. II., pp. 117-127, he gives, under the head of "Classification of the Psychides," a very complete, and therefore to me, very welcome, review of the attempts of previous writers to solve the difficulty.

Generally these attempts have resulted only in suggestions as to the affinities of these insects, not always I admit, without assigning a reason, but usually without this reason being in any way satisfactory. It would appear that the grounds of all such suggestions have been one or other of the following—

1. Resemblance between the male imagines.
2. Apterous condition of the females.
3. Case-bearing habit of the larvae.
4. Size (of the smaller species).
5. Suggested primitive character.

Tutt records these different suggestions in some detail. I do not however gather that he deduced anything important therefrom (they appear to be to him merely as so much ancient history), but he rather falls back upon the conclusions of Bruand and others, and formulated by Dr. Chapman (who based his opinion chiefly upon the pupal structure), that the *Psychides* constitute a distinct, homogeneous, group of Lepidoptera.

It is then only in the hope of throwing a little more light upon the subject that I offer the present note. It would be better undoubtedly could I transcribe in full Tutt's 10-11 pages, but that would be impossible within the limits of this paper, I must therefore confine myself to a short analysis of his remarks. The whole argument is however too involved, and obscure for me to give more than the merest outlines.

Scopoli (1763). Connects the Psychides with the Phryganeids. (Trichoptera.)

Curtis. Agrees. Psychides, are a link between Lepidoptera and Phryganeids.

Stephens holds that this connection is forbidden by difference in mouth-parts.

Newman agrees with Curtis, but refers to the scales, in place of hairs, in a part of the Psychides.

JUNE 15TH, 1924.

Linné. Places the larger species (2) in his Bombyces, the smaller (2) in Tineides.

Hübner. Places all in the Tineides.

Guenée strongly supports the same view.

Stephens. Bombyces, not Tineae. Allied to *Heterogynis penella*.

Horsfield. Connects them with Hepialides.

Bruand (1853) says one group, includes *Lypusa*, *Heterogynis*, and *Psychoides*.

Herrich-Schäffer, places them between the *Cochliopodidae*, and the Heterogynides, the Cochliopods uniting them to the Tineina.

Duponchel. Divides them into Macro- and Micro-Psychides.

Stainton divides them, the Micro-group go to the Tineinae, the Macro-group he places between the Cochliopods and the *Platypterygidae* in his Bombyces.

Barrett places the Macro-species next to the *Liparidae*.

Meyrick. Places them with *Zygaenidae*, *Zeuzeridae*, and *Cochliopodidae*.

Spüler makes them one Superfamily.

Tutt sums the subject up thus—"It is necessary, when such a violent division of a Superfamily is made, as that of placing one portion of it among the Tineids, and the other (structurally identical) amongst the Bombycids, to examine carefully the characters on which the division is made." "There can be no doubt that all the Psychides are so closely related that they must represent one superfamily" (pp. 123-124).

I need scarcely say that I entirely agree with this opinion, after having examined the group from a different standpoint, and with quite sufficient material at my disposal.

I have attempted to represent these different suggestions in the Plates which accompany this paper, illustrated as far as possible from British material.

Phryganeids, by *Hydropsyche pellucida*.

Bombyces, by *Megalopyga* sp.? and *Orgyia antiqua*.

Tineides, by *Psychoides verhuellella*, *Lypusa maurella* (a Tineid), *Adela viridella*, and *Tinea vinculella*.

Hepialides, by *Hepialus lupulinus*.

Cochliopods, by *Heterogenea asella*.

Heterogynids, by *Heterogynis penella*.

Platypterygidae, by *Drepana cultraria*.

Zygaenidae, by *Zygaena filipendulae*.

Some of these references are remarkable for their vagueness. To assign the Psychides to the *Phryganeidae*, or to the "Bombyces" would appear now-a-days, to our more enlightened intellect, very like referring a cat, or a dog, to the whole Zoological Gardens.

I will not here repeat what I have already said about the differences between the genitalia of the Psychides, and the rest of the Lepidoptera. Taking the figures in the order in which they stand.—

Hydropsyche pellucida.— A Trichopterous species, of the Family *Phryganeidae*. This was the simplest form in a number of specimens sent to me for examination by Mr. F. N. Pierce. The relationship here was supposed to lie in the presence of hair-scales in some of the Psychides, and also in the case-building habit of some of the larvae (which is indeed very often remarkably Psychid-like), and also possibly

upon the superficial resemblance of the perfect insect to some of the Psychid males. My own researches into the genitalia of Insecta have not extended into this Order, but I have been able, thanks to Mr. Pierce, to assure myself that there is probably quite as much variety of structure here, as in the Order Lepidoptera.

Heterogynis penella.—Presumably suggested on account of the appearance of the male, and also by the apterous female. But this female bears no resemblance to the females of our group, nor does the larva construct a case. Bruand, it will be remembered, includes this Genus in his *Monograph* and figures the life stages in Pl. I., figs. 11, 12, 13, where the strange naked larva, and the apterous female (so curiously resembling the larva) are well represented.

Hepialus lupulinus.—Unless as a member of the old fashioned Bombyces (not of Linné) I cannot imagine why this connection was ever suggested. There is of course no resemblance in the larval habits, nor is the female *Hepialus*, so far as I know, ever apterous.*

Drepana cultraria.—Except that Stainton placed the "Macro-Psychides" between this Genus and the following, probably in despair of finding a better position for them, I fail to guess at the cause of his decision. The larva does not build a case, nor is the female, so far as I know, ever apterous.

Heterogenea asella.—The same remarks apply here. The large "gnathos" (quite unknown amongst the Psychides) is very noticeable (I have darkened this in my figure). The larva does not build a case, nor are the females apterous.

The two following species, both included by Bruand, but excluded by me, on account of the structure of the final segments of the male, are also excluded by Staudinger.

Psychoides (Teichobia) verhuelletella.—The imago is sufficiently small to look rather like one of the Psychides, but the female is not apterous, nor can the larva be said to be a case-bearer, in a strict sense.

Lypusa maurella.—This somewhat obscure, and not easily obtained, insect, is included by Tutt, and (as I have mentioned above) under another name, I believe, by Bruand. The female is winged. The larva is said to construct a case of leaves,† which scarcely describes the elaborate Psychid habitation. The final segments are totally different from those of the latter.

Megalopyga sp.—This Neo-Arctic insect has no real right here. I found an example amongst Dr. Chapman's specimens, but do not infer from this, that he regarded it as having any connection with our subject. This specimen is doubtless referred to by Tutt (p. 371), when discussing the Psychid antennae. The species belongs to the *Megalopygidae*, which come near to our *Limacodidae*, and has a slightly Psychid appearance. It is allowed here as an example of "Bombyces."

Adela viridella.—Here we appear to have arrived at a somewhat clearer assertion of relationship. So great an authority as Guénéé concludes that "the Psychid alliance is with *Adela*, *Incurvaria*, etc., and not with *Orgyia*, or *Liparis*." *Adela* has of course a winged

* *H. pyrenaica* ♀ has very aborted wings, and with its abnormally large body is probably unable to fly.—H.J.T.

† See *Sich Ent. Rec.*, p. 65 ante.—H.J.T.

female, but it has also a case-bearing larva. Now it is very noteworthy to find that Bruand (Fig. 81 a-b) figures a case of *Adela*, or *Incurraria*, as a probable Psychid, under the provisional name of *linguliformella*. He says that this case (of flat, violin form) having been attacked by an Ichneumon, produced nothing, and he therefore leaves its position undecided.

Tutt (*Entom. Record*, Vol. XI., p. 212) expresses his regret that it is not possible to refer to Bruand's collection for the verification of his species, and somewhat casually remarks, that the collection had been destroyed. It would be well to know whether this unfortunate calamity is anywhere recorded, and whence Tutt obtained his information.

It is an interesting and suggestive fact that, in the Doubleday collection of Psychides, now preserved in the Natural History Museum, (to which neither Tutt, nor Chapman, ever seem to refer, although it was under Tutt's very nose for years when at the Bethnal Green Museum) there is a similar case, also bearing the mark of an Ichneumon, and placed exactly as in Bruand's book, at the end of the Psychides. This fact has led me to wonder whether instead of being destroyed, it may not have come into Doubleday's possession, no note of this acquisition being forthcoming owing to the fact, which is I believe fully authenticated, that Doubleday's papers were all wilfully destroyed after his death.*

Tinea vinculella (richardsoni).—The relationship of the Psychides to the Tineina has been very persistently suggested. Here I am in the difficulty that I know very little of the anatomy of this very extensive Family, but so far as I have seen, there would appear to be no relationship from my point of enquiry. I am able however to refer to an examination of this species, by Tutt and Bacot, undertaken with this particular object in view. In the *Entom. Record*, Vol. XI., pp. 148-49 it is stated that these gentlemen, examining the Dorset captures of Richardson, under the name of *vinculella*, or *leopoldella*, came to the conclusion that it had no connection with the Psychides. It is one of these Dorset insects which I figure. Again, the female of this *Tinea* is not apterous.†

Orgyia antiqua.—There is no structural relationship with the Psychides, although the female be apterous.

Zygaena filipendulae.—I am again surprised to find this group compared with the Psychides. I suppose the idea may have followed upon the assumed relationship with *Heterogynis*. There is however no

* It would be a very interesting exercise for any Entomologist, with time and opportunity, to examine this collection, and compare it with Bruand's *Monograph*, in order to discover how far the contents agree with the species, which he there states to be actually in his possession. Unless my memory plays me false, I believe that in one of the copies of the *Monograph*, in the Library of the Entomological Society of London, there is evidence upon the flyleaf of some connection between Bruand and Doubleday. [The following is the inscription on the flyleaf "Jos. Gul. Dunning | Hunc Librum | ab auctore, Theph. Bruand | acceptum | D.D. | Henricus Doubleday |"—H.J.T.]

† It is strange to read in this account Tutt's statements that one of the points of difference, lay in the fact that the Tineid case is open at both ends, while that of the Psychides is open at one end only. Of course, until the time of pupation, the Psychid case is also open at both ends.

connection here. The *Zygaenidæ* do not construct larval cases, and the female is rarely apterous. I imagine that as with *Hepialus*, so here the link may be found in the assumed antiquity of these forms.

I hope that comparison with my former plate will convince my readers that I am justified in holding the Psychides to be entirely separated structurally from suggested relations. It is of course possible even probable that the connecting link or links between the Psychides and the rest of Lepidoptera, may be discovered, as investigation proceeds, and I do not suggest that they shall be erected into a separate Order.

As all the different divisions of Lepidoptera, with the exception of the Tineina, have been at least partially examined, as to the structure of the final segments of the male abdomen, without the desired relationships having been found, it may quite reasonably be supposed that the connecting link, if existing, may yet be discovered in this last group.

(To be continued.)

The Cumberland Coccinellidæ.

By T. F. MARRINER, F.E.S.

When I took up the study of Coleoptera some few years ago under the guidance of Mr. F. H. Day of Carlisle, I soon found that with other interests claiming a large share of my attention it was impossible to do justice all at once to so large a field of study. I spent about 2 hours along with Mr. Day one February afternoon hunting through some flood-refuse and we took between 70 and 80 species in that short time, all of which were then practically new to me. The resultant attempts at identification and classification gave me a sort of mental indigestion, and I then and there decided that if I was to do anything at the subject I must not try to swallow the whole of it at once. Being a Stamp-Collector, and knowing that while the rudiments might be mastered by general collecting, the finer points could only be learned by specialisation, I applied the same principle to the Coleoptera and determined to specialise in one or two families at first. I am told I shall probably have missed no end of good things by taking only one or two particular families, but I am certain I have learnt more. Being somewhat of a garden enthusiast my fancy first turned to the "Lady-birds," as they are popularly called, and I have covered quite a large portion of Cumberland in my quests for these interesting and useful beetles. I am indebted to Mr. Day of Carlisle and Messrs. Donisthorpe and Leman of London for help in classification, and other kind hints.

Of the 41 species of *Coccinellidæ* in the British List, 31 have been recorded for Cumberland and where a species is subject to variation most of the varieties are also present or have been at some time taken.

SUBCOCCINELLA, Huber.

S. 24-punctata, L.—In Vol. III. of the *Carlisle Natural History Society's Transactions* this is recorded as having been taken at Great Salkeld by H. Britten, and by F. H. Day at Drigg. I have specimens taken at Allonby and Port Carlisle by sweeping grass, so that it is probably present at least all along the coast of the county. One of

the specimens taken at Port Carlisle has no spots. Var. *saponariae*, Huber.

HIPPODAMIA, Muls.

H. 13-punctata, L.—There is an old record of this having been taken at Rockcliffe, but it has not been seen recently. The species *variegata*, Goez., is however found along the coast. Of this species some 70 or 80 aberrations have been recorded and 14 of these have turned up in the collections of Mr. Day and myself. No doubt further search will reveal others. Mr. Day first came across *variegata* at Drigg in 1921, and I have three specimens taken at Silloth in September, 1922.

ADALIA, Muls.

A. obliterata, L.—This is common wherever fir-trees are found in the county. The type form which has no spots is not perhaps so common here as are some of the aberration forms given by Weise. Var. *sublimata* is perhaps the commonest form in the area immediately North and East of Carlisle. Var. *pumata* is the only form I have taken in the district just South of Carlisle; a little further South and reaching to Penrith var. *livida* seems the commonest form found. Nearer the coast and in the Lake District, and near the Pennines I have found the typical form most common.

A. bipunctata, L.—This is common though much more so in some seasons than in others, and a tremendously interesting variety may be obtained within the boundaries of the county. I intended writing a few notes on my experiences in breeding this Ladybird, and its hibernation, but after reading the excellent paper on the subject in the *Proceedings of the Zoological Society London*, by Mrs. Merritt Hawkes, M. Sc., of Birmingham, I decided not to do so.

MYSIA, Muls.

M. oblongoguttata, L.—This is common in the county on fir-trees. In my perhaps somewhat limited experience this species varies much more than is commonly supposed. It was by far the commonest "Ladybird" in the county during the summer of 1923 (a wet year) and I was able to watch it work out its life-history from the egg to the perfect insect on the pine trees near my camp. I have, within a few yards of me while writing, a breeding cage wherein a number of these Ladybirds are in hibernation and I am anxiously awaiting their awakening. As what I have to say about *oblongoguttata* would take up too much space here, I must leave it to a later occasion and pass on. In the same wood, on the same tree, though not so numerous, I found *Anatis ocellata*, L., in all stages of its life-history. It is fairly common also wherever there are fir trees in the county. A few years ago I came across a specimen with very pale coloured elytra. Both Mr. Donisthorpe and Mr. Leman to whom I sent it, remarked upon its unusual colour. Last summer I gathered two more specimens, and my camp companion also took two, of the same pale colour exactly. The colour was not due to new emergence for two of these were kept alive for some weeks and did not change, and further, one of a batch of larvae we collected and kept, produced an exactly similar specimen.

COCCINELLA, L.

C. 10-punctata, L.—Is common all over the county lowlands and appears in tremendous variety.

C. hieroglyphica, L.—Also very common wherever there is heather among the fir woods. The county affords quite a nice series of this, varying from the type form to the all-black variety.

C. 11-punctata, L.—This is common in the low-lying portions of the county nearer the coast. Of the aberrations recorded and named from time to time I have taken ab. *confluens*, Haw., ab. *cahiles*, Ws., ab. *9-punctata*, ab. *boreolittoralis*, Donis. These have all kindly been identified for me by Mr. Leman of London. Another specimen submitted was found to be altogether new and as I was asked to name it I gave it the name ab. **lemani** as some slight return for Mr. Leman's kindness and his work on the *Coccinellidae* generally. This new aberration was taken at Burgh on June 3rd, 1922.

C. 5-punctata, L.—One specimen of this was taken in flood refuse near Carlisle many years ago and this with a record by T. C. Heysham (*Steph. Ill.*), were the only known Cumberland captures, until I was fortunate enough to take four specimens when sweeping along the Caldew Valley a few miles from Carlisle, in May, 1922.

C. 7-punctata, L.—This, too, is fairly common in the county. Except in size there is not much in the way of variation to be recorded here. I have one very small specimen taken at Brampton in 1922 and a specimen without spots except the $\frac{1}{2}$ spot at the scutellum, the aberration ab. *lucida* of Weise.

HALYZIA, Muls.

H. 16-guttata, L.—This is very rare in Cumberland. The first record is, I believe, one by T. C. Heysham, for Newby Cross near Carlisle, about 80 years ago. Since then it has been recorded by H. Britten for Penrith neighbourhood, Orton near Carlisle by Mr. Day, and the latest record is my own, taken in the very wood at Newby Cross, where the earliest recorded capture was made.

H. 14-guttata, L.—This is fairly common and often turns up among flood refuse.

H. 18-guttata, L.—Though this is recorded in Mr. Day's County List as common on fir trees, I personally have not found it so, except in two localities.

H. conglobata, L.—Only one record for this exists, an old one made by T. C. Heysham.

H. 22-punctata, L.—This cannot be called uncommon. I have taken it in flood refuse on one occasion when out with Mr. Day. I also had one really lucky day in my search for it. I had looked for it on nettles in vain several times, but came across quite a colony on some oak seedlings by the road-side. My specimens all came from one or other of two localities or from flood refuse.

MICRASPIIS, Redtb.

M. 16-punctata, L.—Also claims inclusion in the Cumberland List on the strength of one old record and *Hyperaspis reppensis*, Hbst. has only three records. It is recorded from Eskdale in Fowler, from Great Salkeld by Britten and from Cumrew Fell by Day. These

localities are well apart; so possibly further search will add to their number. Of the genus *Scymnus* the county has at one time or other produced seven species but only three of these can be called common; further search will probably lead to the discovery of new localities and add to the county list of species. *S. nigrinus*, Kug., *S. discoideus*, Ill., and *S. testaceus* var. *scutellaris*, Muls., I have taken at Orton near Carlisle. Of *S. pygmaeus*, Fourc., there is only one recorded capture, by Mr. Day at Silloth, of *S. capitatus*, F., two old records, one at Baron Wood, by T. C. Heysham and one given by Fowler at Carlisle. *S. frontalis*, F., and *S. haemorrhoidalis*, Hbst., are marked in Mr. Day's List as rare.

CHILOCORUS, Leach.

C. similis, Ross.—I have taken it in company with Mr. Day at Orton near Carlisle. It is also recorded from Penrith area by Mr. Britten.

C. bipustulatus, L.—This is another beetle which I have not yet succeeded in taking in Cumberland, though I am informed that it is quite common in the mosses on the heaths in all parts of the county.

EXOCHOMUS, Redtb.

E. quadripustulatus, L.—Two records exist, an old one for Armathwaite, and a more recent one by Mr. J. Murray for Dalston.

Rhizobius litura, F., and the last on the list *Coccidula rufa*, Hbst., are both commonly taken by the sweep-net among the grasses and other low growing plants.

There is still plenty of work to be done in connection with this group in the county. There are areas yet unexplored, life-histories to work out, and perhaps with patience old records may be confirmed by new captures, and even new species be discovered for the County List.

The Variation in *Larentia (Thera) variata*, Schiff.

By CARL HÖFER of Klosterneuberg (Vienna).

(Translated by Hy. J. TURNER, F.E.S.)

(Continued from page 41.)

ab. *albonigrata*, n. ab., is also a *variata* form with pure white ground colour, which, so far as I know from a search through the literature, has not yet been described.

Among our native *variata* there occur, at the present time specimens with pure white ground-colour and dark almost black discal area, which, on account of their striking colour-contrast, produce a handsome, remarkable form, and which, at the suggestion of Prof. Rebel, I name ab. *albonigrata*. They are in short, ab. *nigrofasciata* with pure white ground colour. I have four examples of it (♂ May 31st, 1917. Hohe Wand, coll., Höfer. ♂ May 23rd, 1904, Hinterberg, Ysper, coll. Priessecker. ♀ ex. ovo August 19th, 1919, Rekawinkel, coll. Priessecker. ♀ May 18th, 1916, Tullnerbach, coll. Galvagni.).

And now with respect to the divergency of the markings.—Let us look somewhat closer at the middle area (transverse band) of the forewings, and we see that this at its lower, narrower extremity towards

the inner-margin tends to be interrupted or obsolescent, while its upper broad portion forms from the costal margin to the chief vein, an exceedingly permanent element of the marking. However its colour changes, it is on the costal half and on the inner margin usually deepest in colour, while in its central portion there is often a noticeable clear area. I have before me a number of examples, which, by a superficial examination, one might speak of as an *interrupta*-form. Only by a close examination does one find a so-called pseudo-*interrupta* form is present, in which the transverse area, still holds its own in its marking and only the sharp and dark colour-contrast disappears in the filling up of the internal.

A single actual interruption of the central band by the ground colour occurs not uncommonly in our native *variata*. On the other hand less often do there appear other interruptions in its lower portion, so that the middle area towards the inner margin appears to be lost in several small spots.

ab. *interrupta*, Schaw.—The form with interrupted middle area, Herr Dr. K. Schawerda has named an ab. *interrupta* in the 24. *Jahresber. Wien. Ent. Ver.* 1913. Then a few years later, Fritz Hoffman in his *Fauna of Steiermark*, again named this form with the same name, and a humorous chance has stepped in, for he remarks in the same place "that he gladly agrees with the proposal of Dr. Schawerda of denoting by the term *interrupta* all the Geometer-forms whose interrupted middle band has hitherto not received recognition by a varietal name."

Further also one can differentiate here more closely, for in relation to the transverse interruption of the middle area we can generally note the following probable forms.—

1. Forma *insulata*:—The middle area has been cut across by light veins. (*Larentia silaceata*, Schiff. ab. *insulata*, Haw.)

2. Forma *interrupta* or *divisa*:—The middle area has been interrupted once, more or less widely, by the ground colour (*Larentia corylata*, Thnbg., ab. *interrupta*, Hirschke; *Larentia sagittata*, F., ab. *interrupta*, Hirschke; *Larentia juniperata*, L., ab. *divisa*, Strand).

3. Forma *maculata* or *dissoluta*:—The middle area has been broken up into spots by numerous interruptions by the ground colour over its whole length or over only a portion. (*Larentia rivata*, Hb., ab. *maculata*, Rbl.; *Lobophora sertata*, Hb., ab. *dissoluta*, Höfer.)

The last mentioned form of these with interrupted band, forms a transition to those forms, in which the lower portion of the middle band as far as the inner margin, is completely wanting. This aberration occurs, but rarely in our native *variata*. I can show two examples of it, one a male from the coll. of Fritz Preissecker obtained on June 1st, 1919, at Rekawinkel, and a female form the Rosaliengebirge on June 1st, 1902. The last is in the coll. of Herr Dr. Galvagni and was mentioned by him at the meeting of the Zool.-bot. Gesellsch. Wien on January 2nd, 1903.

This form [ab. *costimaculata*, Höfer.] as can be seen even at the first glance, is not to be placed with ab. *stragulata*, Hb. Without taking note of the distinctive size and colour, the two specimens referred to belong in this view to what is usually considered as typical *variata*—these insects have a sharply toothed waved line, and an angle

of the middle line projecting out towards the apex of the wing—both significant characters of the typical form.

A further male example from Campiglio, Tyrol, which Herr Dr. Schawerda, with great kindness, gave me for exhibition, offers such a peculiar appearance, because the dark middle area strongly narrows towards the costal margin, diminishing into little more than a short, stout streak. Among the many hundreds of *variata*, which I have had under my observation, this specimen is the only one in which the middle area has undergone a decrease towards the costa.

Correction :—The last line of page 39 (ante) should read “ Vol. 45 of the *Ent.* for 1912, pp. 241-6.”

(To be continued.)

Euchloë (Anthocharis) ausonia, Hb. (=belia auct.) and its second brood.

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

Having studied *E. ausonia* in its near East forms for several years, I wish to take exception to Dr. Roger Verity's statement (*Ent. Rec.*, 1923, p. 169, and 1919, p. 143) that the two generations of this species are “ a myth.” Not only did the late Dr. Staudinger vouch for the existence of a second brood, not merely a bipartite emergence, in South Spain, where as he pointed out the larva feeds up very rapidly, but I myself, a much humbler lepidopterist than the illustrious Saxon, have bred the second emergence *g. a. melisanda* of the Palestinian race from larvae of the first brood.

Males and females of the vernal brood of *E. ausonia* occurred sparingly round the W.T. Station near G.H.Q. at BIR YAKUB, also called BIR SALEM, in Palestine in late January and the first half of February in 1918. This place is in the coastal plain and lies near the small towns of LUDD and RAMLEH. Females in bad order were flying about what we took to be *Biscutella* plants early in February. About March 12th, I took two larvae of *E. ausonia* on the *Biscutella*. They were two thirds grown. One was drowned when a cloud-burst flooded our camp. The other produced a specimen of *E. ausonia, g. a. melisanda* (which differs from the Palestinian vernal form *triangula* both in the Coastal Plain, the uplands and the Jordan Valley) between the 5th and the 8th of April, 1918. This is surely conclusive as far as Palestine is concerned. I suspect a partial second brood at Constantinople, and a more complete second brood in Greece. Dr. Verity's view that there would not be time for a second brood to pass through all the stages *ab ovo*, between April and June, may be true of Italy or South France. But at Constantinople, *E. ausonia* appears in late March, or at the very beginning of April in favourable years as do *P. napi* and *P. rapae*. If the two common Pierids produce second brood specimens there, even in quite normal years as early as the first week of June, why should the occasional *E. ausonia g. a. maxima* taken near Constantinople in June not be also direct descendants of the first emergence of the same year. In Greece I have taken a female *E. ausonia* race *graeca* as early as January 31st, at Athens. The first *E. ausonia g. a. maxima* taken

by me fell to my net in the first week of May. This gives ample time for development.

NOTES ON COLLECTING, etc.

VARIATION IN *EUCHLOË CARDAMINES*.—In my notes in *The Record*, Vol. XXXV. (1923), p. 179, I stated that ab. *schepdaeli*, Derenne, appeared to be very similar to ab. *caulotosticta*, Wms. (given as *caulosticta* in error.). This is not so; as I have since been in correspondence with Mons. F. Derenne, who kindly forwarded through Mr. H. J. Turner, a beautiful coloured figure of the first named aberration; in this, on the fore-wing the costa is blackened as far as, and almost touching the discoidal; and extending along the sub-costal vein into the apical area; whereas in ab. *caulotosticta*, a black line springs from the discoidal and extends along the sub-costal towards the base.

I possess several ♀ ♀s combining both the above aberrations.

I also wish to describe a new form (as far as I can find out) of this species; ♀ with all wings of a dull ochreous yellow; for this form I would suggest the name *ochrata*. Two examples in Mr. D. Westropp's collection from Co. Cork (one of these is almost of a buff colour); one from Co. Tyrone.—THOMAS GREER, Stewartstown, Co. Tyrone. May 21st, 1924.

A NIGERIAN ANT IMPORTED INTO ENGLAND.—In the cases containing two termites' nests, sent to the British Museum (Natural History) this spring for exhibition at Wembley, were a number of live ants, which, presumably included by accident in the earth and vegetable debris in the boxes, had penetrated into the nests during the voyage and had emerged in the warmth of the museum. A number of these ants were given me on April 14th, and I actually picked up some living ones on the Museum floor. These live ants I kept for some time in a Janet plaster nest.

The consignment of termites was from Ibadan, Nigeria, and I identified the ants as *Camponotus (Myrmotrema) perrisii*, Forel, subsp. *nigeriensis*, Santschi. There are ♂ ♂ and alate ♀ ♀.

C. perrisii, For., was described from Angola in 1886 (*Ann. Soc. Ent. Belg.*, XXX., p. 177) as a race of *C. foraminosus*, For. Later it was raised to a specific rank by him. The s.sp. *nigeriensis*, Sants. (*Boll. Lab. Zool. gen. e agr. Portici*, VIII., p. 333, 1914), was described as a s.sp. of *bayeri*, For., from specimens from Ibadan. The following year the author altered it to a s.sp. of *perrisii*, For. (*Ann. Soc. Ent. France*, LXXXIV., p. 277), adding descriptions of the ♂ ♂ and ♀ ♀. These specimens were from the Belgian Congo.

In none of the above references is there any mention of the habits of the ant or of any connection with termites. In captivity the ♂ ♂ and ♀ ♀ were extremely sluggish under our spring temperature, but became very lively and were capable of enduring extraordinary heat in front of a gas fire. They eat honey fairly readily, and kill flies, but do not apparently devour them. During my absence for a few days, however, the nest had become too dry, and on returning I found that three or four of the ♂ ♂ had been killed, and one of the two ♀ ♀, and their bodies dismembered. A few days ago the remaining ♂ died, and there is at present only one ♀ surviving.

Since the termites' nest has been exhibited at Wembley several people have reported that there are still living ants running about inside the cases.—W. C. CRAWLEY (B.A., F.E.S.).

CAMPONOTUS (MYRMOTREMA) PERRISII, FOREL, SUBSP. NIGERIENSIS, SANT., AT WEMBLEY.—When walking through the section devoted to Nigeria, at Wembley, early in May, I observed a number of live ants (winged ♀ ♀, ♂ ♂, and ♂ ♂ of a *Camponotus*) crawling about in one of the show cases. In the show case are exhibited—a number of butterflies on grass stems; an earthen termites nest; and a representation of a raid by "Driver ants." I found the Secretary of the section and explained to him that the live ants were neither "Drivers" nor termites. He told me that they had commenced to emerge from the termites' nest four days after it had been fixed up in the case, and he was so obliging as to have the glass sides unscrewed for me, so that I could take as many of the ants as I wished. Collecting in the tropics was a new experience for me! I was quite unaware that the ant had previously been found at the Museum, but when I sent specimens to my colleague, Mr. Crawley, he gave me the information contained in his note on the ant in question. The ants must have been in considerable numbers in the termites' nest, as my friend Mr. Laing, of the Natural History Museum, tells me they were in evidence in some numbers when he was at Wembley subsequent to my visit.—HORACE DONISTHORPE (F.Z.S., F.E.S.).

NOTES FROM HAMPSHIRE.—AROUND SOUTHAMPTON.—I have been working hard this spring, and am pleased to say that I have managed to do something, which is certainly encouraging, when one hears such depressing accounts all around. On April 19th, on sallow, close to the town, I took one *Taeniocampa opima*, which, so far as I am aware, is a new species for Hants. Hibernated *Sarothripus revayana* have been moderately common, as well as *Leptogramma literana*, and one *Peronisa cristana* has turned up. I have bred a large number of *Thera variata* and *T. obeliscata*, but I am quite unable to distinguish the larvae or the pupae. I note, however, that the newly emerged imago of *T. variata* has a curious habit of refusing to climb before the wings expand, so that a fair number of them have curled wings, due to insufficient space or height for expansion. This is a nuisance in so frail an insect, for I found it usually impossible to set them. *Boarmia cictaria* has been abundant this year in all the Forest (New) bogs, and on the same pines numbers of *Xylocampa areola* were to be taken. *Eupithecia irrignata* turned up in gratifying numbers, but is strangely restricted and local in both the localities, which I know. *E. dodonata* has been very abundant locally, and *Nola confusalis* was to be taken freely at the same time and place. By searching also I was gratified to find specimens of *Asphalia videns*. One *Lampropteryx suffumata* turned up at Denny, and *Lobophora halterata* (*hexapterata*) has been plentiful, and in the same wood I took a nice form of *Boarmia consonaria* which lacked the distinguishing square spot. On the Winchester Downs I took three *E. fraxinata* in a larch copse. Some years ago I took two specimens at Winchester, but could not recall the spot where they were found. Perhaps my best capture this year was a long series of *Chesias rufata* of which, in one night, I took twelve near Southampton. A long

search by the canal at Shawford, yielded only one larva of *Apamea ophiogramma*, but larva of *Philereme (Scotosia), transversata (rhamnata)* were plentiful. Larvae of *Cleora jubata (glabraria)* were fairly common in a local wood, where hitherto I have only found odd specimens. It seems to be a good year for "pugs," for *E. vulgata* is swarming everywhere, *E. castigata* is fairly common, *E. coronata*, a few, *E. pusillata* is quite common, *E. lariciata* is fairly common, *E. satyrata*, is, as usual, scarce, but *E. scabiosata* is plentiful enough, and larvae of *E. sobrinata* are in countless numbers.—WM. FASSNIDGE (M.A.), 47, Tennyson Road, Southampton, Hants, June 2nd, 1924.

CURRENT NOTES AND SHORT NOTICES.

It has been my privilege to have seen two books recently published, which particularly interested me, inasmuch as they intimately concerned my friend and colleague, Mr. H. St. J. K. Donisthorpe. As doubtless subscribers to *The Entomologist's Record* will share this interest, we give data as follows:—

I. *The Life-work of Lord Avebury (Sir Jno. Lubbock) 1834-1913.*

This comprises essays by

- (a) Sir Bernard Mallet, K.C.B.
- (b) Sir Arthur Keith, F.R.S.
- (c) Dr. A. Smith Woodward, L.L.D., F.R.S.
- (d) Professor J. Arthur Thomson, L.L.D.
- (e) H. St. J. K. Donisthorpe, F.Z.S., F.E.S.
- (f) Dr. A. C. Seward, F.R.S.
- (g) Sir Michael E. Sadler, K.C.S.I.

The essay (e) by Mr. Donisthorpe is a clever and lucid treatise on Ants. The work is edited by (the late) Lord Avebury's daughter, the Hon. Mrs. Adrian Grant Duff and is published by Watts, London, May, 1924.

II. *The Ants of Timothy Thümmel*, by A. Ferenczy.

This is a Fantastic Story in the style of *Gulliver's Travels* or *Erewhon*, but founded upon the marvellous social life of the Ants. It is dedicated to Horace Donisthorpe, and contains 60 pages of Scientific Notes on the Social Life of Ants at the end of the book.

It was compiled with the assistance of Miss Cheesman, Curator of the Insect House at the Zoological Gardens, and has been revised by Mr. Donisthorpe. Published by Jonathan Cape, London, May, 1924.—H.E.P.

From June 4th, 1924, onwards, the Library of the Entomological Society of London will be open to Fellows and their friends (except during September) from 10 a.m. to 6 p.m., but not on Saturdays, when it is closed. On the nights of meetings it remains open until 10 p.m., and on other *Wednesdays* until 9 p.m.

Three Fellows of the Entomological Society of London have passed away during the last few weeks. Mr. F. Merrifield, a past President (1905-6), and a life-long resident of Brighton had reached the ripe age of 94. He was a man of exceptional energy who, when his time of retirement from his daily duties came, not only took up other public duties, but began actively to investigate the influence of temperature on the

life-histories of the lepidoptera and joined the Entomological Society in 1897. His death came quite unexpectedly, for only a few days before, although confined to his bed, his mind was fully alive to the pleasures of the study of entomology. Mr. J. H. A. Jenner, of Lewes, Sussex, had been a Fellow since 1886 and was well known to an older generation as a student and correspondent in the study of the British Lepidoptera. His name appears frequently in the literature of the early part of the later half of last century. Mr. A. D. R. Baccus was a younger man and had only recently joined the Society, but his work on the local insect fauna of the Bristol area showed great promise.

Mr. E. J. Pierce writes:—"With a view to the compilation of a county list of beetles, I should be very grateful for any records of Coleoptera taken within the boundaries of the county Dorset. Full data of Habitat, Locality and Date are most desirable whenever available. They should be sent to me at the following address.—E. J. Pearce, The Lodge, Corpus Christi College, Cambridge."

S O C I E T I E S .

THE SOUTH LONDON ENTOMOLOGICAL SOCIETY.

March 27th.—The President in the chair.

Capt. Crocker, a long series of *Melitaea athalia* showing considerable variation in the light and dark markings, both in shape, area, and in depth of colour.

Mr. Wm. Hales read a paper on the "Old Chelsea Physic Garden," illustrating it with numerous lantern slides.

THE ENTOMOLOGICAL SOCIETY OF LONDON.

March 5th.—OBITUARY.—The President announced the death of Mr. A. H. Jones, Treasurer of the Society from 1904 to 1917, and a vote of condolence was passed to his relatives.

ELECTION OF FELLOWS.—The following were elected Fellows of the Society:—Mr. H. B. Cott, 9, Old Orchard Road, Eastbourne; Mr. R. H. Le Pelley, Entomological Dept., Royal College of Science, S.W. 7.

EXHIBITS.—Mr. H. J. Turner exhibited and made remarks upon some Central European forms of *Pieris napi*.

Mr. W. G. Sheldon exhibited about 50 of the more striking forms of *Peronea hastiana*.

Mr. A. M. Altson exhibited some of the parasites and hyperparasites of the common earwig and also a tsetse-fly parasite, both of which are being bred at Rothamsted Experimental Station on behalf of the Imperial Bureau of Entomology, and Dr. G. A. K. Marshall, C.M.G., F.R.S., described the circumstances under which this work had been undertaken by the Bureau.

Dr. K. Jordan exhibited a new species of *Thysania* allied to *T. agrippina* from S.E. Brazil.

Mr. Hugh Main exhibited a living specimen of a bird-eating spider from Brazil, and Miss Cheesman described some personal experiences of spiders of this type.

Professor E. B. Poulton, F.R.S., exhibited a remarkable cocoon of the Noctuid moth *Labanda fasciata*, Walk., from Ceylon, and also drawings and specimens demonstrating that the larvae of Asilid flies of the Genus *Hyperechia* prey upon those of Xylocopid bees in the colonies of which they live.

March 19th.—ELECTION OF FELLOWS.—The following were elected Fellows of the Society:—Mr. W. H. Edwards, 59, Leinster Square, Bayswater, W.2; Mr. J. H. Grant, Cole Dale View, Coleshill Road, Ward End, Birmingham; Major R. W. G. Hingston, I.M.S., Lloyds Bank, Ltd., Bombay; Miss E. M. Ralfs, Greenfield, Redhill, Surrey; Mr. O. W. Richards, 70, Belsize Park Gardens, N.W.3; Hem Singh Pruthi, Zoological Laboratory, University of Cambridge; Professor Teiso Esaki, Entomological Laboratory, College of Agriculture, Kiushui Imperial University, Fukuoka, Japan.

EXHIBITS.—Dr. J. W. Scharff exhibited and made remarks upon a number of butterflies from Malaya.

Miss L. E. Cheesman exhibited an example of *Scolopendra gigas* and discussed the effect of the poisons secreted by centipedes and spiders.

Mr. O. E. Janson exhibited some rare beetles from North Ireland.

Mr. J. G. Arrow gave an account of stridulating organs in *Erotylidae* and *Dytiscidae* (Col.).

Dr. F. A. Dixey, F.R.S., exhibited a series of *Catopsilia crocale*, *C. pomona*, and *C. catilla* and discussed the identity of these species.

PAPERS.—The following papers were read:—

(1) "On Fluorescence in Lepidopterous Pigments," by Dr. E. A. Cockayne.

(2) "On the species of the Genus *Cosmophila*," by Mr. W. H. Tams.

(3) "On the Dragonflies of Palestine," by Mr. K. J. Morton.

(4) "On the metamorphosis of *Deuterophlebia* sp. (Diptera, *Deuterophlebiidae*, Edw.) by Miss Pulikovski.

April 2nd.—OBITUARY.—The President announced the death of Dr. L. Peringuey, Director, South African Museum, Cape Town, and a Fellow of the Society.

ELECTION OF FELLOWS.—The following were elected Fellows of the Society:—Mr. E. T. Ellis, The Firs, Bridge Street, Wye, Kent; Mr. F. D. Golding, Moor Plantation, Ibadan, Nigeria; Mr. W. E. Jones, M'fongosi, Zululand.

EXHIBITS.—Professor E. B. Poulton, F.R.S., exhibited a new race of *Amauris lobengula* from near Lake Rudolph flying with a corresponding female form of *Papilio dardanus*. He also made further remarks on

the nocturnal flight of *Ploetza cerymica* and on the close resemblances between two *Hispid* beetles from India.

Mr. H. M. Edelsten exhibited an aberration of *Argynnis selene* from Sussex.

May 7th.—WICKEN FEN.—The Treasurer, Mr. W. G. Sheldon, made a statement on the present position of the Wicken Fen Fund and appealed to Fellows for contributions.

EXHIBITS.—Mr. G. T. Bethune-Baker exhibited a new method of mounting small butterflies between two sheets of glass as advocated by Dr. Verity of Florence, for ready examination and comparison.

Mr. A. E. Tonge exhibited some British *Lycaenidae* which demonstrated in a remarkable manner the extremely satisfactory result of the new lighting installation in the meeting room as regards colour values.

Dr. K. Jordan exhibited a new race of a Hyspid moth, *Asota heliconia*, from the Solomon Islands which has lost the orange warning colour of the body.

Mr. W. G. Sheldon exhibited examples of *Peronea cristana* var. *curtisana* and var. *tolana* which by well founded facts he had ascertained to be Desvignes' types.

Professor E. B. Poulton F.R.S., exhibited and made remarks upon the following, among others:—

(1) The terrifying "false head" of the large S. American *Fulgoridae*.

(2) Notes of Fijian butterflies, by Mr. H. W. Simmonds.

(3) An Australian bee *Haliectus* sp. devouring Thrips.

He also gave an account of Mr. R. H. Harris' experiments proving that dummy animals are attractive to tsetse flies and suggested a possible interpretation of this remarkable phenomenon.

Mr. B. C. S. Warren exhibited and described a new European skipper resembling *Hesperia centaureae*.

PAPERS.—The following papers were read:—

(1) "On the Ethiopian species of the Genus *Hesperia*," by Dr. L. G. Higgins.

(2) "On the relation between the larvae of the Asilid Genus *Hyperechia*, and those of Xylocopid Bees," by Professor E. B. Poulton, F.R.S.

REVIEWS AND NOTICES OF BOOKS.

"DIE LEPIDOPTEREN-FAUNA ÄGYPTENS," BY A. ANDRES AND A. SEITZ.
—During the past year three articles have appeared in the periodical of the well known Senckenberg Natural History Society of Frankfurt on the Macro-lepidoptera of Egypt, to which is added a plate of some 30 colored figures of local and new forms. The paper is really a summary of what has hitherto been reported by various lepidopterists who have either, collected in the country, or received collections obtained for them there. The paper contains a description of the country, a general comparison of the lepidopterous fauna with that of the neighbouring areas, a note on the distribution of species, and remarks on the time of flight as regards the seasons. Of the Rhopalocera thirty-seven species are given, some of course being exclusively Mediterranean species, which go but a short way from the coast, and others only admitted as occurring in Sinai.—H.J.T.

Subscriptions for Vol. XXXVI. (10 shillings) should be sent to Mr. Herbert E. Page, "Bertrose," Gellatly Road, New Cross, S.E. 14 [This subscription includes all numbers published from January 15th to December 15th, 1924.]

Non-receipt or errors in the sending of Subscribers' magazines should be notified to Mr. Herbert E. Page, "Bertrose," Gellatly Road, New Cross, S.E. 14

ADVERTISEMENTS of Books and Insects for Sale, or Books wanted will be inserted at a minimum charge of 2s. 6d. (for four lines). Longer Advertisements in proportion. A reduction made for a series Particulars of Mr. Herbert E. Page, "Bertrose," Gellatly Road, New Cross, S.E. 14

Subscribers who change their addresses must report the same to Mr. H. E. PAGE "Bertrose Gellatly Road, New Cross, London, S.E., otherwise their magazines will probably be delayed.

Desiderata.—Foreign examples, local races, vars. and abs. from all parts of the world of any butterflies included in the British list. Setting immaterial; exact data indispensable. Liberal return made.—*W. G. Pether, "Thebna," 4, Willow Bridge Road, London, N. 1.*

Duplicates.—*Cinxia*, *Bellargus*, *Coridon*, *H. Comma*, *Lineola*, *Galathea*, *Moneta*, *Nupta*, and many others. *Desiderata*.—*Blandina*, *Irish Icarus*, *Carmelita*, *Cuculla*, *Gonostigma*, *Ashworthii*, *Templi*, *Australis*, *Undulata*, *Smaragdaria*, *Testacea*.—*W. Gifford Nash, Clivering House, Bedford.*

Duplicates.—*Cinerea* ♀, fine forms, grey, brown and blackish, *Maritima* and vars. *Immorata* and other East Sussex species.

Desiderata.—Pupæ. *Luteago (Barrettii)*, *Caesia*, *Albimacula*, *Alpina*, *Xanthomista*, *Sparganii*, *Dissoluta (Arundineta)*, *Graphalii*. Also imagines of extreme forms *Noctuæ* in fine condition only.—*A. J. Wightman, 35, Morris Road, Lewes.*

N. American Lepidoptera in papers in exchange for ditto from any part of the world. *J. C. Woodward, Training Ship "Cornwall," Purfleet, Essex.*

MEETINGS OF SOCIETIES.

Entomological Society of London.—41, Queen's Gate, South Kensington, S.W. 7. 8 p.m. October 1st, 1924.]

The South London Entomological and Natural History Society, Hibernia Chambers, London Bridge. Second and Fourth Thursdays in the month, at 7 p.m.—*Hon. Sec., Stanley Edwards, 15, St. German's Place, Blackheath, S.E.3.*

The London Natural History Society (the amalgamation of the City of London Entomological and Natural History Society and the North London Natural History Society) now meets in Hall 40, Winchester House, Old Broad Street E.C. 2, first and third Tuesdays in the month, at 6.30 p.m. Visitors welcomed. *Hon. Sec., W. E. GLEGG, 44, Belfast Road, N. 16.*

All MS. and editorial matter should be sent and all proofs returned to HY. J. TURNER, 98, Drakefell Road, New Cross, London, S.E.14

We must earnestly request our correspondents NOT to send us communications IDENTICAL with those they are sending to other magazines.

Lists of DUPLICATES and DESIDERATA should be sent direct to Mr. H. E. Page, Bertrose, Gellatly Road, New Cross, S.E. 14

OVA, LARVÆ, AND PUPÆ.

The Largest Breeder of Lepidoptera in the British Isles is

H. W. HEAD, Entomologist,

BURNISTON, Nr. SEARBOROUGH.

Full List of Ova, Larvae, and Pupae, also Lepidoptera, Apparatus, Cabinets, etc., sent on application.

Many Rare British Species and Good Varieties for Sale.

Thymoplas

MOUNTING OUTFITS.

A simple and permanent method for mounting insects, &c.

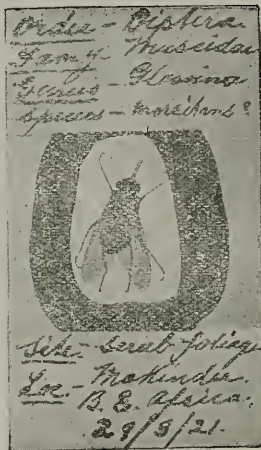
Adapted by the Entomological Dept. Royal College of Science, London.

Price 3/- (postage 6d.) and 6/- (postage 9d.)

HARBUTT'S PLASTICINE, LTD,
56, LUDGATE HILL, E.C.4, and
BATHAMPTON, nr. BATH.

AGENT—

G. A. BENTALL, F.Z.S.,
Naturalist,
392, Strand, W.C.2.



BACK VOLUMES OF

The Entomologist's Record and Journal of Variation.

(Vols. I-XXXV.)

CONTENTS OF Vol. I. (Most important only mentioned.)

GENUS *Acronycta* and its allies.—Variation of *Smerinthus tiliae*, 3 coloured plates—Differentiation of *Melitaea athalia*, *parthenie*, and *aurelia*—The Doubleday collection—Parthenogenesis—Paper on *Taeniocampidae*—Phylloxera—Practical Hints (many)—Parallel Variation in Coleoptera—Origin of *Argyris paphia* var. *valesina*—Work for the Winter—Temperature and Variation—Synonymic notes—Retrospect of a Lepidopterist for 1890—Lifehistories of *Agrotis pyrophila*, *Epinida lichenea*, *Heliothobus hispidus*—Captures at light—Aberdeenshire notes, etc., etc., 360 pp.

To be obtained from—

Mr. H. E. PAGE, "Eertrose," Gellatly Road, New Cross, London, S.E. 14
to whom Cheques and Postal Orders should be made payable

13,520

The Entomologist's Record

AND

Journal of Variation

EDITED BY

RICHARD S. BAGNALL, F.L.S., F.E.S.
 GEORGE T. BETHUNE-BAKER, F.L.S., F.E.S.
 M. BURR, D.Sc., F.L.S., F.Z.S., F.E.S.
 (REV.) C. R. N. BURROWS, F.E.S.
 E. A. COCKAYNE, M.D., F.E.S.

JAS. E. COLLIN, F.E.S.
 H. ST. J. K. DONISTHORPE, F.Z.S., F.E.S.
 JOHN HARTLEY DURRANT, F.E.S.
 ALFRED SICH, F.E.S.
 (REV.) GEORGE WHEELER, M.A., F.E.S.

and

HENRY J. TURNER, F.E.S.,
 Editorial Secretary.

CONTENTS.

	PAGE.
Upon the suggested Relationship of Psychides, <i>Rev. C. R. N. Burrows, F.E.S.</i>	97
New British Cecidomyiidae. 6., <i>R. S. Bagnall, F.E.S., F.L.S., and J. W. Harrison, D.Sc.</i>	99
Digne and the Basses Alpes in July, 1923, <i>Lt. E. B. Ashby, F.E.S.</i>	102
Additions and Corrections to "List of Grypocera and Rhopalocera of Peninsular Italy," <i>Roger Verity, M.D.</i>	106
Nomenclature—1924, <i>H. J. Turner, F.E.S.</i>	111
NOTES ON COLLECTING:—"Tinea vinculella (richardsoni), <i>J.H.D.</i> ; <i>Abraxas grossulariata</i> and parasites in 1924, <i>H.J.T.</i> ; The Pupation of <i>Dictyopteryx bergmanniana, H.J.T.</i> ; <i>Plusia moneta</i> at Amberley, <i>H. T. C. Pepper.</i>	113
CURRENT NOTES AND SHORT NOTICES	115
SOCIETIES:—The South London Entomological Society; The Entomological Society of London	116
SUPP.:—List of Races of the Rhopalocera of Peninsular Italy, <i>Roger Verity, M.D., and</i> <i>Orazio Querci</i>	(33)–(36)
SUPP.:—List of the Macro-lepidoptera of Hampshire and the Isle of Wight, <i>W. Fassnidge,</i> <i>M.A.</i>	(29)–(32)

JULY—AUGUST, 1924.

Price TWO SHILLINGS (NET).

Subscription for Complete Volume, post free
 (Including all DOUBLE NUMBERS, etc.)

TEN SHILLINGS.

TO BE FORWARDED TO

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

"BERTROSE," GELLATLY ROAD, NEW CROSS, S.E.14.

Communications have been received or have been promised from Messrs. H. Donisthorpe, Dr. Verity, J. H. Durrant, Rev. C. R. N. Burrows, Wm. Fassnidge, Orazio Querci, H. J. Turner, Karl Höfer, O. R. Goodman, F.Z.S., F.E.S., Lieut. E. B. Ashby, F.E.S., with Reports of Societies and Reviews.

WATKINS & DONCASTER

(ESTABLISHED 1879)

36, Strand, London, W.C.2.

Telephone: GERRARD 9451.

:: Manufacturers and Suppliers of ::
Natural History Requisites of all Kinds.

Cabinets. Best quality and finish. All sizes at lowest prices on view at above address.

Lepidoptera. Large stocks kept of British Palæarctic and Exotic Species. Lists on application.

Bird's Eggs. Large selection of British and European Eggs, singles and in sets with data, always on hand.

Books. A varied and extensive stock on Entomology and all Branches of Natural History.

GENERAL CATALOGUE SENT POST FREE.

ENTOMOLOGICAL NEWS.

An illustrated magazine, published monthly—except August and September—devoted to the study of **INSECT LIFE**. It contains a list of the titles of the current Literature on American Entomology, articles by the leading authorities in the United States and Canada, and is a necessary journal of reference for working entomologists. Valuable information for economic and systematic students.

Annual subscription price \$2.50. Foreign (except Canadian) subscriptions \$2.70. Single copies 30. cents. Address

ENTOMOLOGICAL NEWS, 1900, Race Street, Philadelphia, Pa.

Bexley]

L. W. NEWMAN

[Kent

Has for sale a superb stock of 1920 specimens in fine condition, including Varleyata; Bicuspis; Pendularia var. Subroseata; Melanic forms Lariciata, Consortaria, Consonaria, Abietaria; Irish forms Aurinia and Napi, fine vars. Tiliae, Yellow Dominula, etc., etc. Quotations and Insects sent on approval with pleasure.

Also a huge stock of fine PUPÆ and OVA.

Write for latest price lists.

Relaxing Tins are now 4/- small and 6/- large, pos free **Re-fills, 2/3** small, 3/3 large, post free.

Upon the suggested Relationships of Psychides.

(Continued from page 85.)

By REV. C. R. N. BURROWS, F.E.S.

I may perhaps, as I have threshed out all that I can find to say upon the subject of this paper, be allowed to add a few notes about my more recent experiences in attempting to rear some of the larger Psychides.

I must confess that I have found the work fairly heartbreaking. Evidently ignorance of the attention required, climatic conditions, or resentment on the part of the captives, makes the rearing of these insects particularly difficult. On two occasions Whittle handed to me cases which he had found in Britain. These produced nothing.

The same fate has overtaken almost every individual which has reached my hands. I have often found, upon carefully opening a case (which has only been done when hope had been abandoned), a living larva, but all attempts to persuade it to eat, although Psychides are reputed to be nearly omnivorous, have proved fruitless.

My last experience has been almost equally disappointing. Last autumn I received about a dozen cases from Dr. P. A. Buxton, which he had collected in Palestine, with the warning that the natives declared they would produce nothing. Only one of these has at all rewarded my pains, and that but partially. Having lost a consignment from Tunis (for which I have to thank M. Charles Dumont), by leaving them out of doors during the winter (lest they should get dry, or hungry, in doors), I kept these Palestine cases, during the past winter in my study, and duly watered them from time to time.

Only one of these has ever shown life since its arrival, although such cases as I have been led to open, have usually contained a living larva. This one specimen has, however, made up in interest, for the inertness of its companions. It alone "opened its door." No other has exhibited the smallest curiosity as to its whereabouts, nor trace of hunger. The history of this individual seems to be worth recording.

On September 14th, 1923, Mr. H. J. Turner being with me, we noticed that a pupa was forcing its head parts from the free extremity of the case. It was then of a pale honey-colour and although I ought to have been able to decide upon its sex, I found it difficult to make up my mind as to whether I detected more detail than some Psychid female pupae show. Its transparency made it difficult to examine, and the slightest disturbance sent it back at once out of sight. It was then evidently not sufficiently developed to be on the point of emergence. I watched it carefully day by day, making notes of its behaviour. Its habit proved to be, on every fine day, to protrude as far as the thoracic segments, every morning, until noon, when it always withdrew for the rest of the day. On dull days it did not appear, and sometimes it even seemed to close its door, although that would seem a difficult operation for a pupa to perform.

This performance continued until October 19th, when it emerged too far, and consequently fell on to earth. Seeing that it was alive and active I carefully replaced it in its case, but it fell again on November 3rd. It continued to fall out, more and more frequently, and to be replaced, until November 18th, when examination proved

JULY-AUGUST, 1924.

that life was extinct. It had by this time assumed a dark chestnut colour, and the imaginal organs of the male were plainly visible.

Having assured myself that there was no remaining hope of rearing the insect, I took advantage of Mr. Pierce's next visit to mount the remains. It proved to be perfectly developed. This development was, I feel quite certain, completed after its first appearance outside the case. I secured therefore from this specimen perfect preparations of all parts, except the wings, which of course, never expanded. This was my sole success.

Some time ago I had a similar successful experiment. I managed to rescue from a purchased case of *Amicta quadrangularis*, a dead male pupa, which supplied me with a perfect preparation in the same way. I may add that I have never been able to procure a specimen of this species, which would appear to be common enough in Palestine, in the larval, but very rarely procured in the perfect state, this goes to show that these insects are liable to die when ready to emerge. I have not been able to identify my insect by its wing parts, but by comparison with specimens in my collection, I feel confident in deciding that it belongs to the Genus *Amicta*, and not far removed from, if not identical with, *febretta*.

I have to-day (March 25th), examined the remaining cases from Palestine, which I have stated came to hand in August last, and which have never yet shown a sign of life. The result is this.—A case of *Amicta quadrangularis*, from Wadi Felt, Jericho, which was marked as having spun up for pupation on July 28th, last, is absolutely empty, no trace of larval skin, or indeed of occupation. A second case is also empty, while a third contains the remains of a dead larva. The remaining four each contain a living and active larva (although very emaciated), which obviously resented my intrusion. Every time I have thus opened a case, the tenant has promptly set to work to repair the damage. But these larva have during this long period taken no food of any description.

Another curious habit of these larvae, which may probably indicate a so-far unrecognised habit, consists in the construction of an earthen, or sandy cap upon the end which is usually fixed down at the time for pupation. It appears to me that when this cap is found, it must be an indication that the species does not spin up to a support, but either lies upon the surface of the ground, or else enters some cavity therein. This fact may explain why the cases of some species never appear to be collected, even where an insect may be common.

I think I have already mentioned the ascertained fact, that if a Psychid case be removed from its support before the larva has actually pupated, there is a probability that the insect will not emerge safely.

The reason for this fatality is simply that the larva, having spun itself up, turns round in the case, bringing the head to the free end. If the case be now disturbed, the larva is upset, and returns in order to refix the case. It is said that it rarely, or never, retains sufficient vitality to enable it to carry out this second turn safely. I must in common honesty, however, put on record the fact, that all my four larvae, examined to-day, have their heads directed towards the free end of the case, after having been removed from their original location for at least eight months. There is evidence that these larvae do on

occasions leave their cases. *Luffia lapidella* and *L. ferchaultella*, for instance, object to confinement, and will generally be found wandering about, when the box containing them has been long closed. The larva of the latter species and that of *Narycia (melanella) monilifera*, certainly renew the pattern upon the exterior of the cases with fresh Lichen, *Diplodoma herminata* frequently to add to its "skirt." Those which construct elaborate cases, must emerge almost, if not quite, entirely, in order to fix the large fragments which they use, upon their cases. *Amicta febretha* is the only species which seems to be satisfied to fix fragments by the one extremity alone. I may then add to my previous suggestions, this, that larvae may, and do on occasions, leave their cases empty.

New British Cecidomyiidae 6.

By RICHARD S. BAGNALL, F.R.S.E., F.E.S., F.L.S., and J. W. HESLOP HARRISON, D.Sc., F.R.S.E.

The following is a list of larvæ observed feeding on rusts, mildews, etc., all of which are presumably referable to the genus *Mycodiplosis*.

Mycodiplosis sp.

1. On *Puccinia lamsanae* on *Lampsana communis*; larvae largish, reddish to brick red. Widely distributed.

Mycodiplosis sp.

2. On *Puccinia glechomatidis* on *Glechoma hederacea*; larvae dirty pinkish-salmon.

DEVON, Sidmouth, September, 1920.

Mycodiplosis sp.

3. On mildew (*Peronospora viciae*) on *Lathyrus pratensis*; larvae yellow.

DEVON, Sidmouth, September, 1920.

NORTHUMBERLAND, Seaton Sluice and Stocksfield.

Mycodiplosis sp.

4. On an epiphytic fungus on elm (*Ulmus*); larvae red.

DEVON, Sidmouth, September, 1920.

Mycodiplosis sp.

5. On *Puccinia annularis* on *Teucrium scorodonia*; larvae light to dirty pinkish-yellow.

DEVON, Sidmouth district, September, 1920.

NORTHUMBERLAND, Rothbury, October, 1921.

Mycodiplosis sp.

6. On mildew (*Peronospora myosotidis*) on *Myosotis* sp.; larvae pale creamy yellow to rosy-white, inclined to be translucent.

DEVON, Hartford Woods, near Sidmouth, September, 1920.

NORTHUMBERLAND, Ratcleugh Crag, nr. Alnwick, August, 1922.

Mycodiplosis sp.

7. Feeding on *Uromyces loti* on *Euphorbia*; larvae red, yellowish at ends.

DEVON. Common Torquay district. Sidmouth, on *E. helioscopis*.
SHROPSHIRE, Shrewsbury, October, 1923, on *E. pepelis*.

Mycodiplosis sp.

8. On *Puccinia menthae* on *Mentha*; larvae dirty whitish.

NORTHUMBERLAND, Gosforth Park.

DURHAM, Beamish, Waldridge.

Mycodiplosis sp.

9. On Mildew on *Poterium sanguisorba*.

NORTHUMBERLAND, Riding Mill and Corbridge.

DURHAM, railway banksides, Birtley.

Mycodiplosis sp.

10. On Mildew on *Heracleum*.

(a) larvae dirty white to pale flesh-colour.

DURHAM, near Rowlands Gill. August, 1916, Birtley.

11. (b) larvae yellow to orange-yellow.

NORTHUMBERLAND, Rothbury, October, 1921.

SCOTLAND, Balerno and Dalmeny, September, 1922.

Mycodiplosis sp.

12. On Mildew on Dandelion; larvae dirty white.

DURHAM, near Rowlands Gill, August, 1918.

NORTHUMBERLAND, Stocksfield, July, 1922. The Sneap.

Mycodiplosis sp.

13. On Mildew (*Bremia lactucae*) on *Lampsana communis*; larvae amber yellow to lemon yellow.

Apparently common and widely distributed.

Mycodiplosis sp.

14. On Mildew (*Peronospora sordida*) on leaves of *Verbascum*; larvae orange-red.

DEVON, Sidmouth, September, 1920.

Mycodiplosis sp.

15. With above; larvae larger, light to lemon yellow.

DEVON, Sidmouth, September, 1920.

Mycodiplosis sp.

16. On Mildew (*Bremia lactucae*) on *Sonchus*; larvae largish, yellow.

DEVON, Sidmouth, September, 1920.

NORTHUMBERLAND, Staward.

Mycodiplosis sp.

17. On Mildew (*Peronospora lamii*) on *Stachys palustris*; larvae minute, pale lemon-yellow.

DEVON, Sidmouth, September, 1920.

Mycodiplosis sp.

18. On *Puccinia violae* on violet; larvae pinkish yellow.

DEVON, Sidmouth, September, 1920.

Mycodiplosis sp.

19. On *Puccinia menthae* on *Origanum*; larvae pale flesh colour.

DEVON, Branscombe, September, 1920.

Mycodiplosis sp.

20. On *Puccinia malvacearum* on *Malva*; larvae rose-red, small example yellow orange.

DEVON, Sidmouth, September, 1920.

Mycodiplosis sp.

21. On *Puccinia schroeteriana* on *Serratula*; larvae orange-red (J. E. Plender and R. S. Bagnall).

KENT, Tunbridge Wells, September, 1920.

Mycodiplosis sp.

22. On yellow fungus (*Melampsora*) on leaves of *Salix caprea*.

KENT, Tunbridge Wells, September, 1920.

Mycodiplosis sp.

23. On *Phragmidium rubi*, on bramble; larvae red.

KENT, Tunbridge Wells, September, 1920.

Mycodiplosis sp.

24. On yellow fungus (*Melampsora pinitorqua*) on aspen leaves; larvae orange-red to red.

KENT, Tunbridge Wells, September, 1920.

Mycodiplosis sp.

25. On yellow fungus, on birch leaves; larvae orange-red to red.

DURHAM, Beamish.

KENT, Tunbridge Wells, September, 1920.

Mycodiplosis sp.

26. On *Puccinia coronata* on *Holcus lanatus*; larvae rose-red.

KENT, Tunbridge Wells, September, 1920.

Mycodiplosis sp.

27. On *Puccinia hieracii* on *Hieracium* sp.; larvae orange-red to reddish.

KENT, Tunbridge Wells, September, 1920.

DURHAM, very common at Chopwell on *H. murorum*.

Mycodiplosis, sp.

28. On *Puccinia arenariae* on *Stellaria nemorum*.
SCOTLAND, near Edinburgh, September, 1921.

Mycodiplosis sp.

29. On an epiphytic fungus (? mildew) on *Convolvulus*; larvae pale-white to palest lemon-white.

Mycodiplosis sp.

30. On *Puccinia lolii* on *Rhannus cartharticus*.
WESTMORLAND, Witherslack.

Mycodiplosis sp.

31. On Mildew on *Aegopodium*; larva pinkish-red to brick-red.
NORTHUMBERLAND, Stocksfield, July, 1922.

Mycodiplosis sp.

32. On *Phragmidium* on nettle; larvae rusty-red.
NORTHUMBERLAND, North Shields, Stocksfield.

Mycodiplosis sp.

33. On *Puccinia* on betony (*Stachys betonica*).
YORKS, Saltersgate, June, 1922.

Mycodiplosis sp.

34. On an undetermined rust on *Euonymus europaeus*; larvae salmon-red.
WESTMORLAND, Witherslack, June, 1922.

Mycodiplosis sp.

35. On *Puccinia absinthii* on *Artemisia vulgaris*; larvae red.
NORTHUMBERLAND, Seaton Sluice, August, 1921.

Mycodiplosis sp.

36. On mildew (*Podosphaera oxyacanthae*) on stem of *Spiraea ulmaria*; larvae yellow-orange.
SCOTLAND, Balerno, September, 1922.
NORTHUMBERLAND, Wylam-on-Tyne, September, 1922.

Mycodiplosis sp.

37. On mildew (*Podosphaera* sp.) on *Geum urbanum*; orange-yellow larva.
SCOTLAND, Dalmeny, September, 1922.

Digne and the Basses Alpes in July, 1923.

By Lt. E. B. ASHBY, F.E.S. and memb. Soc. ent. Fr.

This year I left England with my friends Mr. F. T. Gilliat and the Rev. S. W. E. Gilliat on July 5th, and travelling via Paris and Grenoble we reached Clelles-Mens in Dauphiny on the morning of July 6th.

We collected here until 3 p.m. that day and took *Strymon ilicis*, *Melitaea aethalia*, *Plebeius argyrognomon* (*argus*), *Pararge maera* ♀, one *Adopaea lineola*, *Coenonympha arcania*, and *Plebeius medon* (*astrarche*). I saw also one or two quite fresh *Heodes virgaureae* and took the "burnets" *Zygaena filipendulae* and *Z. achilleae* with *Rhodostrophia vibicaria* ab. *strigata*, Stdgr., in which the bands are represented by lines only, with the Hymenoptera *Sphex viatica*, *Andrena hattorfiana*, etc., the Coleoptera *Clythra laeviuscula*, *Cryptocephalus sericeus* and *Podabrus alpinus*, and a Dipteron *Tabanus quatuor-notatus*. The Mt. Aiguille is the outstanding feature seen from Clelles-Mens station and the wonderful viaducts of the P.L.M. railway near here are triumphs of engineering. We had a pleasant luncheon on the verandah of the Hotel Ferat, now kept by the daughter of the old lady who kept it on the occasion of my last visit in 1914, and in the evening reached our destination, the Hotel Boyer-Mistre at Digne. Whilst waiting at S. Auban, Mr. F. T. Gilliat found a larva of *Papilio podalirius* on an almond tree on the station platform.

There is not much fear of oversleeping at Digne for the Boyer-Mistre overlooks the market square, and people are early about. The morning of July 7th, was fine and we were soon out on the Dourbes road by way of the Cathedral and the Rue Mère de Dieu. My friends collected along this road while I ascended to the La Collette by the Petit Vallon which leads up to the left and passes a small barn. On the top I found the males of *Polyommatus meleager* just emerging, whilst *Gonepteryx cleopatra* and *Papilio alexanor* swung about the steep slopes of the hillsides. The usual abundance of *Satyrus hermione* and *S. circe* were around the tree trunks with *Coenonympha dorus* everywhere in good condition. On a high ridge I took a freshly emerged specimen of the Arctiid *Rhyparia purpurata*, and on the way back, Mr. F. T. Gilliat found a larva of *Deilephila* (*H les*) *enphorbiae*, on the spurge, which pupated in a few days and produced a fine female on September 14th, after reaching home. A specimen of the form ab. *pallida* of *Coscinia striata*, in which the forewings are wholly without the stripes was taken, and the Orthopteron, *Stanoederus scalaris*.

On July 8th, we walked up to the Eaux Chaudes gorge past the Baths and there found *Polyommatus* (*Hirsutina*) *admetus* race *ripartii*, on the bottoms of the streams, just emerging. The usual species of the "fritillaries" were on the wing and in ascending high up the cross gorge I managed to take eight *P. alexanor* in good condition out of about twenty seen. Near the Baths I got a pair of the dragon-fly *Orthetrum caerulescens*, in *côp* in the early morning, and on the little road to the left of the Baths the Hymenopteron *Sphex melanaria* was in some number. A male of the Orthopteron *Barbitistes berengueri*, was taken.

We spent July 9th and 10th on and about La Colette. Males of *Parnassius apollo* and of *P. meleager* were now getting common. The Rev. S. W. E. Gilliat took a female *P. alexanor* on the bridge by the oetroi, and Mr. F. T. Gilliat took a fine female of *Lacosopsis roboris*, near the Petit Vallon. Males and especially females of *Strymon spinii* were now in fine condition. Owing no doubt to the prolonged cold period experienced in Western Europe this season many of the usual June species were still quite fresh. *Satyrus cordula* was plentiful; *Polyommatus escheri* and *P. hylas* were both worth catching, the former the

much more plentiful. Thunderstorms were about but up to now were no hindrance to our collecting.

On July 11th, we got to the Eaux Chaudes Torrent and the cross gorge by 8.30 a.m. and ascended the latter for about a mile and a half. *P. alexanor* was flying in some numbers and about a dozen were secured, chiefly males. I took a pair *in cop* sitting on lavender. We got a fair number of *Heodes* (*Lowia*) *alciphron* race *gordius*, the males still quite good. A dragon-fly *Cordulegaster annulatus* occurred near the stream of the gorge, and a fresh *Brenthis daphne*. *S. spini* and *S. ilicis*, were quite swarming on several large clumps of white melilot and one specimen of *S. w-album*. I was fortunate to secure a fine specimen of *Libythea celtis* on a bush not far from the last captures. The tall clumps of white melilot were very attractive to Hymenoptera, among which I got several more specimens of *Sphex melanaria*.

June 12th found us again on the Dourbes road around the base of La Collette and up the Petit Vallon. Mr. F. T. Gilliat took a fine specimen of the Mantid, *Empusa egena*, whilst it was just finishing a meal on a *Melitaea didyma*. Another ♂ *M. didyma* came up and had a sniff around, but finding the situation somewhat unpleasant, cleared off. As I passed the octroi-office I found a specimen of the S. European form of *Eutricha* (*Gastropacha*) *quercifolia* race *ulmifolia*, at rest on the wall. The Rev. S. W. Gilliat found a similar specimen on July 19th.

July 13th. The sun was obscured most of the day but the heat was great. I went along the bed of the Torrent from the octroi bridge to the Baths to hunt for dragonflies. They were quite numerous on the many patches of reeds along the sides of the stream which feed the main torrent. *Orthetrum caeruleum*, *Calopteryx splendens* and *C. haemorrhoidalis*, were all abundant of both sexes, with *Onychogomphus forcipatus*. I saw no *Aeschna* at Digne. The flowers of the white melilot, which grows to a great height in several places, were generally crowded with insects and I took a number of Hymenoptera around them. *P. admetus* race *ripartii*, were now emerging in good numbers along the river bed. My friends brought me from the skirts of La Collette on the Brusquet road the green Orthopteron *Barbitistes serricauda*.

July 14th. The National Fête day in France. We celebrated this at the Eaux Chaudes gorge as far away from guns and the many other noises accompanying the festivities, as we could. All Haute Provence seemed to have swarmed into Digne for the celebration of this day and the next. Along the bed of the stream *P. admetus* was in increasing numbers, both above and below the Thermal Etablissement which has recently been modernised and was reopened on June 1st. Mr. F. T. Gilliat took a fine ab. *midas*, of the *gordius* race of *H. alciphron* in the cross gorge and another nearly full fed larva of *H. euphorbiae*, which after a walk around the Hotel obliging pupated, subsequently producing a fine male at Hounslow on October 3rd. The long reeds by the water-wheel of the Etablissement Thermal are an excellent ground for dragon-flies which are more easily obtained than in the hot muddy river-bed.

July 15th. To-day was Sunday and we visited the museum in the morning. I much regretted to find that the famous Duponchel collection is in a much worse state than when I saw it last in 1914 owing to its continued utter neglect in the past.

July 16th. A fine male of *Satyrus idia* was taken by Mr. F. T. Gilliat at the flowers of traveller's joy on the Dourbes road; the first we had seen.

On July 17th, I took the first train to Thoréme-Haute on the Sud de France line, and arrived there at 8.23 a.m. From there I took the autobus for Colmars, which I reached at midday for déjeuner at the Hôtel de France. As the autobus did not leave Thoréme until after 10 a.m., I walked on for about a mile until I came to a very likely looking field on the left of the road just beyond a wood-cutting yard. Here I caught a fine series of *H. alciphron* race *gordius*, of both sexes, a *P. machaon*, just emerging and the Zygaenids, *Z. achilleae*, *Z. carniolica*, *Z. fausta*, race *niceae* and *Z. transalpina*. After déjeuner at Colmars I walked from thence to Allos sending my portmanteau on in advance by the autobus. I was much disappointed with the results which produced only *Limenitis rivularis* (*camilla*), a good ♂ *Aporia crataegi*, the "blues" *P. damon*, *P. icarus*, *Plebeius argyrognomon* (*argus*) and the "skippers" *Thymelicus acteon*, *Hesperia alveus* and *H. sao*.

Parnassius apollo and *Papilio alexanor*, were also seen. Just before reaching Allos on the right of the road by a small stream I took four specimens of the dragon-fly *Agrion mercuriale*, for the first time. I put up for the night at the Auberge Pascal, Allos.

July 18th. I left Allos this morning before 7 a.m., and carrying two knapsacks and a camera reached the Lac D'Allos by the only mule track, and not too fatigued before midday, collecting all the way up. I had ordered a bed at the Lake-side Chalet by telephone from Allos post office the previous evening. If one wishes to stay up at the Lake for any length of time you can send up your luggage by mule, 20 francs each way. The first sight of the lake is lovely, blue tranquil water, one or two fishing boats, two small islands, and the two or three little chalets, man's only habitation in sight. The frowning mountains marked with snow around, make this place worth twice the grind up from Allos. On the way up to the lake I took *Coenonympha iphis*, *C. arcania* var. *darwiniana*, *Plebeius argus* (*aegon*), *Cupido minimus*, *Erebia euryle*, *S. ilicis* ab. *cerri*, *E. stygne* and the "burnet" *Z. achilleae*; several interesting Diptera including *Tabanus bovinus*, *Ocyptera bicolor*, *Volucella pellucens*, *Chrysotoxum cautum*, *Cyrtopogon ruficornis*, *Empis tessellata* and *Chilosia variabilis*; the Hymenoptera included *Chalicodoma muraria* and *Allantus arcuatus*; and the Hemipteron *Reduvius personatus*. I saw numbers of beautiful flowers on the way up, perhaps the deep blue of the Alpine gentians being the most beautiful. There is one point in the path nearly halfway where it is easy to miss the track, and I did so at first and lost half an hour over it in the hot sun. From Allos you must follow the river and the telephone posts generally speaking all the way. But at one point you must cross the river by a little wooden bridge and take the path to the right of the river, which path at first leads through some fine woods apparently in a wrong direction and then curves back sharply in the proper direction above the left bank of the river and leading on uphill. There is no signpost, but if the "voyageur" is not sure what I indicate, he can ask at the farmhouse above the river on the left hand of it before crossing the said bridge. The rest of the route presents no difficulty.

In the afternoon I took a mile or so walk around the Lake, which after Lac D'Ancecy is perhaps the most beautiful Lake in France.

Unfortunately the sun did not shine strongly and I got only one *E. stygne* ♂, one *V. alecto* ab. *pluto* ♂, one *Polyommatus (Aricia) eumedon* ♀, one "skipper" *H. cacialiae*, a couple of beetles, and the Geometrid *Pygmaena fusca*, which was very abundant, with a specimen of each of *Crambus perlellus*, *Acidalia flaveolaria* and *Venilia macularia*. Just as I had reached the Chalet again a terrific hailstorm came on and I took refuge in an outhouse with sheep, poultry, and rabbits, all of whom appeared very fed up with the weather. Storm after storm succeeded accompanied by thunder and heavy rain and I turned in early. On the whole it had been a better day at the Lac for a Botanist than for an Entomologist.

(To be continued.)

Additions and Corrections to "List of Grypocera and Rhopalocera of Peninsular Italy."

Published in *Ent. Rec.*, Vol. XXXV and XXXVI.

By ROGER VERITY, M.D.

Page 3: *Erynnis alceae*, Esp.—Having collected more material than had hitherto been available, we have been able to work out more accurately the variations of this species. In Sicily and in Africa, there exists a peculiar form of very small size, of a clear and very warm fulvous and with dark spots very limited in extent. This is quite constant and racial during the warmer months and to it should be restricted Zeller's name of *australis*. Its first generation differs from nymotypical *alceae* by its smaller size, warmer hue, which is dark brown rather than grey, with a slightly fulvous sheen, and by the dark spotting standing out less on ground colour; I should distinguish it by the name of **praeaustralis**. "Types" of April and May from Monreale, 800m., near Palermo. In Central Italy and probably in the the whole of the peninsula, save Southern Calabria, a transitional race is found and true *australis* does not exist, except perhaps as a rare extreme individual variation. The first generation differs quite constantly from the others, contrary to what we thought, by its cold grey tone, with no trace of fulvous and by its bluish sheen on both surfaces; it is thus quite similar to nymotypical *alceae* of Central Europe. The second generation of June and July, in Tuscany, comes nearest to *australis* by its warm fulvous tone and sheen and clear underside, but it is much larger and it has larger and darker spots: **magnaustralis**. The third, of August and September, is smaller and darker than the latter, with a strong mixture of black scaling on both surfaces: **griseofulva**. The paragraph on this species should be modified as follows:—

(a) race *australis*, Zeller.—I. gen. *praeaustralis*, Vrtv.; II. and III., gen. *australis*, Z.—Southern Calabria.

(b) race *magnaustralis*, Vrtv.—I. gen. *alceae*, Esp.; II. gen. *magnaustralis*, Vrtv.; III. gen. *griseofulva*, Vrtv.—Central and probably the whole of P. It., up to 1300 m.

Page 3: *E. altheae*, Hb.—II. gen. **fulvipinnulis**, mihi, is the name by which I propose distinguishing the second generation of June from Tuscany, restricting my name of *australisformis* to the third, because the former differs from the latter by the bright fulvous tinge

of the tuft of hair on the underside of the forewing of the male, which is more or less black in the other generations; it is also rather lighter in tone generally on that surface.

Page 4: *Hesperia armoricanus*, Obth., II. gen. **tersa**, mihi, and *H. mopordi*, Rbr., II. gen. **tersior**, mihi.: In 1923, the Quercis collected in the narrow gorges of the Camaione Valley (prov. of Lucca). The sun only beats there during four or five hours and the vegetation never gets parched. The result is that butterflies can go on feeding and emerging all through the summer heat in much larger numbers than is usual in this region and no generations get suppressed. Thus a second generation was detected in these two *Hesperiae*, emerging from July 1st to 18th, whilst the third began about the middle of August. In both species, but more distinctly in *armoricanus*, the former differed from the latter quite constantly by the perfectly clear fulvous tinge of the underside of the hindwings, which in the latter is usually more or less mixed with black scaling. I possess a similar series of *tersa* from Mt. Conca, 400 m, near Florence, of July 5th to August 10th. Instead, in the Pian di Mugnone the II. g. is only represented by a few sporadic individuals in June, and we had, in consequence, never suspected its existence; the III. g. emerges there from the first days of August, and goes on all through September; at the end of October a few individuals of a fourth partial generation appear again in favourable years; these resemble the spring ones.

Page 5: *Urbicola comma*, Z.—Race *apennina*, Rost., with features on the whole quite similar to those of the "typical" series collected by Querci just under the village of Vallerotonda, 500 m, in the prov. of Caserta, is widespread all over Central Italy. I have, however, found two races which differ strikingly from that usual aspect in exactly opposite directions. One I have collected at the Abetone Pass, at 1800 m., on the northern boundary of Tuscany, on very arid, stony grounds. What characterises it is that all the black markings of the females are replaced by a golden chestnut of a very pale tone, giving the insect a washed out appearance; the little quadrate spaces do not tend at all to white, but are all bright yellow; the underside of hindwings is also unusually bright yellow, with much less green powdering than is usual in that sex of *apennina*, although in the latter it is already much reduced as compared to other races. The males are rather small and with dark pattern, rather limited in extent. The other race I have discovered on the coast, first at Pertusola, on the Gulf of Spezia, and then at Quercianella, near Leghorn. Its aspect must be due to the moisture of sea-air, because in both cases it was flying only a few hundred yards from the shore, but in the first it was on a swampy spot and in the second on an extremely parched one. At first sight, it recalls the largest and finest *alpina* from the Alps, by its large size, broad black patch at the base of the forewing on the underside and extensive and dark patterns in both sexes. The tone of black, however, is not as deep and the quadrate spaces are entirely fulvous on the upper surface of the female and yellow on the underside of the male; in both sexes they are very much smaller, although they are larger than in most *apennina*; the green scaling on the underside is also of a much brighter yellowish tinge and usually with no black mixture. The Abetone race I propose calling **aurata**, the coast-race **orae**. There is a certain degree of parallelism between

the latter and race *flava*, Tutt, from South Tyrol, because they are both transitional between *alpina* and *apennina*, but *flava* stands considerably nearer to *alpina* by its darker markings and whitish spaces on the upper side of the female and by their larger size in both sexes and surfaces; it is also much smaller than *orae*. Race *aurata* is the culminating grade along the *apennina* line of variation.

Page 6: *Lowëia dorilis*, Hüfn.—There are two extreme forms of underside variation on both wings of the male and on the hindwing of the female: in one the ground-colour is of a cold white tinge, suffused more or less abundantly with grey, and there is a suffusion of bluish scales at the base; in the other the ground colour is of a clear, bright sulphur-yellow colour, and there is no trace of blue at the base; the description of the underside of *phocas*, Rott., seems to apply to the first; that of *circe*, Schiff., to the second. In Central Europe, as far as I can make out from my specimens from Germany and from Vienna, the two forms occur in both generations. In a large series of May from Vendée, in N.-W. of France, the males belong nearly exclusively to the first, and the females all belong to the second. August males from the same locality are highly characteristic of the second, so that in this sex, seasonal dimorphism exists perfectly. Race *italorum*, Vrtý., which is well characterised in all generations by its prominent premarginal lunules on both surfaces of the male, does not vary geographically in the least from the Prealps of Northern Italy to Calabria, but the first generation differs from the two others more constantly and markedly than it does in Central Europe, because the underside is of a clearer white than is usual there, rarely sprinkled slightly with grey, and the blue basal suffusion is extensive and bright. As my original description of *italorum* applies to the summer underside, I now distinguish from it the spring generation by the name of **italaveris**, taking as "typical" my specimens of the end of April and beginning of May from the Pian di Mugnone, near Florence.

Page 6: *Lycaena arion*, L.—In the Sibillini Mts., in the Marche, at about 1200 m., in alpine surroundings, there exists a distinct mountain race allied to *punctifera*, Grundl., which is widespread in Central Italy. The former is constantly smaller and the spots are reduced in extent on both surfaces; most individuals also have a broader marginal black band, and the tone of the blue gives the impression of being deeper, because it is mixed more or less abundantly with black scales; when this character is pronounced, also the underside is of a much darker grey than is ever seen in pure race *punctifera*, but some individuals do not differ at all from the latter on either surface and only do so by their small size. Wheeler reports in *Ent. Rec.*, XXII., p. 281, that at Palena and Roccaraso, at about 4,000 ft. in the Abruzzi, the specimens are rather small and dark, but not approaching the blackness of var. *obscura*. This is evidently the same race as my series from the Sibillini. Tutt remarks in *Brit. Butts.*, IV. p. 309, that they are no doubt to be referred to ab. *cotswoldensis*, le Chamb., described as an individual form from the Cotswold Hills in England, because he maintains that no real geographical races are produced by *arion* in Europe and that exactly the same forms are found everywhere simply varying in number according to localities; he concludes that races must be called by the name of the prevailing form. I fully agree he is right to a certain extent in this remark, when *arion* is compared

with most other species, but I cannot bring myself to label with the same name, my dark blue English specimens and the whole of the Sibillini Mts. race, simply because many individuals of the latter point to this character, for which the name was created. To begin with, they do not exhibit it fully and constantly enough and then they always combine it with other features approaching *punctifera*, not found in English specimens. As the race differs on this account from all the other named ones, I think it should be called **australpina**.

Page 8: *Aricia medon*, Hüfn.—It is only lately I have been able to read Zeller's paper on *The Lepidoptera observed during a Journey to Italy*, in *Isis*, 1847, wonderfully in advance of its times by the minuteness and accuracy of its remarks on seasonal and geographical characteristics. To my surprise I found in it at page 155, that the name of *aestiva* had already been introduced by him in connection with this species, whilst Staudinger appropriated it in 1871 (*Horae Soc. Ent., Rossicae*, p. 52 and *Catolog*) and, strange to say, even Tutt, always so exhaustive in collecting bibliographical data, entirely overlooked this fact. This has obliged me to look over Tutt's conclusions as to the use of this and other names, and the summary of the names of races and generations I had drawn out in *Ent. Rec.*, 1920, p. 150. Fortunately, I think no changes of names are necessary, if I am not mistaken in reasoning as follows. Zeller's Latin diagnosis is: var. *aestiva*: *alis omnibus subtus lutescentibus (specimina, Sicila, Ital., Asiae Min)*. He then says the second generation began on June 20th, when he found a specimen on the Etna, and went on through July and August, when he collected a male at Camaldoli, near Naples, and one in Rome. He describes them as follows: "This II. gen. is to be distinguished by the more pronounced tone of red and more marked rows of spots and also by the brighter, light, yellowish-brown colour of the underside"; he then gives an elaborate description of the fringes. Evidently the description, the localities and the dates are all very inclusive and embrace all the forms subsequently described in the summer generations. Bellier, Oberthür and myself have gradually restricted Zeller's name to the form in which the lunules are less pronounced and the underside is less warm in tone, by creating the names of *calida*, *gallica*, and *subcalida* for the other forms. As it happens this has turned out well, because Tutt informs us (*Brit. Butt.*, IV., p. 238) that Zeller's specimens of June 26th and July, from Sicily in the British Museum collection "have very narrow orange bands failing towards the costa." Tutt's and my conclusion, concerning Staudinger's *aestiva*, that this name could perfectly be used for the form most frequent in the second generation of Central Europe, although his "types" were from the mountains of Greece, applies curiously enough to Zeller's *aestiva*, whose "types" were from Sicily and Italy, and I had already referred the entire summer generation of high altitudes in the Sibillini Mts. to that *aestiva* race, so that no alteration need be made, beyond the author and the locality of "types."

Querci in 1923, has made the interesting discovery that in the deep, cold and damp Camaione Valley, mentioned above in connection with the *Hesperiae*, the II. gen. of *A. medon* does not acquire the characteristic fulvous tinge of the underside, but remains entirely of a cold grey, like the I. gen., only differing from it by the total lack of bluish silvery scales at the base. I have called this *infraplumbea* in

Ent. Rec., 1920, p. 149, from specimens found in the Isle of Elba in June, at the beginning of the second generation. In the Camaione, the name must be extended to the entire generation, whilst the third is *subcalida*, Vrtý. In that Valley the second emerged from July 10th to 18th, the third began at the end of August.

Page 8: *Plebeius argus*, L.—In the same Camaione Valley locality a spring emergence of this species was witnessed during the first week of June, in fair numbers. Although much inferior to those of the primary August emergence, they were sufficient to make one believe that it was due to a partial generation. In the *Ent. Rec.* for 1919 I stated, at p. 145, the existence of two generations in Tuscany, but we had never had an occasion to find more than a few sporadic individuals in June, anywhere, so that serious doubts had arisen in our minds as to whether they were not, rather, precocious individuals. To settle the matter definitely breeding of their offsprings will have to be effected, so as to see whether they grow up in time to be on the wing within the same year, joining the August emergence. The race of the Camaione is *apennincola*, Vrtý., and most spring specimens do not seem to me to be in any way different from the summer ones; amongst them one finds, however, some of larger size, with a broader black border above and with a purer white underside, and bolder black and orange spots, which point to the smallest and less highly characterised specimens of race *calabrica*, Trti., (= *calabrica*, Vrtý., *E.R.*, 1919, p. 45). This is the largest and finest form we have observed in Central Italy, and it will be useful to have a name to designate it, as very probably it will be found to predominate in some localities; I propose that of **veris**. The opposite extreme variation has been found in the middle of August at the unusually high altitude of 1700m., in the Sibillini Mts. (Marche), under the Pizzo Tre Vescovi; an altitude at which butterfly-life, in the Apennines, is nearly entirely suppressed by the parchedness and perpetual beating of winds on the summits. This form of *argus*, which predominated there, is small and faded in colour in both sexes, recalling, in the most highly characterised examples, specimens which have been in collections for years exposed to light; in the male the blue is very clear, bright and silvery, and broadly white along the costa of the forewing, and a whitish circle is often seen around the premarginal dots; all the fringes are perfectly white as low down as their point of insertion; the females are of a pale reddish-brown in some cases, or grey in others, and in the latter there may exist a suffusion of greenish silvery scales over part of the wing, and a white circle around the discocellular spot of the forewing and whitish striae on the hindwings (this last form, which is frequent in northern races, has not been found by us in any other locality of Peninsular Italy); fringes much whiter than in other races; the underside of male is pale gray; black spots very small; orange spots small and yellowish; females correspondingly pale. This is evidently a secondary aberrative race of *apennincola*, which is found at lower altitudes in the same mountains. The name of **pallidula** seems appropriate for it.

Page 15: *Leptosia sinapis*, L.—There can be no doubt it is foolish to multiply names to an endless extent for slight variations when they are purely individual, and there is no reason to point them out particularly, except as part of a more general line of variation, but there are cases in which an inconspicuous difference may be very constant and

characteristic in a race or a generation, and I think one should then admit that a name is not wasted on it. Such is the case I found myself confronted by when I tried to name a large series of the second generation of this species, collected by me at Forte dei Marmi, on the Tuscan coast, at the end of June and beginning of July, 1923. Except for two or three specimens, which have a uniformly white underside to the hindwings, all the others, of both sexes, exhibit a light, but distinct, band across them at the back of the discoidal cell and of the second median nervure, and in some cases an indistinct patch near the costal margin, being a vestige of another band, which in form *bivittata* crosses the wing too; they are thus not *diniensis*, B., such as are the great majority of individuals of the third generation of that same locality, and practically of the whole of Peninsular Italy, and such as are also those of the second in other localities. The second generation of Forte dei Marmi, on the other hand, cannot be referred in the least to *bivittata*, Vrtý., because in every way it is much more closely connected with *diniensis*, in the male especially by the pure white underside, which is instead yellow in *bivittata*; by the extent and shape of the apical spot on the upperside it is intermediate between the two, and so it is by the extent of grey suffusion at base of forewings on both surfaces. It is not *mogna*, Vrtý., nor *grandis*, Vrtý., because it is much smaller and different in other ways. I thus find that, if I wish to name that generation, and I do not wish to apply a name inaccurately, there is nothing to be done but to point out these differences, slight as they may be, and to give it a new name, as a grade standing between *diniensis* and *bivittata* in the line of variation of *sinapis* in Western Europe. I call it **monovittata**. With this addition we have the following grades in the extent of the dark markings taken as a whole: *deserticola*, *diniensis*, **monovittata**, *bivittata*, *sinapis*, *transiens*, *lathyri*, *nigrescens*. Each of these prevails in a generation of some race; see *Ent. Rec.*, 1922, p. 90.

Nomenclature—1924.

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

More than ten years ago my summary of what was then being done on this question opened with the words, "Progress is slow; especially is it so in the vexed question of Nomenclature." At that time, in the spring of 1913, the Entomological Society of London appointed a permanent Nomenclature Committee. This committee has met, I believe once, or at any rate has only had one series of points under consideration since their constitution, to the present time. Partly no doubt owing to the adverse political events this inactivity has occurred, but nomenclature has gone on and on the whole time, and many knotty points have arisen, to be shelved again and again. At their meeting in early June the Entomological Society of London once more took up the matter. But perhaps before referring further to their present action, a retrospect of the whole question of concerted action in Nomenclature may be not inappropriate.

In August, 1912, the 2nd International Congress of Entomologists took place at Oxford, at which were present representatives of every important entomological body, not only of the British Empire, but of the world, and one of the Sections of the Congress devoted its energies

to this question of Nomenclature, for which the Executive Committee had made arrangements in accordance with instructions received from the representatives present at the 1st International Congress, held two years before in Brussels. With these arrangements the Entomological Society of London had a great deal to do, and submitted to the Congress a long resolution through Mr. G. T. Bethune-Baker, which resolution was by an amendment directed to be brought before the Executive Committee and a report submitted later in the Congress. This was done, and the following machinery dealing with Nomenclatorial questions was arranged:—

1. An "International Entomological Committee of Nomenclature" was set up, consisting of eight members, of whom Mr. C. G. Gahan was one, and Dr. Karl Jordan was Secretary. If necessity arose additional members could be added with certain reservations.

2. Instructions were given to the International Committee to communicate with the Entomological Societies of the world with a view to the formation of "National Committees on Entomological Nomenclature."

Thus it was that in the late spring of 1913, the Entomological Society of London replied to the communication of the International Committee by electing Messrs. J. H. Durrant, L. B. Prout, and the late C. O. Waterhouse to serve on the National Committee. Mr. G. T. Bethune-Baker was, I believe, put on this committee by the Birmingham Entomological Society, and Dr. Jordan by Tring. Who the other members of this committee were, or if there were any more, I do not know.

However, the Entomological Society of London being the premier society of Great Britain, showed its active interest in this question by appointing a "Permanent Committee of Entomological Nomenclature," composed of five *ex-officio* members and two elected members, with power to add to their number *if necessary*. That is the Committee consisted of Messrs. C. J. Gahan, J. H. Durrant, L. B. Prout, C. O. Waterhouse (now dec.) with the Secretary of the Entomological Soc. (then the Rev. G. Wheeler) all *ex-officio*, the elected members were Mr. G. T. Bethune-Baker and Dr. Karl Jordan (Tring). The view generally accepted all through was that the Committees should be kept small. Subsequently this Permanent Committee was recognised as the National Committee including, as it did, the whole of that Committee. So that so far as Great Britain was concerned there existed only the International and National Committees.

It will be remembered that owing largely to the researches of Dr. Verity, there were numerous nomenclatorial difficulties which required consideration at that time. Some of these were submitted to this National Committee and in 1915, their Report was issued and published with the Transactions of the Entomological Society of that year. Of this Report, a summary was given in this magazine, Vol. XXVIII., p. 146, 1916. Since it was impossible for the International Committee to meet at that period, this Report was not brought before it. However, British entomologists accepted the decisions therein given, and they have since been generally adopted in entomological literature both here and abroad.

Thus when the Council of the Entomological Society in the present year came to consider its obligations, it found that the National Com-

mittee had lost one elected member the late Mr. C. O. Waterhouse and that Dr. Neave had succeeded the Rev. George Wheeler as Secretary of the Society, and thus taken his place on the Committee. The vacancy was filled by the election of Dr. G. A. K. Marshall, and whether wisely, or not, the Committee was enlarged by the additional of Messrs. J. E. Collin, E. E. Green, W. H. Tams and Dr. Waterston. It would have been much better to have kept the Committee at its smaller size, since it is quite possible that other purely entomological societies such as the Lancashire and Cheshire, the Manchester, and the Hampshire Societies may each in future appoint at least one representative, to which they are quite entitled. A small committee can more easily come to a decision than can a large one and it is always possible to call in any number of experts for suggestion and assistance. The decisions arrived at are more likely to be unanimous with a small committee than with an unwieldy one of say a dozen. It would be of much more advantage to be able to consider and impartially weigh the opinions of experts than to give them a chance of fundamentally dividing the committee on their own views which may be strongly *ex parte*.

I will conclude by quoting what I wrote in 1913, that "It is to be hoped that decisions arrived at by this committee will at once be accepted by all those responsible for our entomological literature, whether magazines, or transactions of Societies, or contributed articles, even though the individual writers may personally disagree, for only by this rigid acceptance can any real stability be assured in our scientific names." (Vol. XXV., p. 142.)

NOTES ON COLLECTING, etc.

"*TINEA VINCULELLA (RICHARDSONI)*" VIDE p. 84 ANTE.—This is quite wrong if it applies to British specimens. It should for these read thus: *richardsoni* (= *vinculella*: British specimens erroneously identified), *vinculella*, *richardsoni* and *leopoldella* are distinct species, properly removed from *Tinea* to *Meessia*, Hfm., in *Stdgr.-Rbl. Cat.* But *Meessia* will have to sink under an older (American) genus.—J.H.D.

ABRAXAS GROSSULARIATA AND PARASITES IN 1924.—The larvae of this moth has been super-abundant in my small garden this year and opportunity was taken to feed up the larvae in confinement for varieties. Only two out of several hundred larvae succumbed to the attacks of parasites, which in my experience with this species is most unusual. Some of the larvae were fed and allowed to pupate in a zinc larva-tin with perforated sides. Yesterday when picking up the tin, I found an ichneumon sitting on it with its ovipositor inserted, through the perforated side in a pupa.—This was rather remarkable as the tin was standing in the conservatory among the plants and not at all conspicuous, back away from the door and in the shade.—Hy.J.T., June 19th.

THE PUPATION OF *DICTYOPTERYX BERGMANNIANA*.—It has been generally understood and expressed in our text-books, such for instance, as in Barrett's *Lepidoptera of the British Isles* that the pupa is "Spun up among the twisted rose leaves, or in a fold in the larval habitation," giving one the impression that there was no definite plan in the larval

preparation of the pupal chamber. On June 24th while rambling around Shoreham in Kent, I noticed that many of the wild rose leaves were curiously and regularly folded, and on opening several found that there was contained a pupa. I picked a goodly number of these leaves and found that they were one and all neatly folded up and knit together on a very definite plan, which only varied in a few definite directions. It will be remembered that the normal rose leaf is made up of two pairs of opposite leaflets with a terminal leaflet, five leaflets in all. Every pupal arrangement comprised the terminal leaflet and the two adjoining leaflets, the former being the actual pupal chamber folded length-wise along the midrib, the serrated edges neatly tied together by silk. The adjacent pair of leaflets were attached to this by the proximate half of the undersurface in all cases, the one leaflet on the one side the other on the other side, but from the varied growth of the petioles of the leaflet it was impossible that the side leaflets should coincide with the terminal leaflet hence variation one was that the pupal-chamber leaflet either projected considerably beyond the two adpressed leaflets or was more or less between these two. Variation two was the further use which was made of these two adpressed leaflets. In some cases they too were folded on the midrib as the pupal chamber, in others the outer half was only brought up at an acute angle, in other cases it stood out at right angles to the adpressed portion as wings, while in still another the outer halves were bent back on their midrib until they met undersurface to undersurface below the pupal chamber. In no case was there any folding other than along the midrib, in no case was there any irregular twisting and further in no case had any of the three included leaflets been eaten by the larva. In every case it appeared that the larvae deliberately search for a leaf with the three terminal leaflets absolutely undamaged by having been fed upon. Hence the larva does *not* spin up "among *twisted* rose leaves" and it does *not* spin up "in the larval habitation." I note that Wilkinson in 1859, in "*British Tortrices*," says "When about to assume the pupa state it frequently folds the terminal leaf longitudinally along the midrib, and slightly fastens to it the contiguous leaves; it afterwards goes into pupa at the base of the folded leaf, but before the imago emerges it wriggles to the top and the puparium may be found projecting almost wholly out of the leaf." There is little to criticise in this statement of 60 years ago except to read "leaflets" for "leaves" and "pupal-skin" for "puparium." Does this definite plan always occur? I seem to have an impression from long ago that I have bred the "beastie" from irregular bunches of leaflets of our garden roses. But this is only an impression.—H. J. TURNER. [Kennel *Pal. Tort.* gives *Rhamnus catharticus* as a foodplant. Has anyone taken the larvae on other than rose species?—H.J.T.]

PLUSIA MONETA AT AMBERLEY.—I thought you might be interested to learn that last evening at 10.30 I caught two perfect specimens of "Golden Plusia" hovering over Delphiniums.—H. T. C. PEPPER. Highdown, Amberley, Sussex. June 24th.

[*P. moneta* is now by no means rare in the South and South Central England, especially in the larval stage. We know a Surrey hostelry where the larvae have been found for many years past. Several were seen there a few weeks ago.—H.J.T.]

CURRENT NOTES AND SHORT NOTICES.

A meeting of the Entomological Club was held at 19, Hazlewell Road, Putney Hill, on May 6th, 1924, Mr. H. St. John K. Donisthorpe being the host. Members of the Club present were Prof. E. B. Poulton, F.R.S., Messrs. Robt. Adkin, H. Donisthorpe, and H. Willoughby-Ellis. Visitors present were Messrs. K. G. Blair, Jas. E. Collin, Drs. E. A. Cockayne, Messrs. P. Harwood, W. J. Kaye, F. Laing, Dr. G. H. K. Marshall, F.R.S., Messrs. H. E. Page, W. Rait-Smith and W. Bevan Whitney. Mrs. Donisthorpe welcomed the visitors in the Drawing-room where tea and coffee were served, and afterwards a business meeting was held in Mr. Donisthorpe's study, during which Mr. Jas. E. Collin and Dr. H. Eltringham were elected members of the Club. A letter was read by the Hon. Secretary from Mr. G. T. Porritt accepting Honorary membership of the Club. A resolution that the new Laws of the Club should be printed and distributed was passed. After the meeting Mr. Donisthorpe's interesting collection of British Coleoptera and Myrmecophilous Insects and their life histories were inspected and discussed with great interest; afterwards an excellent supper was served at 8 o'clock and a most enjoyable evening was spent.—H. W. E.

We much regret to hear that the greatest of French entomologist's of the present age has passed away. M. Chas. Oberthür died on June 1st at an advanced age, leaving behind him a monument of records of the entomological work of himself and of many whom he inspired with his own enthusiasm and his own thoroughness in his *Études d'Entomologie* and his *Études de Lépidoptérologie Comparée*. Of the many honours of which he was the recipient, such as Chevalier de la Legion d'honneur, he considered his election as an Honorary Fellow of the Entomological Society to be one of the most valuable.

We have just received an article from the Proceedings of the United States National Museum entitled, "New Species of Moths in the United States National Museum," which contains the descriptions of 150 species new to science. We have made an analysis of this work as follows:—69 descriptions are absolutely *ad hoc*, *i.e.*, there is not the slightest indication to what previously described species the one named is similar, not a single comparison; 78 descriptions remark "near" such a species, "allied" to such a species, etc.; about 6 give a very meagre point of comparison with another species; less than 20 descriptions in any way lead one to infer that more than one example exists; in 44 cases it is the female only which is described; there is not a mention in the whole paper of habits; in only one case is the date of capture added and in one other the local elevation is given. We would like to know whether such "barebones" is of the slightest use to workers without every possible comparison added to the descriptions? Surely by now our modern scientific workers should have got out of the ways of Hewitson and others, who rolled out such "incomparable" descriptions score after score *ad nauseam*. Is not the first act of all of us, upon getting an insect unknown to us, to compare and compare, note all differences, particularly the salient ones? These should assuredly be recorded in full in all modern descriptions to make them of real use and advance our science.

SOCIETIES.

THE SOUTH LONDON ENTOMOLOGICAL SOCIETY.

April 10th.—Mr. J. L. Henderson, of Thornton Heath, was elected a member.

Mr. Sperring exhibited series of *Pieris napi* captured in Aberdeen, and a series bred in the South from ova laid by Aberdeen-caught females, showing that the captured ones were darker. Also a bred series of *Pararge aegeria* from N. Cornwall forced to emerge in February, to compare the effect with another series which emerged in March after only about 14 days forcing.

Mr. H. W. Andrews, British Anthomyiid flies whose larvae are injurious to crops.

Mr. L. W. Newman, a living full fed larva and a living pupa of *Dryas paphia* after about 6 weeks temperature of about 75° F., and pupae of *Melitaea aurinia* from Dorset larvae wild hibernated and now forced.

Mr. Garrett, the rough stick-like chrysalis of the N. American *Papilio philenor*.

Mr. A. W. Buckstone, a garden Anemone flower with a petaloid bract below it.

Capt. Crocker, a very varied series of *Epinephela jurtina* from one field and series of both broods of 1923, *Polyommatus (Agriades) thetis* from Folkestone, 1st brood pale undersides when the temperature was cool, 2nd brood darker (redder) with warmer temperature to compare with the corresponding broods of 1922, when the temperature was much hotter.

April 24th.—Mr. Parker exhibited an example of fasciation in the Daisy (*Bellis perennis*).

Dr. Cockayne, larvae of *Cerastis ligula (spadicea)* on dock; ova laid December to January.

Mr. Dennis, examples of Primrose and Oxlip to show points of difference.

Dr. Baylis read a paper "The Romance of Helminthology," and showed lantern slides.

May 8th.—Mrs. L. Brook, 48, Anerley Park, and Mr. J. W. Cox, 3, Elm Court, Middle Temple, were elected members.

Mr. Dennis exhibited the Mistletoe and called attention to the separate ♂ and ♀ flowers..

Mr. Blair, a living green cockroach, *Panchlora nivea*, found among imported bananas.

Mr. Parker, a living specimen of *Samia cecropia*, a large American Saturniid.

Mr. Edwards, the skin of the Indian python, *P. molarus*, 15 ft. long.

Mr. H. J. Turner, a collection of the smaller species of the genus *Delias (Pieridae)* from New Guinea, Ceram, etc., showing remarkable similarity of pattern on the upperside and brilliant and diverse colouring on the undersides.

Mr. O. R. Goodman, a ♂ Lycaenid butterfly which from its colour and markings appeared to suggest a natural hybrid between *Polyommatus (Agriades) coridon* and *P. hylas*. It was taken at Gavarnie, Pyrenees, where both *P. coridon* and *P. hylas* were flying together.

Subscriptions for Vol. XXXVI. (10 shillings) should be sent to Mr. Herbert E. Page, "Bertrose," Gellatly Road, New Cross, S.E. 14 [This subscription includes all numbers published from January 15th to December 15th, 1924.]

Non-receipt or errors in the sending of Subscribers' magazines should be notified to Mr. Herbert E. Page, "Bertrose," Gellatly Road, New Cross, S.E. 14

ADVERTISEMENTS of Books and Insects for Sale, or Books wanted will be inserted at a minimum charge of 2s. 6d. (for four lines). Longer Advertisements in proportion. A reduction made for a series Particulars of Mr. Herbert E. Page, "Bertrose," Gellatly Road, New Cross, S.E. 14

Subscribers who change their addresses must report the same to Mr. H. E. PAGE "Bertrose Gellatly Road, New Cross, London, S.E., otherwise their magazines will probably be delayed.

Desiderata.—Foreign examples, local races, vars. and abs. from all parts of the world of any butterflies included in the British list. Setting immaterial; exact data indispensable. Liberal return made.—*W. G. Pether*, "Thelma," 4, Willow Bridge Road, London, N. 1.

Duplicates.—*Cinxia*, *Bellargus*, *Coridon*, *H. Comma*, *Lineola*, *Galathea*, *Moneta*, *Nupta*, and many others. *Desiderata*.—*Blandina*, *Irish Icarus*, *Carmelita*, *Cuculla*. *Gonostigma*, *Ashworthii*, *Templi*, *Australis*, *Undulata*, *Smaragdaria*, *Testacea*.—*W. Gifford Nash*, *Clavering House, Bedford*.

Duplicates.—*Cinerea* ♀, fine forms, grey, brown and blackish, *Maritima* and vars. *Immorata* and other East Sussex species.

Desiderata.—Pupæ. *Luteago* (*Barrettii*), *Caesia*, *Albimacula*, *Alpina*, *Xanthomista*, *Sparganii*, *Dissoluta* (*Arundineta*), *Graphalii*. Also imagines of extreme forms *Noctuae* in fine condition only.—*A. J. Wightman*, 35, *Morris Road, Lewes*.

N. American Lepidoptera in papers in exchange for ditto from any part of the world. *J. C. Woodward*, *Training Ship "Cornwall," Purfleet, Essex*.

MEETINGS OF SOCIETIES.

Entomological Society of London.—41, Queen's Gate, South Kensington, S.W. 7. 8 p.m. October 1st, 1924.

The South London Entomological and Natural History Society, *Hibernia Chambers*, London Bridge. Second and Fourth Thursdays in the month, at 7 p.m.—*Hon. Sec.*, *Stanley Edwards*, 15, *St. German's Place, Blackheath, S.E. 3*.

The London Natural History Society (the amalgamation of the City of London Entomological and Natural History Society and the North London Natural History Society) now meets in Hall 40, *Winchester House, Old Broad Street E.C. 2*, first and third Tuesdays in the month, at 6.30 p.m. Visitors welcomed. *Hon. Sec.*, *W. E. Glegg*, 44, *Belfast Road, N. 16*.

All MS. and editorial matter should be sent and all proofs returned to *H. J. Turner*, 98, *Drakefell Road, New Cross, London, S.E. 14*

We must earnestly request our correspondents NOT to send us communications IDENTICAL with those they are sending to other magazines.

Lists of **DUPLICATES** and **DESIDERATA** should be sent direct to *Mr. H. E. Page*, *Bertrose, Gellatly Road, New Cross, S.E. 14*

OVA, LARVÆ, AND PUPÆ.

The Largest Breeder of Lepidoptera in the British Isles is

H. W. HEAD, Entomologist,
BURNISTON, Nr. SCARBOROUGH.

Full List of Ova, Larvæ, and Pupæ, also Lepidoptera, Apparatus, Cabinets,
etc., sent on application.

Many Rare British Species and Good Varieties for Sale.

GREAT REDUCTION IN PRICES.

Cabinets.

Hardwood finished rich mahogany, panelled
or glass doors. Drawers, $17 \times 16 \times 2\frac{1}{4}$ ", on
hidden runners.

Lift-off glazed tops. Camphor cells. Lined cork or peat.

40-drawer, 12/6 per drawer. 20-drawer, 1/- per drawer extra.

Store Boxes.

10×8 13×8 14×10 16×11 17×12
3/11 5/- 6/6 7/9 9/-

G. A. BENTALL, 392, Strand, W.C.2.

IMPORTANT

TO ENTOMOLOGICAL SOCIETIES and MUSEUMS.

BACK VOLUMES OF

The Entomologist's Record and Journal of Variation.

(Vols. I-XXXV.)

CONTENTS OF Vol. I. (Most important only mentioned.)

GENUS *Acronycta* and its allies.—Variation of *Smerinthus tilia*, 3 coloured plates—
Differentiation of *Melitæa athalia*, *parthenie*, and *awelia*—The Doubleday collection—
Parthenogenesis—Paper on *Taeniocampidae*—Phylloxera—Practical Hints (many)—
Parallel Variation in Coleoptera—Origin of *Argymnis paphia* var. *valesina*—Work for the
Winter—Temperature and Variation—Synonymic notes—Retrospect of a Lepidopterist
for 1890—Lifehistories of *Agrotis pyrophila*, *Epanda lichenea*, *Heliothobus hispidus*—
Captures at light—Aberdeenshire notes, etc., etc., 360 pp.

To be obtained from—

Mr. H. E. PAGE, "Bertrose," Gellatly Road, New Cross, London, S.E. 14
to whom Cheques and Postal Orders should be made payable

The Entomologist's Record AND Journal of Variation

EDITED BY

RICHARD S. BAGNALL, F.L.S., F.E.S.
GEORGE T. BETHUNE-BAKER, F.L.S., F.E.S.
M. BURR, D.SC., F.L.S., F.Z.S., F.E.S.
(REV.) C. R. N. BURROWS, F.E.S.
E. A. COCKAYNE, M.D., F.E.S.

JAS. E. COLLIN, F.E.S.
H. ST. J. K. DONISTHORPE, F.Z.S., F.E.S.
JOHN HARTLEY DURRANT, F.E.S.
ALFRED SICH, F.E.S.
(REV.) GEORGE WHEELER, M.A., F.E.S.

and

HENRY J. TURNER, F.E.S.,
Editorial Secretary.

CONTENTS.

	PAGE.
Batrisodes delaportei, Aubé, and B. adnexus, Hampe—two additions to the British List of Coleoptera	117
Taphronychus villifrons, Duf., a Species of Coleoptera new to the British List of Coleoptera, <i>H. Donisthorpe, F.Z.S., F.E.S., etc.</i>	118
The Variation in <i>Larentia (Thera) variata</i> , Schiff., <i>Carl Höfer</i>	119
Notes on the Myrmecophiles found with <i>Acanthomyops brunneus</i> , Latr., in Britain, <i>H. Donisthorpe, F.Z.S., F.E.S., etc.</i>	121
Digne and the Basses Alpes in July, 1923, <i>Lt. E. B. Ashby, F.E.S. (concluded)</i>	122
NOTES ON COLLECTING:—Size of the Generations of <i>L. rivularis</i> in Italy, <i>G.W.</i> ; Scarcity of <i>Lepidoptera</i> , <i>Earl Waldegrave</i>	127
CURRENT NOTES AND SHORT NOTICES	127
SOCIETIES:—The South London Entomological Society; The Entomological Society of London	129
REVIEW:—The Bulletin of the Hill Museum, <i>H.J.T.</i>	131
SUPP.:—List of Races of the Rhopalocera of Peninsular Italy, <i>Roger Verity, M.D., and Orazio Querci</i>	(37)-(40)

SEPTEMBER 15th, 1924.

Price ONE SHILLING (NET).

Subscription for Complete Volume, post free
(Including all DOUBLE NUMBERS, etc.)

TEN SHILLINGS.

TO BE FORWARDED TO

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

"BERTROSE," GELLATLY ROAD, NEW CROSS, S.E.14.

Communications have been received or have been promised from Messrs. H. Donisthorpe, Dr. Verity, J. H. Durrant, Rev. C. R. N. Burrows, Wm. Fassnidge, Orazio Querci, H. J. Turner, Karl Höfer, with Reports of Societies and Reviews.

WATKINS & DONCASTER

(ESTABLISHED 1879)

36, Strand, London, W.C.2.

Telephone: GERRARD 9451.

:: Manufacturers and Suppliers of ::
Natural History Requisites of all Kinds.

Cabinets. Best quality and finish. All sizes at lowest prices on view at above address.

Lepidoptera. Large stocks kept of British Palæarctic and Exotic Species. Lists on application.

Bird's Eggs. Large selection of British and European Eggs, singles and in sets with data, always on hand.

Books. A varied and extensive stock on Entomology and all Branches of Natural History.

GENERAL CATALOGUE SENT POST FREE.

ENTOMOLOGICAL NEWS.

An illustrated magazine, published monthly—except August and September—devoted to the study of **INSECT LIFE**. It contains a list of the titles of the current Literature on American Entomology, articles by the leading authorities in the United States and Canada, and is a necessary journal of reference for working entomologists. Valuable information for economic and systematic students.

Annual subscription price \$2.50. Foreign (except Canadian) subscriptions \$2.70. Single copies 30. cents. Address
ENTOMOLOGICAL NEWS, 1900, Race Street, Philadelphia, Pa.

Bexley]

L. W. NEWMAN

[Kent

Has for sale a superb stock of 1920 specimens in fine condition, including Varleyata; Bicuspis; Pendularia var. Subroseata; Melanic forms Lariciata, Consortaria, Consonaria, Abietaria; Irish forms Aurinia and Napi, fine vars. Tiliae, Yellow Dominula, etc., etc. Quotations and Insects sent on approval with pleasure.

Also a huge stock of fine PUPÆ and OVA.

Write for latest price lists.

Relaxing Tins are now 4/- small and 6/- large, pos free **Re-fills, 2/3** small, 3/3 large, post free.

Batrisodes delaportei, Aubé, and B. adnexus, Hampe—two additions to the British List of Coleoptera.

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

It is with much pleasure that I am able to bring forward these two very fine additions to our list of myrmecophilous Coleoptera. I took them both in nests of *A. (D.) brunneus* in Windsor Forest this year; nor can their capture be said to be only luck, or by chance, as they are both mentioned in the list I published [see *Ent. Record*, **35**, 23 (1923)] of the species found with this ant on the continent. I have been specially working ever since to try and find them in Britain, and the other species enumerated in that list. The following table shows how they may at once be recognised from our third species, *Batrisodes venustus*, Reich:—

- | | | | |
|------|---|--|---------------------------|
| 1. | { | Antennae stout; the middle joints transverse... | <i>delaportei</i> , Aubé. |
| — | { | Antennae more slender; the middle joints not transverse | 2. |
| 2. | { | Shoulders terminating in a small pointed tubercle, or tooth | <i>adnexus</i> , Hampe. |
| (1.) | { | Shoulders rounded, or bluntly angled... | <i>venustus</i> , Reich. |

Batrisodes delaportei, Aubé.—Mon. Psel. in *Mag. Zool.*, **3**, 46 (1833).—*B. delaportei* is a very handsome beetle; it is somewhat larger than the other two, stouter, and with much thicker antennae. The head is entirely dull, and considerably more punctured. It is also a more lethargic beetle, and walks in a slower and more dignified manner. The ♂, as in other species of the genus, has the last two joints of the antennal club considerably enlarged, and with small tooth-like projections on the inner side. The head (as also with the others) is broader than in the ♀, and the raised borders are thicker.

It was first taken in France in rotten wood, in company with “a small brownish ant,” which would of course be *brunneus*.

Habitat: Central Europe (France, Germany, Austria, etc.); widely distributed, but always rare.

Batrisodes adnexus, Hampe. *Wien. Ent. Monatschr.*, **1863**, 285-86.—*B. adnexus* is of the size of *B. venustus*; it is a more slender and much more active insect than *B. delaportei*, and runs very swiftly. The distinctly pointed shoulders will at once separate it from *venustus*; as in the latter species they are rounded, though in some specimens the ♂ shows a blunt angle (in the ♀ *venustus* the shoulders are always quite rounded). In *adnexus* the shoulders always show a distinct small pointed tubercle, or tooth, in both sexes. Also the raised borders of the head are more coarsely punctured, and the space between in the centre of the head is convex. In *venustus* this space is flatter, more shining, more dug out, and the borders are more closely punctured. The head of the ♂ in *adnexus* is armed with a long thin bent horn; which is not present in *venustus*, the forehead of which is only pointed.

Habitat: Central Europe (Austria, Tuscany, France, Greece, and Italy). In company with *brunneus*; always very rare.

Reitter describes this species as being “extremely rare.” Both these two species are, like the rest of the genus, found with ants of the genus *Acanthomyops*, in particular with *A. (D.) brunneus*; and appear to be very rare.

SEPTEMBER, 1924.

Taphrorychus villifrons, Duf., a Species of Coleoptera new to the British List.

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

Taphrorychus villifrons, Duf. Dufour "Expl. vallée d' Ossau, Pau. 1843." *Bull. Soc. Sci. Lett. et Art. Pau.* 91 (1843); (*capronatus*, Perris).

"*B. villifrons*, Duf. Obl., cyl. noirâtre, velu; tête d. male à touffe d. poils gris tr. founie; cors chagr. à ses 2 tiers antér. dépr. et ponct. en arr.; él. à sér. d. p., tronq. en arr., mais inermes; ant. et pat. pâles. Long. 2½m. H. le Chêne—Distinct du *fuscus*, Gyl."

According to Reitter, and others, it is the ♀♀ in *Taphrorychus*, which have the tuft of hairs on the forehead.

T. fuscus, Gyl., is a synonym for our other species, *T. bicolor*, Hbst. Reitter gives the following table to separate the two species:—

- "1. The declivity above finely punctured, without distinct rows of small tubercles, the suture slightly raised, 1-2 striae also generally indicated; in the ♀ with 2-3 striae, above more distinctly punctured, the interstices with traces of rasp-like elevations. 1,6-2,3 mm. (*B. fuscus*, March).

bicolor, Hrbst.

- "1. Declivity of the elytra in ♂ very steeply arched, and the declivous surface flat with rounded border edges, in ♀ more distinctly arched. Elytra at the truncature not distinctly, or extremely finely, punctured, with three rows of very small tubercles. The declivous surface of truncature in ♂ and ♀ equally flatly arched, shining, the suture in ♂ scarcely, in ♀ distinctly tectiformly raised, and the sutural stria shallowly impressed. 1,8-2,3 mm. (*Dryoc. capronatus*, Perris.)

villifrons, Dufour."

T. villifrons, Duf., may be easily recognised by the three rows of little sharp tubercles, which are very distinct, on the declivity of the elytra.

Reitter gives the distribution for this beetle, as Austria, South of France, Italy, and Algiers; and the European Catalogue of Coleoptera, as Central Europe and the Caucasus.

It occurs in and under bark of oak and beech.

On June 17th, 1924, I was at Ruislip (where I went to try for *Cryptocephalus frontalis*; most of my time being spent in beating poplars and willows); when I took a ♂ of this little beetle in the thick bark of a large standing dead oak tree. When set, as I did not recognise it, the insect was put on one side until recently, when I sent it with other beetles to my friend Major Sainte Claire Deville, who returned the specimen to me as *T. villifrons*, Duf. I have since compared my insect with the series of *T. capronatus* and *T. villifrons*, standing under the name of the latter species in the general collection in the South Kensington Museum, with which it well agrees.

A second visit in August failed to produce any further specimens, but I brought home some of the bark of the tree, in which small Scolytid larvae are present, and from these I hope to breed more of the beetle.

I have taken our other species, *T. bicolor*, Hbst., freely, in beech bark in Epping Forest.

The Variation in *Larentia (Thera) variata*, Schiff.

By CARL HÖFER of Klosterneuburg (Vienna).

(Translated by Hy. J. TURNER, F.E.S.)

(Continued from page 90.)

Ab. *stragulata*, Hb.—This interesting form is of striking appearance in itself. It was originally determined by Jacob Hübner as a form of *L. variata*, and in his work it is well figured as fig. 337 from a female specimen. The figure depicts a satin-white ground colour with a suggestion of yellow, and does not, as Treitschke and de la Harpe remark, appear to be polished, but strikes one certainly as a very fresh example. I have now before me two good specimens agreeing with this, a ♂ ex coll. Galvagni, taken at Perchtoldsdorf on September 8th, 1910, and a ♀ ex coll. Priessecker, taken at Rekawinkel, on May 22nd, 1911.

The very distinctive appearance of *stragulata* has naturally misled entomologists, even of considerable repute, to consider it a distinct species.

It will probably be interesting if I here recall to mind what Freyer said about it in his *Neue Beitr. Schm. Kunde*, which appeared in 1833, at Augsburg.

“Herr Hübner and Herr Treitschke have determined this Geometer, which is not rare with us (near Augsburg) as a variety of *L. variata*. I cannot agree with this, the more so, as I have before me now the ♂ corresponding to Hübner's ♀ figure (337) from which I have had made my own figure [plt. 60, fig. 3, *vitiosata*].

“By comparison of captured specimens with specimens of *variata* it is very clearly apparent that the two must be separated, since there is not the slightest trace of the toothed band across the forewing of this insect. The general coloration of the wings is pale yellowish. The forewing having at the base two dark brown, toothed, narrow bands lying close together. A brown round spot extends on the middle of the forewing from the costa as far as the chief vein (median) where it terminates abruptly, and from which there projects a tooth towards the outer margin of the wing. Between this spot and the margin there appears the trace of a dark, indistinct band, showing feebly across the wing. Below the apex of the wing, close on the marginal fringe, and between the veins, there lie three black streaks in a shaded area.

“The underside is uniformly whitish, varying to fawn colour, and on the forewing the marking of the upperside show through slightly.

“*L. variata* has the underside very sharply marked and the bands, especially on the hindwings are quite distinctly developed.”

Further, also de la Harpe in his *Lep. Fauna d. Schweiz*, published in 1853, treated *stragulata* as a distinct species. He writes on it as follows:—

“Rare in the woods around Lausanne; it is difficult to take it in fresh condition. Up to now I have only been able to obtain males. Mlle Bremlé and M. Rothenbach each possess one female (Lah.).

“In spite of the authority of Herrich-Schäffer I cannot admit that *stragulata* is only a variety of *L. variata*. Below are the points of difference which I have noted.

“1. The costa of the forewings is more rounded in *stragulata* than in *L. variata*.

" 2. The commencement of the median band of the forewing shows no projecting angle along the margin of the costa in the former, whereas in the latter there is a very pronounced projection.

" 3. The angle at the centre of the band on the hindwings is more produced in *stragularia*, and the waved band is more distinct on a deeper ground.

" 4. The female of the former is precisely like the male, in the latter it is constantly different from it.

" 5. There exist no individuals transitional between one species and the other. The specimens of *L. variata*, which have a yellowish tinge around the median band, are precisely those which differ the most from *stragularia* by their very pronounced band.

" 6. I have never seen fresh *L. variata* show the grey black tint of the median band of *stragularia*.

" 7. The waved line of *L. variata* has the teeth much more pointed.

" 8. The cellule of the lower wings is longer in *L. variata*.

" Hübner's fig. 337 is too brightly coloured. It is probable that Boisduval had our *stragularia* before him. The synonyms of Freyer, and of Herrich-Schäffer, as well as the figure of Hübner, 380 are uncertain. *Stragulata*, Hüb. (*vitiosata*, Fr.), is found in the Vienna Museum, placed along with *L. fluctuaria*; it is specifically distinct from *L. variata*, while it is not *L. obeliscata* (Mann)."

And later he says:—

" Further specimens, very fresh, taken recently, have only served to prove still more, in my opinion, the validity of the species admitted by Hübner. Not only the coloration and the general shape are constantly different, but the male always similar to the female, which never occurs with *L. variaria*. The waved line in the former always has rounded undulations, while the undulations in the latter are always pointed and much emphasised.

" The specimens of *L. variaria* in which the middle band is cut off in its internal half, are not of the *stragularia* form and remain quite distinct. One cannot say, without being in error, that the fig. 337 of Hübner is ' var. *stragularia*,' as Heydenreich does (*Cat.* 598).

" As regards *obeliscata*, Hb., it ought to remain as a variety of *L. variata*. I have seen several specimens reared by M. Couleren, at La Neuville, and other taken by M. Rothenbach; it is easy to establish a transition between them, from the best marked *L. variata* to *obeliscata*, in which the markings disappear almost entirely in a large suffused band, graduating off at its margin into the ground colour. It appears that *obeliscata* only occurs in Switzerland at the foot of the Jura, and always in company with *L. variata*."

In conclusion I cannot leave without noticing that Treitschke, in his *Nachträge*, which appeared in 1835, places *stragulata* to *fluctuaria* (!) and corrected himself as regard what Freyer had said was his opinion in 1833 (see above).

Treitschke by this admission is obviously very much in error, and one must unwillingly call to mind that the proverb says "Appearances deceive." Moreover, it is further evident that this error of Treitschke's arose either from having too little material or from forming his opinion from a solitary specimen.

(To be continued.)

Notes on the Myrmecophiles found with *Acanthomyops* (*Donistherpea*) *brunneus*, Latr., in Britain.

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

It will be remembered that my friend Dr. N. H. Joy first discovered the tree-ant, *A. (D.) brunneus*, in Britain near Theale, in Berkshire, on January 21st, 1923, and I brought it forward into the British list [Donisthorpe, 1923]. Subsequently, in the same year, he found it inhabiting Windsor Forest; this I also recorded [Donisthorpe, 1924 (a)], and in these two papers I gave an account of the habits of the ant, and a list of the myrmecophiles found with it on the Continent. This year I have devoted a considerable amount of time in hunting for, and investigating, nests of *brunneus* in the latter locality, and carefully studying the guests of this ant.

Although I have been very successful (having added at least three insects to the British list), it has only been by means of extremely hard work, patience, and perseverance. It is not sufficient just to find a tree in which the ant occurs, as perhaps in one day out of a hundred trees examined, in five it may be present, but three or four of these will be quite unworkable, and of the remainder, though apparently suitable, in only one any myrmecophiles may be found, or in none! Another difficulty is that a tree, which is easily worked, will be found to be deserted on the next visit—in fact a very little disturbance of the ants will always cause this—and new trees containing the ant must be hunted for. In this way I have tramped all over the district; I divided it into sections, and must have examined many hundreds of trees in all. It is quite useless to set traps, or pack a tree with grass, etc., as one does with *A. (D.) fuliginosus*; both Joy and I have tried this, but on the next visit both the ants and anything that may have been with them have simply disappeared. The ant also occurs in the Park, but here the trees are too well looked after, the lowest branches and twigs cut off, old decayed trees cut down, and their roots blown up and carted away.

I am hopeful that the following results of my labours are of value as a real addition to the knowledge of our myrmecophilous fauna; and do not merely represent the capture of a few rare species to fill up gaps in a collection.

First to deal with the ant itself, and its connection with other *Formicidae*:—

A. (D.) brunneus is not confined to any particular tree, as I have found it present in oak, elm, ash, beech, poplar, and maple. On two occasions I was fortunate enough to find the winged sexes, *viz.*, on June 14th and June 25th. On the former several ♂♂ and one winged ♀ occurred in cells under the bark of an oak tree; but on the latter date many ♂♂ and a number of winged ♀♀ were running about on the surface of another oak tree, and in the crevices of the bark; some also being present under the bark. The ♂♂ were in a very excited state, running all over the tree, and endeavouring to drag back some of the winged forms beneath the bark. The time was about 12 o'clock noon, "summer time." The marriage flight is recorded for June and July, and Schenck [1852] says it takes place between five o'clock and eight o'clock in the morning. I should judge that on this occasion the sexes were anxious to leave the tree, but were being restrained by the ♀♀;

the time, or temperature, or some other reason best known to themselves, being unsuitable. One ♂ remained for a long time standing motionless on the tree, holding in its jaws a dead dealated ♀, which was hanging down in a vertical position, not touching the tree. Not infrequently little colonies of *Leptothorax nylanderii*, Först., were found inhabiting the same tree in which *brunneus* was present. Their nests consist of little cells in, and under, the bark, and these tiny ants were sometimes walking freely about in the runs of the larger species.

On one occasion I found a mixed colony of *A. (D.) brunneus* and *A. (C.) umbratus* in an ash tree. The *umbratus* ♀ ♀ occurred in the lower part of the tree, but the *brunneus* ♂ ♂ were running all over it, mixing freely with the yellow ants. When examples of both species were placed together in small tubes and boxes, no fighting took place, and the ants were quite friendly together. It would thus appear that an *umbratus* ♀ had founded her colony in a *brunneus* nest at the foot of the tree, in the same way as do *mixtus* and *umbratus* ♀ ♀ in nests of *A. (D.) alienus*, and *A. (D.) niger*!

The food of this ant consists chiefly, no doubt, of the excreta of their large aphides (about which I shall have a good deal to say presently); but I have seen the ♂ ♂ carrying Psocids, and other small insects in their jaws.

We now come to the other inhabitants of the nests of this interesting ant. It must be understood that all the following species were found with *brunneus*; and in Windsor Forest, unless otherwise stated. Those species marked with an asterisk were mentioned by me in the list I gave [1923] of the guests of this ant on the Continent.

(To be continued.)

Digne and the Basses Alpes in July, 1923.

By Lt. E. B. ASHBY, F.E.S., and memb. Soc. ent. Fr.

(Concluded from page 106.)

July 19th. Arising at 6 a.m. and after a few snapshots of the lake bathed in the early morning sunlight, I began to make the descent about 7 a.m. and reached Allos about midday. Below the lake I took two fine specimens of *E. stygne* and one or two moths. On the first meadow that I reached, irrigated by a beautiful overflowing stream, I netted one or two *Brenthis pales* and a grey skipper. Just below the first chalet insects became more abundant and *P. argus (aegon)*, *C. minimus*, and *C. iphis* were swarming. I also took *E. stygne*, *E. oeme* ♂, *E. gorge* ♀, *E. ceto*, *E. mnestra*, and *E. epiphron*. Between this and the bridge over the river, I got some fine Hymenoptera including *Discolia quadripunctata*, *Chalicodonia muraria*, *Ichneumon xanthorius* and *Allantus olivacea*; and the Diptera *Tabanus bovinus*, *Fabricia ferox* and *Syrphus vitripennis*.

By the large meadow just above the bridge, *Argynnis niobe* var. *eris* was flying and *Polygonmatus eros* was taken, while *Colias phicomone* was missed. The Coleoptera I took just here were *Cicindela hybrida*, *Clytus arietis* and *Silpha quadripunctata*. As time was urgent and I had only a few more boxes I pushed on to catch the autobus from Allos, which left about 12.30 for Thorème-Haute. Just before reaching Allos, I met with *Heodes virgaureae*. But I was somewhat

disappointed from the entomological point of view with the results of this toilsome expedition, as I had hoped for a good series of *P. eros* and of *Plebius donzelii* as well as other alpine species. However the trip itself was a most delightful if toilsome experience in so short a time. For those who may visit this spot in future, I advise a day to be given in going from Allos to the lake, if possible, three days spent at and around the lake and a full day for the descent. As insect life is teeming especially between Allos and the lake plenty of boxes or envelopes are needed, and as one can get nothing by the way, lunch must be taken, which would allow more time for collecting in the ascent.

When the autobus had passed Thorème-Haute and had reached the field by the timber cutting sheds on the right, I got down, directing my luggage to be left at the station. *Heodes alciphron* var. *gordius* was here in swarms, the females were in splendid condition and I selected a fine series, including a perfect ab. *midas* and a specimen approaching this form. *Melitaea didyma* race *alpina* ♀, *Polyommatus icarus*, *Plebius argyrognomon* and the moth *Malacosoma castrensis* occurred here, with the Coleoptera *Clytus verbasci*, *Larinus sternus* and *Molytes glabratus*, the Hymenoptera *Ammophila viatica*, *Anthidium manicatum*, and 2 ♀s of *Psithyrus rupestris*, and of the Diptera a *Bombylus* species which in the British Museum is labelled "near *variabilis*," and which is common at Digne.

Digne was reached at 8 p.m. that night and I was glad to turn in early for a long night's rest.

July 21st. My friends and I this morning drove along the Dourbes Road as far as the bridge over the river, near which is the sign post directing one to the village of Villard. We stopped at promising spots both going and returning. All along the rough grass by the river banks we found *Polyommatus admetus* race *ripartii* in numbers and in good condition, and flying with them were some females of *P. escheri*. In the clover and vetch fields the following species were in plenty, *Papilio podalirius*, *Gonepteryx cleopatra*, *Pyrameis cardui*, *Satyrus circe*, *Argynnis adippe* (some large females), *Melitaea didyma*, and *Melanargia galathea* race *procida*. Of the last species I took a fine ab. *leucomelas*, the undersides of the hindwings being without markings, in one of the fields. On likely ground some way on we found *Satyrus fidia* settled on *Clematis vitalba* when it is much easier to net. We stopped some time beyond the bridge; the grey skippers were in some numbers, but they are not yet identified, *Epinephela lycaon* was present as was also *Zygaena transalpina*. The above list does not exhaust our captures for we found the ground thereabout very good for a morning collecting, especially as there is a much greater downward breeze in this valley than in the Eaux Chaudes valley by the Baths, although it would have been quite hot enough had we had to walk all the way.

July 22nd. My friends drove direct to the same bridge as yesterday and collected all the way down taking more *S. fidia* including one ♀, *S. dryas* and another ab. *leucomelas* while *Leptosia duponcheli* race *aestiva* was flying in some numbers. I had left by bicycle at 5 a.m. for the Dourbes and reached the bridge where the road divides about 6 a.m. Close by in a gully under a tree by a dry stream, I "cached" my bicycle and went on up to Villard. En route I gathered a quantity of cocoons of a Zygaenid and took some interesting Coleoptera. Pass-

ing the village I went on through the beech and pine forests taking *Erebliä ligea*, fresh males of *P. escheri*, *Pararge maera*, *Satyrus aleyone*, and one *Coenonympha arcania* while *Zygænidæ* swarmed everywhere, *Z. carniolica*, *Z. loniceræ*, *Z. purpuralis*, and *Z. fausta* race *niceæ*. There was a number of *Lycænaalcon* too worn to take. I took two males of the robber-bee *Psithyrus restalis* as well as the Asilid *Stenopogon sabaudus* flying with a specimen of *Pararge megera* impaled. Going on towards a most likely looking gorge according to a rough map which a friend had kindly lent me, I found *E. stygne* and *E. ligea* but quite failed to find *E. scipio* as I had hoped, and had to content myself with ab. *pallida* of *Coscinia striata* (the form with pure white forewings), *Callimorpha quadrimaculata* (*hera*) and one *Diacrisia sannio* (*russula*) ♂. About 3 o'clock I descended to the little café at Villard, kept by M. Cotte (brother of the naturalist of Digne, who died two years ago), for déjeuner, taking on the way *P. damon*, and *P. meleager* on lavender and some perfectly fresh *P. admetus* race *ripartii*. I was evidently too early for *E. scipio*, and from what M. Cotte told me a week or two later would have been a better date. It is, I should suggest, a much better plan to stay a night at Villard and to make an early morning start for the *scipio* ground. About 8 p.m. I reached Digne. I might say in passing, that it is inadvisable to hire French bicycles here, as they are very poor things, and the road from Digne as far as it is usable, is very stony and dusty. Among other things I took on the Dourbes, were *L. duponcheli* race *aestiva*, *M. galathea* race *procida*, the beetle *Cicindela campestris*, the Hymenoptera *Halictus sexcinctus* and *Melanichneumon monostogon*, the Dipteron *Syrphus latifasciatus*, and the Rhyncota *Stenocephalus agilis* and *Piezodorus lituratus*.

July 23rd. My friends found *S. fidia* in some numbers on the Dourbes road, sometimes settling on garbage sometimes on Clematis. The males of *Enodia dryas* were quite fresh and a ♀ of *P. podalirius* was seen on a cherry-plum tree just emerged with limp wings. A quarter of an hour later the same insect was observed *in cõp.* with its wings still undeveloped. In the afternoon the next valley to the left after passing the Petit Vallon on the Dourbes road proved to be a good spot. A number of *Z. transalpina* were taken with the var. *peucedani* of *Z. ephialtes*, as well as the var. *athamanthæ* of the same, also *Z. carniolica* and *Z. fausta* var. *niceæ*. Another fine specimen of the ab. *leucomelas* of the *procida* race of *M. galathea* turned up as well as a very extreme dark *procida*, which may be considered as ab. *turcica*. I also took an immature Orthopteron probably *Ephippigera crucigera* (*bitterensis*).

July 24th. I noted to-day that the *S. fidia* along the Dourbes road were partial to the flowers of blackberry but perhaps more than to anything else they seem to prefer the blue green thistle which occurs so plentifully along this road. A fine specimen of *Sphex melanaria* and a couple of the bee *Anthidium manicatum*, an example of *Ammophila sabulosa* and a female of *Anthophora quadrimaculata* were captured. But little else of interest was noted except that I captured an Asilid fly *Selidopogon diadema* with its prey, an example of *Satyrus actæa*, in its clutches.

The afternoon found me again in the gorge of the Eaux Chaudes beyond the Baths. Both sexes of *Heodes dorilis* and of *H. virgaureæ*

abounded in excellent condition and I picked up some *Z. transalpina*, *Z. ephialtes* and its ab. *athamanthae*. Various species of grey "skippers" were conspicuously in evidence and there is always a legion of many "fritillaries" at the foot of the cross gorge, fighting for possession of the tallest thistle-heads.

We left Digne with keen regret. With our sojourn at the Hotel Boyer-Mistre we were amply satisfied for Madame attends to her guests very well. In the quiet of the late evening hours when setting occupied us we always had the company of the owls at the back of the hotel. Digne has changed but little since 1914; perhaps the dogs are quieter but the children are more numerous and consequently more noisy. One or two cinemas have sprung up, motor charabancs are in evidence; the beautiful "Monument aux morts pour La France" by the Bridge over the R. Bléone speaks for itself. When collecting on the Eaux Chaudes road, I tried to picture Digne as it was in 1815 when Napoleon having escaped from Elba, landed on the coast not far from Cannes, came on to Grasse, crossed the mountains to Castellane, and having slept at Barrême came down the Eaux Chaudes road and pausing at the Baths spent three hours at Digne, thence on and on rallying all France to him for a final coup. As to the insect fauna around Digne, it was to us quite normal in its abundance. Collecting ground behind the station and along the Nice road diminishes in area as more land is built upon, but the remaining spots are as good as ever.

Besides the butterflies mentioned and omitting those common everywhere we met with *P. apollo*, *P. machaon*, *P. manni*, *G. cleopatra*, *S. ilicis* ab. *cerri*, *S. spini*, *R. phlaeas* race *eleus*, *L. sinapis*, *P. argus* (*aegon*), *E. argiades* (one taken by Mr. F. T. Gilliatt), *P. escheri*, *P. egea*, *C. dorus*, *H. onopordi*, *H. malvae*, *H. carthami*, *A. lineola*, *A. flava*, *V. alceae*, *E. althaeae*, *E. lavatherae*, etc.

The chief Heterocera taken at Digne were *Aegeria asiliformis*, *Syntomis phegea*, *Z. rhadamanthus*, *Z. achilleae*, *Z. purpuralis*, *Adscita statices*, *Thyris fenestrella*, *Naclia ancilla*, *Lithosia caniola*, *Setina aurita* ab. *ramosa*, *Diacrisia sannio* (*russula*), *Arctia purpurata*, *Notodonta trepida*, *Pterostoma palpina*, *Laphygma exigua*, *Leucania straminea*, *L. impura*, *Aedia funesta*, *Xylophasia lithoxylea*, *Metoptria monogramma*, *Agrophila trabealis*, *Nemophila hybridalis*, *Pyralis costalis*, *Aphomia sociella*, *Boarmia rhomboidaria*, *Pseudoterpna pruinata*, *Leptomeres rubiginata*, *Rhodostrophia vibicaria*, *Nychiodes lividaria*, *Phibalapteryx tersata*, *Gnophos lignicolor* and *G. furrata*.

The Hymenoptera taken were *Formica fuscus*, *Camponotus cruentatus*, *Glyptomorpha pectoralis*, *Discolia quadripunctata*, *Eumenes pomiformis*, *E. amydei*, *Polistes gallica*, *Osmia rufahirta*, *Anthidium manicatum*, *Stronygaster singulatus*, *Andrena varians*, *A. chrysosceles*, *Pedanaspis crassitarsis*, *Amblyteles palliatorius*, *Ophion paniscus*, *Pimpla instigator*, *Ichneumon extensorius*, *Halictus zonulus*, *H. nitidulus*, *H. scabiosae* (*zebrus*), *H. sexcinctus*, *H. cylindricus* and the Chalcid *Leucaspis grandis*.

The Paraneuroptera met with were *Cordulegaster annulatus*, *Orthetrum caerulescens*, *Onychogomphus forcipatus*, *Calopteryx haemorrhoidalis*, *C. splendens* and *Pyrhosoma nymphula*.

The Neuroptera were *Ephemera bioculata*, *Ascalaphus longicornis*, *Chrysopa perla* and *C. prasinus*.

The Coleoptera have been identified as *Cicindela hybrida*, *Silpha quadripunctata*, *Lucanus cervus*, *Cetonia aurata*, *Phyllopertha horticola*,

Anisoplia floricola, *Halyzia ocellata*, *Coccinella septempunctata*, *Tricodes alvearius*, *T. apiarius*, *Mylabris quadripunctata*, *Oedemera nobilis*, *O. podagrica*, *Rhagium bifasciatum*, *Leptura fulva*, *Coptocephala unifasciata*, *Cryptocephalus aireolus*, *C. globicollis*, *Exosoma lusitanica*, *Otiorrhynchus sulcatus*, *Polydrosus sericeus*, *Molytes coronatus*, *Apoderus coryli*, *Attelabus curculionoides*, *Chlorophorus trifasciatus*, *C. figuratus*, *Larinus sternus*, etc.

The Diptera captured were *Tabanus anthracinus*, *T. bromius*, *Bombylius cruciatus*, *Dioctria oelandica*, *Syrphus ribesii*, *S. glaucius*, *Platychirus manicatus*, *Volucella bombylans* var. *plumata*, *V. inanis*, *V. zonaria*, *Xanthogramma ornatum*, *Ocyptera bicolor*, *Erigone rudis*, *Stenopogon sabaudus*, *Selidopogon diadema*, and *Pangonia micans* var. *ornata*.

The Digne Rhyncota were represented by *Cicada fraxina*, *Harpactus iracundus*, *Reduvius personatus*, *Graphosoma lineata*, *Cercopis sanguinolenta*, *Carpocoris nigricans*, *Dolycoris baccarum*, *Jalla dumosa*, *Spilostethus equestris*, *S. savatilis*, *S. pandurus*, *Monodesmus m-flavum*, *Campotopus lateralis* and *Gonocerus acutangulatus*.

On reaching Paris I spent some time at the Laboratoire Colonial, 55, Rue Buffon, and had an interesting chat with M. J. R. Surcouf. By his suggestion I went by train to Nemours St. Pierre, two hours run by the P.L.M., lying beyond Fontainebleau. Following a quarry light railway and then continuing for a distance of about a mile I reached Montmien which was reputed a good ground for insects. Here I found the ab. *lateliens* of *M. galathea* flying in good numbers. This is one of the late M. Oberthur's discoveries and is marked by a considerable increase of the white area on the upperside and is of large size. They were past their best but I succeeded in getting a dozen good ones. Probably about July 14th, would have been a good date to get them in the best condition. I took *P. machaon*, a form like the British fen form and quite different from the form at Digne. Besides these I found *Issoria lathonia*, *P. daplidise*, *H. doris*, *P. coridon*, *A. lineola* and *S. semele* mostly in some numbers. There were a good number of Hymenoptera about including *Vespa sylvestris*, *Oerceris arenaria*, *Halictus cylindricus*, *H. albisectus*, *Exochilium brevicorne*, *Ichneumon xanthorinus*, etc.

In addition I met with *Rhagonycha fulva* (Col.), *Syritta pipiens* (Dip.) and the moth *Setina aurita*. In fact a very successful day and a half were spent at Montmien. There is a tolerable inn for déjeuner about a quarter of a mile further on over the rocky hill amid the woods.

My best thanks are due particularly to Mr. H. L. Earl for the loan of his valuable notes on Digne, to M. J. R. Surcouf of Paris, and to Major Austen, Messrs. Blair, Arrow, Edwards, China, Frisby, Donisthorpe, the Rev. F. D. Morice and Dr. B. P. Uvarov for their great kindness in helping me to name many of the species referred to in this paper.

Have any of our readers collected at the Col de la Croix, 1167m. a station on the P.L.M. at the highest part of the line between Grenoble and Veynes? or at Saint Maurice-en-Trieves, a station near with a Buffet Hotel Terminus with "service automobile"? or at Luz-en-Croix-

Haute? or at Saint-Julien-en-Beauchêne in the midst of beautiful forests? If so I should be grateful for an account of what was taken at any of these places and the best place to stay at as I imagine this district may be very good for *Erebia* species about July-August.—E.B.A.

NOTES ON COLLECTING, etc.

SIZE OF THE GENERATIONS OF *L. rivularis* IN ITALY.—Dr. Verity states on page (35) that “the first generation of *Limenitis rivularis* (*camilla*) differs markedly from the successive ones by its smaller size, more slender build, etc.” This is in complete opposition to my experience. The only two late specimens from Italy which I possess (Assisi, July 26th, 1909, and Orvieto, August 9th, 1909) are both extremely small, far the smallest specimens I have seen.—G. W.

SCARCITY OF LEPIDOPTERA.—I shall be glad to know the experience of others. Here, in spite of S.W. winds and hot sun, there is hardly a butterfly to be seen, very few even of the common “Whites” and an occasional Meadow Brown, but nothing else.—WALDEGRAVE, Chewton Priory, Chewton-Mendip, Somerset, July 12th, 1924.

[My own experience is the same, at practically every spot I have visited there has been a remarkable scarcity of insects in any stage. Most of the places visited were noted choice collecting grounds, where one ought in a normal season to obtain “a good bag,” yet they yielded nothing. Tree searching, larva beating, has been the same. Beating for Geometers only produced odd specimens and traces of larvae, such as leaves defaced, were completely absent. Insects were scarce last year, but this year matters seem to be worse. The “blues” have been particularly scarce in my experience during the whole season. In one very favoured spot for *Polyommatus* (*Agriades*) *thetis* I met with only three or four dozen instead of the usual hundreds. The only larva I have found abundant (locally) was that of *Marasmarcha lunaedactyla* (*phaeodactyla*).—HY. J. T.]

CURRENT NOTES AND SHORT NOTICES.

Two meetings of the Entomological Club were held at Oxford during the week end July 12th to 14th, by the invitation of Prof. E. B. Poulton, F.R.S., and Dr. H. Eltringham. Members present:—Messrs. Robert Adkin, Jas. E. Collin, Horace Donisthorpe, Dr. H. Eltringham, Prof. E. B. Poulton, F.R.S., Mr. H. Willoughby-Ellis. Visitors:—Messrs. E. Bolton-King, G. C. Champion, Dr. F. A. Dixey, F.R.S., Mr. E. E. Green (Pres. Ent. Soc.), Dr. Hanitch, Dr. W. A. Lamborn, Dr. G. A. K. Marshall, C.M.G., F.R.S., Dr. S. A. Neave, Mr. A. W. Pickard-Cambridge, Capt. N. D. Riley, Dr. Hugh Scott, Mr. H. J. Turner, Commander J. J. Walker, Dr. C. A. Wiggins, C.M.G. Accommodation was provided at Wykeham House, the residence of Prof. Poulton, and in rooms at Wadham College, by permission of the Bursar. The members and visitors met at the Hope Department, University Museum. During the afternoon of July 12th an opportunity was afforded of inspecting the magnificent collections and of witnessing a demonstration of Fluorescence in Lepidopterous pigments. Tea was

dispensed by Mrs. Poulton during the afternoon. A meeting of the Club was held at Jesus College in the evening. Prof. Poulton, F.R.S., was in the Chair, and entertained the members and visitors to dinner in the Hall of the College at 7.45. A most enjoyable evening was spent. On July 13th the Hope Department was again open for inspection, and an opportunity of visiting interesting places in Oxford was provided and taken advantage of by many of the party. A collecting excursion to Tubney was also organised, which was joined by several Entomologists, who took advantage of the fine weather, and many interesting captures were made. After the luncheon, the whole party joined in a boating excursion on the River Cherwell and a picnic tea was provided on the banks of the river. A meeting of the Club was again held in the evening at Wadham College, Dr. H. Eltringham was in the Chair, and entertained the company to dinner in the College Hall, by kind permission of the Bursar, Dr. F. A. Dixey, F.R.S., after which a short business meeting of the Club was held in the beautiful gardens of the College. After the meeting a retirement was made to the smoking room where another most enjoyable evening was spent. The morning of the 14th was spent at the University Museum, and also in the town of Oxford, which concluded two most interesting and successful meetings of the Club.—H.W-E.

Newspaper reports say that there has been an immigration of butterflies along the Kentish coast. Have any of our readers first hand particulars of this? Reports of similar origin describe "une pluie de papillons" in the province of Umbria, near Rome, which was such an "avalanche inattendue" on the roads that motor cars were impeded and trains delayed near Assisi. One would like to know the facts; can anyone help us here?

We are still asked if Seitz Lepidoptera is being continued. Yes, we regularly have two parts (Eng. edition) arrive per month, each 8pp. and 2 plates, or 16 pp. and 1 plate, or 24 pp. only, at 3s. per part. A few more pages of the Index and one plate of the American Rhopalocera are to come to complete the 5th volume, while two other volumes, the Africa Rhopalocera and the Indo-Malay Rhopalocera, are to be completed next year (1925).

The *London Naturalist* for 1923 is just to hand. There is a most interesting account of the life of the late A. W. Bacot, dealing with his "Medico-entomological Researches," by Dr. M. Greenwood. The Reports of the various sections are printed and some of the papers that were read are also printed, including some useful "Notes on Collecting in 1923," by Dr. E. A. Cockayne. His remark "that even the commonest species, especially the Geometers, with few exceptions, were very scarce," we can all agree with from our own experience. In contrast to this it is here recorded that on April 8th *Lycia hirtaria* was in such abundance on Wimbledon Common that 50 imagines were counted on one trunk and 38 on one side of another.

The Isle of Elba has attracted many students of limited faunae. In the "Memoires" of the *Soc. Ent. It.*, just published, is the continuation of an account of the Coleoptera of the island, with remarks on the Tyrrhenian Problem, as the comparative study of the whole of that corner of the Mediterranean sea is styled.

SOCIETIES.

THE SOUTH LONDON ENTOMOLOGICAL SOCIETY.

May 22nd.—Mr. Blenkarn exhibited Coleoptera from Wicken Fen in April, *Leistus rufescens*, *Bembidion fumigatum*, *B. aeneum*, *B. dentellum*, *Agonum liveus*, *Pterostichus anthracinus*, *Oodes helopioides*, *Paragaeus erux-major*, *Hydaticus transversalis*, *Trogophloeus corticinus*, *Donacia dentipes*, *Dorytomus salicinus*, etc.

Mr. Enefer, larva of *Ourapteryx sambucaria*.

Mr. Pennington, an aberration of *Venilia macularia* with a continuous narrow band of black across all four wings on a yellow ground; a pale fawn coloured *Xanthia fulvago* (*cerago*), and a curious *Apamea secalis* with a light streak extending from the reniform stigmata.

An exhibition of *Apamea secalis* with a short discussion was opened by Mr. Tams, Messrs. Buckstone, Pennington, Tonge, R. Adkin, Mera, Turner, etc., exhibiting.

June 12th.—Mr. Blenkarn exhibited some rare and local Coleoptera, *Calosoma inquisitor*, New Forest, *Carabus granulatus*, Wicken, *Rhagium indigator*, Aviemore, *Apoderus coryli*, Darenth Wood, *Gonodera luperus*, Box Hill, *Tillus elongatus*, Mickleham, and *Grammoptera variegatus* (*analis*), and for Mr. Goodman *Leptura cerambyciformis*, Chiddingfold, and *Melasoma populi*, Tilgate Forest.

Mr. Adkin, webs of the larvae of *Butalis grandipennis* on *Ulex nana*, Eastbourne.

Mr. S. N. A. Jacobs, ova and young of a Hemipteron from Saskatchewan.

Mr. K. G. Blair, the "firefly" *Pyrophorus pilucidus*, from Trinidad sent by Dr. Withycombe, and described its characters and habits.

Mr. A. W. Dennis, the Filmy Fern, *Hymenophyllum wilsoni* from N. Wales.

Dr. Cockayne, larva of *Tricopteryx polycommata* from ovum.

Mr. Sims, *Agapanthia villosoviridescens* (*lineaticollis*) Col., and ova of *P. machaon*, Wicken.

Mr. Tonge, larva of *Taenioctampa miniosa* on bramble.

Mr. T. H. L. Grosvenor, *Zygaenidae* from Algeria, Asia Minor and Turkestan.

Mr. O. R. Goodman, *Anthocharis falloui*, *A. belemia*, and *A. belia* (*eupheno*) sent him from Algeria by Prof. Lister.

June 26th.—Mr. T. H. L. Grosvenor, F.E.S., Vice-President, in the chair.

Mr. C. G. Priest, of Notting Hill, was elected a member.

Dr. Fremelin exhibited the white helleborine (*Cephalanthera ensifolia*) and the fly orchis (*Ophrys apifera*) from near Berkhamstead.

Dr. Cockayne, larvae of *Lampropteryx suffumata* hatched in early June.

Mr. K. G. Blair, for Mr. Blenkarn, the green cockroach, *Panchlora virescens*, with its brown coloured young, from Jamaica.

Mr. Turner, examples of the pupal habitations of *Dictyopteryx bergmanniana* among wild rose leaves, and pointed out the curious and definite plan upon which these were always constructed.

Mr. E. G. Bunnett, living larvae of *Saturnia pavonia*, *Cucullia verbasci*, and *Notodonta ziczac*, with the yellow balsam, *Impatiens parviflora*, and the sweet scented orchis (*Habenaria conopsea*).

Mr. Sims, young larvae of *Papilio machaon* and *Chrysomela graminis* (Col.), from the Fens.

Mr. Blenkarn, *Bembidion schüppeli* from Cumberland, the black form of *Carabus arvensis*, from Honister Pass, *Geotrupes vernalis* from Keswick, and *Epipolaeus caliginosus* from Ashford.

Mr. Priest, a perfect gynandromorph of *Amorpha populi*, bred June, 1923.

July 10th.—The President in the chair.

Mr. R. Adkin, egg-masses of the fresh-water snail, *Limnaea stagnalis*, attached to the underside of a lily-leaf, and gave notes on the life-history.

Mr. Enefer, *Sesia* (*Macroglossum*) *stellatarum*, taken at Blackheath on June 23rd.

Mr. Farmer, imperfectly developed *Zygaena filipendulae* bred from cocoons taken at Eastbourne, and remarked on the small size.

Mr. Step, a living ♀ of the so-called "velvet ant," *Methoca ichneumonoides*, from Swanage.

Mr. H. J. Turner, living larvae of *Hypena rostralis*, feeding on hop in his garden at New Cross, and remarked on their curious habit of curling and springing suddenly when touched.

Mr. Grosvenor, *Teinopalpus imperialis*, from Sikkim, and *Armandia lidderdalii*, from Bhutan.

Mr. A. E. Stafford, a *Rumicia phlaeas* with the markings of the left forewing underside reproduced on the left hindwing, and an *Arctia villica*, from Reigate.

THE ENTOMOLOGICAL SOCIETY OF LONDON.

June 4th.—OBITUARY.—The Chairman announced the death of Mr. F. Merrifield, a Past-President of the Society.

LIBRARY.—Dr. S. A. Neave announced that by order of the Council, a change had been made in the hours during which the Library would be open. From this date the hours would be from 10 a.m. to 6 p.m., except on Saturdays, and during September when it will be closed. On the nights of meeting it will remain open until 10 p.m. and on other Wednesdays until 9 p.m.

ELECTION OF FELLOWS.—The following were elected Fellows of the Society:—Mr. S. R. Baldoek, Oakburn Villa, Hertford Road, Enfield, Middlesex; Mr. H. B. Johnston, M.A., 25, Findhorn Place, Edinburgh; Capt. F. S. Smith, Sunnyside, Middle Bourne, Farnham, Surrey.

EXHIBITS.—Dr. S. A. Neave exhibited some insect remains found in a stratum of oil-sand in Trinidad at a depth of about 8 feet.

Mr. H. E. Andrews exhibited a new British *Trechus* probably allied to *T. amplicollis*.

Professor E. B. Poulton, F.R.S., amongst other exhibits communicated (1) Some notes by Dr. V. G. L. van Someren on the life history and insect-food preferences of an Ascalaphid larvæ at Nairobi; (2) A. W. J. Pomeroy's observations on Lycaenid life-histories in Southern Nigeria; (3) An entomological contribution to the under-

standing of Minoan symbolism, in which he discussed a letter from Sir Arthur Evans, F.R.S., describing a Minoan gold signet ring on which two butterflies are represented.

Dr. K. Jordan exhibited and drew attention to some important characters of several species of the African Genus *Nyctemera* (*Lymantriidae*).

Mr. C. Dover exhibited the larva and pupa of two Cassid beetles and called attention to the protective excremental structure found on the larva.

Dr. F. A. Dixey exhibited a series of photographs illustrating the pupation of *Catopsilia crocale*, which had been taken by Mr. F. N. Chasea, Curator of the Raffles' Museum, Singapore.

PAPERS.—The following papers were read:—

1. Mallophaga of the Spitzbergen Expedition, 1923, by Dr. J. Waterston.
2. Vocal Organs in the Coleopterous Families, Erotylidae and Dytiscidae, by Mr. G. J. Arrow.
3. Notes on the Bionomics of *Xylocopa aestumas*, Linn. (Apidae) by Mr. C. Dover, with notes on the beetle larvae by Mr. K. G. Blair.

REVIEWS AND NOTICES OF BOOKS.

BULLETIN OF THE HILL MUSEUM.—Vol. I., no. 3, pp. 260, 25 plates (7 in colour), and 1 map.—We must congratulate Mr. J. J. Joicey and his able colleague Mr. G. Talbot on this final part of the first volume. It is a well arranged and a well thought out account of a portion of the work, which has been done at the Museum, and the whole of the three parts, some 650 pp. and 60 plates, has catalogued, described, arranged and illustrated a huge mass of new material, for which there was no adequate room in any of the existing periodicals, with the added advantage that the matter is not scattered and perhaps difficult and expensive of access.

The subscription price is most reasonable, and we were somewhat surprised to read in the editorial note that "no adequate response has been received by way of subscription." This is decidedly discouraging, for the cost of production at the present time is very heavy, and we hope that the issue of part 3, such an admirable part as it is, will add substantially to the list of subscribers. Possibly the price marked at the foot of the cover of each part and the placing of an index at the end of Part I. may mislead. It is not 30s. for each part, but 30s. for parts 1 to 3 and index (to be issued later).

Among the contents are (1) a second part of "A Catalogue of the Lepidoptera of Hainan," an island in the Gulf of Tonkin, 175 miles by 100 miles, by Messrs. Joicey and Talbot. There are bibliographical and historical notes followed by remarks on the localities, and a few words on the affinities so far indicated by the lists, with a map showing the routes of the collectors and the elevations and relative positions of the places mentioned. The list is not merely a list, but contains references, dates, and comparative notes for identification; data most useful for a study of an island fauna. (2) "A List of *Pyralidae* collected by T. A. Barns in Central Africa in 1919-20-21," by Prof. A. J. T. Janse, the S. African specialist in this family, whose presence in England was taken advantage of to get him to work on the numerous

new forms obtained in Africa, as well as elsewhere. (3) A similar list from the mountains of Central Ceram. (4) Monsieur F. le Cerf gives comprehensive notes on the rich series of African *Papilio* species in the Hill Museum, at the same time introducing his own views on the classification of forms, in which he refers to "purely individual forms susceptible of furnishing indications as to the evolution of the species to which they belong," but "trop peu significatives pour être nommés." This paper is illustrated by 55 figures of geographical and individual forms. The writer, in discussing such species as *Papilio dardanus*, considers the various forms as not being in any way stable, but manifesting "en periode d'évolution active." Ninety-seven forms are dealt with, of which fifty are figured.

A very large number of descriptions of new species of Heterocera are published, particularly of *Noctuidae* by Miss A. E. Prout, and of *Geometridae* by Mr. L. B. Prout, many of which species are also figured. We note, with pleasure, that almost without exception the descriptions are not of the "barebones," *ad hoc* type, but contain sufficient comparative notes and references if not also accompanied by a figure. To place a new species in its position in its genus the reader wants all the references and salient comparisons and contrasts, which the writer has made in working out the form. So many of our older descriptions are practically useless without these indications of apparent affinity or other data.

Referring to descriptions and comparisons it seems quite necessary to have a commonly recognised colour standard. This is being done at the Hill Museum by the use of Ridgeway's "Colour Standards and Nomenclature," an admirable book as far as it goes with an enormous number of shades. New names created in the "Bulletin," are of course in Clarendon.

Although the bulk of the work published, when active collecting is going on on a large scale, must be descriptive, yet we hope that when opportunity offers we shall have a further article during the course of Volume II, on Mimicry and such like subjects, as was given in Part 1, so that we get not only the material results of the collecting, but the scientific indications and results.

The coloured plates deserve our mention: not only are they well done, but the insects chosen are just those which require such portrayal. The first three plates figure the new species of the genus *Delias* from Ceram and New Guinea, all of them being that section of the genus containing the smaller black and white species with remarkably bizarre undersides of which Seitz only figures two, while 16 further species are here presented, all having been described in Part 2 in 1922. Two coloured plates figure new *Sphinxidae* and one new *Zygænidæ* (*sens. lat.*). A further plate figures two new forms of *Troides* from Buru and New Guinea, which were also described in Part 2.

We note one or two slight irregularities. The plates in part 3 begin with No. 1 again instead of running on from those in Part 1, and the list of plates in part 3 refers to articles "No. 12," "No. 1," etc., which themselves are not numbered, and hence one has to refer to the list on the cover of the part concerned, all of which lists begin at No. 1 instead of running on as should the plates in the one volume.

It is up to all, who can, to support such praiseworthy work so generously carried on to advance our knowledge of the world around us, by contributing our mite—a subscription.—H.J.T.

Subscriptions for Vol. XXXVI. (10 shillings) should be sent to Mr. Herbert E. Page, "Bertrose," Gellatly Road, New Cross, S.E. 14 [This subscription includes all numbers published from January 15th to December 15th, 1924.]

Non-receipt or errors in the sending of Subscribers' magazines should be notified to Mr. Herbert E. Page, "Bertrose," Gellatly Road, New Cross, S.E. 14

ADVERTISEMENTS of Books and Insects for Sale, or Books wanted will be inserted at a minimum charge of 2s. 6d. (for four lines). Longer Advertisements in proportion. A reduction made for a series Particulars of Mr. Herbert E. Page, "Bertrose," Gellatly Road, New Cross, S.E. 14

Subscribers who change their addresses must report the same to Mr. H. E. PAGE "Bertrose Gellatly Road, New Cross, London, S.E., otherwise their magazines will probably be delayed.

Desiderata.—Foreign examples, local races, vars. and abs. from all parts of the world of any butterflies included in the British list. Setting immaterial; exact data indispensable. Liberal return made.—*W. G. Pether*, "Thelma," 4, Willow Bridge Road, London, N. 1.

Duplicates.—*Cinxia*, *Bellargus*, *Coridon*, *H. Comma*, *Lineola*, *Galathea*, *Moneta*, *Nupta*, and many others. *Desiderata*.—*Blandina*, *Irish Icarus*, *Carmelita*, *Cuculla*, *Gonostigma*, *Ashworthii*, *Templi*, *Australis*, *Undulata*, *Smaragdaria*, *Testacea*.—*W. Gifford Nash*, *Clavering House*, *Bedford*.

Duplicates.—*Cinerea* ♀, fine forms, grey, brown and blackish, *Maritima* and vars. *Immorata* and other East Sussex species.

Desiderata.—Pupæ. *Luteago* (*Barrettii*), *Caesia*, *Albimacula*, *Alpina*, *Xanthomista*, *Sparganii*, *Dissoluta* (*Arundineta*), *Graphalii*. Also imagines of extreme forms *Noctuae* in fine condition only.—*A. J. Wightman*, 35, *Morris Road*, *Leves*.

N. American Lepidoptera in papers in exchange for ditto from any part of the world. *J. C. Woodward*, *Training Ship "Cormwall," Purfleet, Essex*.

MEETINGS OF SOCIETIES.

Entomological Society of London.—41, Queen's Gate, South Kensington, S.W. 7. 8 p.m. October 1st, 1924.

The South London Entomological and Natural History Society, *Hibernia Chambers*, London Bridge. Second and Fourth Thursdays in the month, at 7 p.m. —*Hon. Sec.*, *Stanley Edwards*, 15, *St. German's Place*, *Blackheath*, *S.E. 3*.

The London Natural History Society (the amalgamation of the City of London Entomological and Natural History Society and the North London Natural History Society) now meets in Hall 40, *Winchester House*, *Old Broad Street E.C. 2*, first and third Tuesdays in the month, at 6.30 p.m. Visitors welcomed. September 20th, *Botanical Excursion: Woldingham*. *Hon. Sec.*, *W. E. GLEGG*, 44, *Belfast Road*, *N. 16*.

All MS. and editorial matter should be sent and all proofs returned to *HY. J. TURNER*, 98, *Drakefell Road*, *New Cross*, *London*, *S.E. 14*

We must earnestly request our correspondents NOT to send us communications IDENTICAL with those they are sending to other magazines.

Lists of **DUPLICATES** and **DESIDERATA** should be sent direct to *Mr. H. E. Page*, *Bertrose*, *Gellatly Road*, *New Cross*, *S.E. 14*

OVA, LARVÆ, AND PUPÆ.

The Largest Breeder of Lepidoptera in the British Isles is
H. W. HEAD, Entomologist,
BURNISTON, Nr. SEARBOROUGH.

Full List of Ova, Larvae, and Pupae, also Lepidoptera, Apparatus, Cabinets,
etc., sent on application.

Many Rare British Species and Good Varieties for Sale.

Thymoplas

MOUNTING OUTFITS.

A simple and permanent method for
mounting insects, &c.

Adapted by the Entomological Dept. Royal
College of Science, London.

Price 3/- (postage 6d.) and 6/- (postage 9d.)

HARBUTT'S PLASTICINE, LTD.
56, LUDGATE HILL, E.C.4, and
BATHAMPTON, nr. BATH.

AGENT—

G. A. BENTALL, F.Z.S.,
Naturalist,
392, Strand, W.C.2.



BACK VOLUMES OF

The Entomologist's Record and Journal of Variation.

(Vols. I-XXXV.)

CONTENTS OF Vol. I. (Most important only mentioned.)

GENUS *Acronycta* and its allies.—Variation of *Smerinthus tiliae*, 3 coloured plates—
Differentiation of *Melitaea athalia*, *parthenie*, and *aurelia*—The Doubleday collection—
Parthenogenesis—Paper on *Taeniocampidae*—Phylloxera—Practical Hints (many)—
Parallel Variation in Coleoptera—Origin of *Argynnis paphia* var. *valesina*—Work for the
Winter—Temperature and Variation—Synonymic notes—Retrospect of a Lepidopterist
for 1890—Lifehistories of *Agrotis pyrophila*, *Epunda lichenea*, *Heliophobus hispidus*—
Captures at light—Aberdeenshire notes, etc., etc., 360 pp.

To be obtained from—

Mr. H. E. PAGE, "Bertrose," Gellatly Road, New Cross, London, S.E. 14
to whom Cheques and Postal Orders should be made payable

E. D.

13,820

The Entomologist's Record AND Journal of Variation

EDITED BY

RICHARD S. BAGNALL, F.I.S., F.E.S.
GEORGE T. BETHUNE-BAKER, F.L.S., F.E.S.
M. BURR, D.SC., F.L.S., F.Z.S., F.E.S.
(REV.) C. R. N. BURROWS, F.E.S.
E. A. COCKAYNE, M.D., F.E.S.

JAS. E. COLLIN, F.E.S.
H. ST. J. K. DONISTHORPE, F.Z.S., F.E.S.
JOHN HARTLEY DURRANT, F.E.S.
ALFRED SICH, F.E.S.
(REV.) GEORGE WHEELER, M.A., F.E.S.

and

HENRY J. TURNER, F.E.S.,
Editorial Secretary.

CONTENTS.

	PAGE.
Notes on the Myrmecophiles found with <i>Acanthomyops brunneus</i> , Latr., in Britain, <i>H. Donisthorpe, F.Z.S., F.E.S., etc. (concluded)</i>	133
A Locality in the High Alps, Névache-le-Château, <i>W. Fassnidge, M.A. (concluded)</i>	139
NOTES ON COLLECTING:—A Holiday in N. West Cornwall, <i>C. Worssam</i> ; <i>M. aurinia v. debilis</i> , <i>Hy.J.T.</i> ; <i>C. arcania</i> , <i>H.J.T.</i> ; Butterflies in late Autumn, <i>Waldegrave.</i> ; Aberration of <i>A. urticae</i> , <i>C. Worssam</i> ; Double-broodedness in <i>T. punctularia</i> , <i>F. B. Carr.</i> ; Abundance of larvae locally, <i>Hy.J.T.</i> ; Autumn Butterflies, <i>Hy.J.T.</i>	142
CURRENT NOTES AND SHORT NOTICES	144
SOCIETIES:—The South London Entomological Society	147
SUPP.:—List of the Macro-lepidoptera of Hampshire and the Isle of Wight	(33)-(36)

OCTOBER 15th, 1924.

Price ONE SHILLING (NET).

Subscription for Complete Volume, post free
(including all DOUBLE NUMBERS, etc.)

TEN SHILLINGS.

TO BE FORWARDED TO

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

"BERTROSE," GELLATLY ROAD, NEW CROSS, S.E.14.

Communications have been received or have been promised from Messrs. H. Donisthorpe, Dr. Verity, J. H. Durrant, Rev. C. R. N. Burrows, Wm. Fassnidge, Orazio Querci, H. J. Turner, Karl Höfer, J. A. Lestage, H. B. D. Kettlewell, H. Moore, with Reports of Societies and Reviews.

SPECIAL ANNOUNCEMENT!!

Watkins & Doncaster,

(ESTABLISHED 1879.)

36, Strand, London, W.C.2.

Reg to announce a **Special Offer** of Bound Volumes of the important Work

"MACRO-LEPIDOPTERA OF THE WORLD,"

By DR. A. SEITZ.

FOR ORDERS RECEIVED BEFORE DEC. 31ST, 1924.

PRICES AFTER
DEC. 31ST WILL BE.

Divn. I. Palearctica, Complete (Vols. I.-IV.) £27 £36
,, II. American Rhopalocera (Vol. 5) .. £19 £25

Volumes IX. (Indo-Australian Rhopalocera) and XIII. (African Rhopalocera), are nearing completion.

Reduced terms are offered to *former* Subscribers who wish to renew their Subscription if application is made at an early date.

Send us your enquiries regarding any part or Section of this work and we will send fullest particulars immediately.

OUR NEW CATALOGUE of Collecting Apparatus, Books and Specimens sent **POST FREE** per return.

TELEPHONE—GERRARD 9451
P.O. Box. No. 126.

ENTOMOLOGICAL NEWS.

An illustrated magazine, published monthly—except August and September—devoted to the study of **INSECT LIFE**. It contains a list of the titles of the current Literature on American Entomology, articles by the leading authorities in the United States and Canada, and is a necessary journal of reference for working entomologists. Valuable information for economic and systematic students.

Annual subscription price \$2.50. Foreign (except Canadian) subscriptions \$2.70. Single copies 30. cents. Address

ENTOMOLOGICAL NEWS, 1900, Race Street, Philadelphia, Pa.

Bexley]

L. W. NEWMAN

[Kent

Has for sale a superb stock of 1920 specimens in fine condition, including Varleyata; Bicuspis; Pendularia var. Subroseata; Melanic forms Lariciata, Consortaria, Consonaria, Abietaria; Irish forms Aurinia and Napi, fine vars. Tiliae, Yellow Dominula, etc., etc. Quotations and Insects sent on approval with pleasure.

Also a huge stock of fine PUPÆ and OVA.

Write for latest price lists.

Relaxing Tins are now 4/- small and 6/- large, pos free **Re-fills, 2/3** small, 3/3 large, post free.

Notes on the Myrmecophiles found with *Acanthomyops* (*Donisthorpea*) *brunneus*, Latr., in Britain.

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

(Concluded from p. 122.)

COLEOPTERA.

1. *Aleochara sanguinea*, L. (*brunneipennis*, Kr., *lugubris*, Shp. Cat.).—On June 7th, a single specimen was taken. I have only found this rare species heretofore in Richmond Park, where a series was obtained in birds' nests. This capture is of interest, as several other beetles which are found in the nests of birds (such as *Microglossa gentilis*, *M. pulla*, etc.), also occur with ants. In my paper on the Origin and Ancestral form of Myrmecophilous Coleoptera [Donisthorpe, 1909] I discussed the whole subject and endeavoured to show how such species had branched off from a common ancestor and adopted a double mode of life, though not possessing "double hosts" in the ordinary sense of the term.

2. *Ilyobates propinquus*, Aubé, was captured on June 19th. It is not usually found with ants; but André [1874] recorded it with *Formica rufa* in France. Of course *Ilyobates glabriventris*, Rye,* is a myrmecophilous species, and Wasmann [1891] records it with *brunneus* in Holland. Certainly the behaviour of this specimen of *I. propinquus* in the presence of the *brunneus* ♂♂, was exactly that of an ants' nest beetle.

3. *Myrmedonia limbata*, Pk., one specimen running on a tree with the ants on June 6th. This beetle occurs with various other species of ants. I have previously taken it with *Myrmica scabrinodis*, *A. (D.) fuliginosus*, *A. (D.) niger*, *A. (C.) flavus*, *Formica exsecta*, and *F. sanguinea*.

4. *Drusilla canaliculata*, F., one on June 29th. This species is also found with many species of ants, and I have recently [Donisthorpe, 1924a] shown it to be a regular myrmecophilous species.

5. *Atheta nitidula*, Kr.,* occurred in a number of different nests; over a dozen specimens in all being taken. The late Dr. Sharp [1869] recorded it as very rare in the South of England; being sometimes found in the nests of *fuliginosus*. Ellis [1908] took it with the ant last mentioned at Knowle; and Rouget [André, 1874] with the same species in France. Schmitz [1915] records it with *brunneus* in Holland; and Wasmann [1894] states that the species of *Atheta* most often found with ants is *A. nitidula*.

6. *A. sodalis*, Er., was found on two separate occasions. I have previously taken it with *Formica rufa* at Weybridge and Oxshott [Donisthorpe, 1909], and Maeklin has also found it with the same ant in Fennica [André, 1874].

Euryusa, Er. I am writing a short separate paper on this genus [Donisthorpe, 1924c] to correct the synonymy, and giving a table to distinguish the species, etc. All the species of this genus are truly myrmecophilous and live with species of *Acanthomyops*, especially *A. (D.) brunneus*, in trees inhabited by ants of that genus.

7. *Euryusa optabilis*, Heer.* (*laticollis*, Heer.).—This beetle is decidedly rare in Britain, and is moreover considerably scarcer at Windsor than the next species. Out of the ten specimens, which is all I have been able to find, five proved to be ♂♂.

OCTOBER, 1924.

It has been recorded in Britain from Highgate, Loughton, Shirley, Hainhault Forest, Tilgate Forest, Windsor, and Ilfracombe. The only record, however, with ants in this country previous to Joy's [1923] capture at Windsor, is by Brewer [Linnell, 1898], who took two specimens in a nest of *A. (D.) fuliginosus* in Tilgate Forest, in 1866. One is obliged to think, however, that in some of the other localities *A. (D.) brunneus* was present, for as Wasmann [1891] wrote when discussing the capture of this beetle by Dr. Veth, at Valkenburg, who did not record it with ants, "As *Lasius brunneus* generally only shows itself singly, is very fugitive, and possesses nests very hard to find, it can easily be overlooked."

8. *Euryusa sinuata*, Er.*—Dr. Joy [1923] took and recorded a single specimen of this beetle at Windsor; its first capture in Britain. I have since taken some 30 specimens, only one of which is a ♂! It must not be thought that it is any the less rare, or difficult to get, as this total, as I have already pointed out in the introduction to this paper, represents the results of many visits, and many many hours of hard and laborious work. These beetles, as was also the case with the previous species, were always with and right amongst the ants. They run very swiftly when disturbed, but do not fear the ants, sitting quietly and poking their tail into an ant's face if it threatens them. I have kept a number alive in tubes with some ants for days at a time, and though the beetles have come to no harm the ants have always been found dead. I have never seen them kill an ant; but I believe they do so. It is possible they may feed on the brood of *brunneus*, but as Wasmann [1892] has also pointed out, this is very difficult to find, and one would probably have to cut down a tree to get at it! My observation nest of *brunneus* had died out before I got these beetles [see Donisthorpe, 1924a].

On several occasions I have taken what I believe to be the larva of this beetle, under the bark in the runs of the ants. The following is a rough description of a specimen preserved in spirit, which I should judge to be nearly full grown:—

Narrow and linear; head brown: body yellowish white, with ventral segments whiter. Eyes consisting of 6 ocelli on each side of head; antennae four-jointed, the last two joints very short; labial palpi quite as long as antennae, their last joint, long, thin, and pointed; mandibles triangular, pointed. The whole body is furnished with long pointed yellow bristles, both on the dorsal and ventral surface. The 9th segment of the abdomen bears two styles, or cerci, furnished with three or more bristles. The 10th segment is terminated by a narrow round pointed tail or "false foot," bent downwards, and brown in colour. The legs are slender, pale yellow, and end in a simple claw. Long, 3.5 mm.

9. *Quedius scitus*, Gr.—One specimen was taken with *brunneus* in rotten wood, on June 27th. Although this insect is generally found away from ants, it is worth recording, as Crotch [1862] took a specimen with *A. (D.) fuliginosus* at Cambridge.

10. *Xantholinus glaber*, Nord.—One specimen of this rare beetle was taken on June 29th. This is another birds' nest species, which is often found with ants. Fowler [1888] records it as "often in company with ants." Rouget [André, 1874] took it with *A. (D.) fuliginosus* in France; and Wasmann [1891] says it is often found in hornets' nests in Holland; but he regards it as a regular guest of *fuliginosus*, having found it with that ant at Exaeten and Valkenburg. Schmitz [1915] took it with *brunneus* in Holland.

11. *Stenichnus exilis*, Er.—A single specimen was taken under bark of oak with *brunneus*, on May 4th. As I pointed out in 1922 several specimens of this beetle were taken in a nest of *F. rufa* at Bridge-of-Gairn, by King, on July 24th, 1915, and Harwood found it in numbers, extending over a period of many weeks, in a nest of *F. rufa* in the Limpsfield Woods, near Westerham, in 1921, where I subsequently had the pleasure of taking it with him. It was also taken with the same ant by the late Viehmeyer in Saxony, who gave it to Wasmann.

12. *Euthia formicetorum*, Reitt. (*formicetorum*, Sauley, MS.).—On August 12th I captured a specimen of this rare little beetle in a nest of *brunneus* in an oak. It was first introduced as British by Bedwell in 1915, who found a single specimen in company with *Trichomyx sulcicollis*, and a *Myrmica* in an old beech tree, in the New Forest, in July of that year. Walker has taken three specimens (at different times from 1907 to 1912) in rotten wood, also in the New Forest, and these are all the British examples that have been found up to now. The insect has occurred in France, Dalmatia, and the Mediterranean and Caspian regions, etc. I am indebted to Commander Walker for lending me one of his specimens to compare mine with. It is certain that de Sauley (who described and recorded many Myrmecophilous beetles in the 60's and 70's) must have taken this species with ants, hence the name.

13. *Batrissodes delaportei*, Aubé,* and 14. *B. adnexus*, Hampe.*—I have already published a short paper introducing these two beetles to the British list [Donisthorpe, 1924b], and I gave a table to distinguish them from the species previously found with us, etc. They are two of the most interesting and most important of my discoveries with this ant; as they are also two of the species I have worked hardest to find. They appear to be extremely rare both with us and on the continent; the reason perhaps being that it is so very difficult to find a tree, which one can get at, in a suitable condition for them.

15. *Trichopteryx montandoni*, All., occurred in small numbers on June 25th. My friend Major Sainte Claire Deville has also taken it with *brunneus* in France. I regard this little beetle as a truly myrmecophilous insect, though generally found in the nests of *Formica rufa*; where I have taken it in Parkhurst Forest [Donisthorpe, 1909], etc. Matthews [1872] gives nests of *F. rufa*: Hamm took it with the same at Tubney; Allen at Lustleigh Cleave [Donisthorpe, 1919]; and Walsh [1923] at Barnsliffe. Walker [1920] records it with *A. (D.) fuliginosus* at Tubney. Wasmann [1894] gives *F. rufa* as the host, and cites various authors who have recorded it with that ant on the continent.

16. *Ptenidium kraatzi*, Matt., occurred in some numbers in the rotten wood of a beech tree inhabited by *brunneus*, on August 12th. It was described by Matthews from specimens taken by Foxcroft in *rufa* nests at Rannoch, and Fowler took it with the same ant in Buddon Wood, Leicestershire. On March 11th, 1908, I took a specimen in my observation nest of *F. sanguinea* from Woking.

17. *Ptinus subpilosus*, Müll.—Four specimens (2♂♂ 2♀♀) were taken on April 22nd and a single ♀ on August 12th, in company with *brunneus*. Although this is not a regular ants' nest beetle, nevertheless it is occasionally found with ants. Fowler [1890] says it is some-

times found in company with ants, recording also that Brewer took it in ants' nests in Tilgate Forest. In the latter case the ant would no doubt have been *A. (D.) fuliginosus*; and Walker [1920] has found it on several occasions in a tree inhabited by that species at Tubney, etc.

HYMENOPTERA.—*Proctotrupidae*.

18. *Acropiesta striolata*, Th., and 19. *A. rufiventris*, Kief., were taken on June 29th.

20. *Synacra brachialis*, Nees., on June 6th; 21. *Conostigmus innotatus*, Kug., on June 29th; and 22. *C. dubiosus*, Kief., on June 19th and 29th.—I can only record that these five species of *Proctotrupidae* were taken in company with *brunneus*; but if there is any real connection between them and the ant, I know not.

I have taken a number of species of *Conostigmus* with other ants on previous occasions.

I am indebted to my friend Mr. Claude Morley for the names of these insects.

DIPTERA.

23. *Apiochaeta ciliata*, Zett.—A single specimen was taken with *brunneus* near Theale, Bucks, on February 9th, 1923. I had previously taken it in some numbers with *A. (D.) fuliginosus*, at Wellington College, in 1906, and Darent Wood in 1910.

24. *Apiochaeta* sp.?—A ♀ of a species of this genus was found with *brunneus* in Windsor Forest, on June 25th.

25. *Limosina crassimana*, Hal.—Taken in the Theale nest on June 20th, 1923. As I pointed out [Donisthorpe, 1924a] I have taken several other species of this genus with other ants.

HETEROPTERA.

26. *Pilophorus perplexus*, D. and S.—On July 25th a number of the very young of a *Pilophorus* was seen running about among the ants, and dodging in and out of the cracks in the bark of two *brunneus*-infested oak trees. Several examples were sent to my friend Mr. E. A. Butler, who suggested that they might be *P. clavatus*; but that they were far too young to make certain. On August 5th these trees, which I had specially not disturbed, were again visited, and a certain number of adults and a few nymphs of the bug were secured—proving them to be *P. perplexus*. I have previously found this insect with *A. (D.) niger*, *A. (D.) fuliginosus*, *Formica rufa*, *F. sanguinea*, and *F. fusca*.

I have never been able to ascertain the connection between bugs of this genus and ants [see Donisthorpe, 1921]; but the fact remains that they are always found with ants. Of course they are very ant-like in appearance, and probably thus obtain protection from their enemies.

APHIDÆ.

27. *Stomaphis longirostris*, F.—On April 24th I found under the bark of an oak tree "in the runs of *brunneus*" a number of very young green *Stomaphis*. The ants were carrying some of them about, and when disturbed they hurried off with them into safety under the bark. At the same time a cluster of large egg-like cases was found, and these when hatched proved to be the eggs of the plant louse. I took some

of the young aphides to my friend Mr. F. Laing, at the British Museum, and suggested that they belonged to a different species from *S. quercus*, which I had previously found attended by *A. (D.) fuliginosus* on the bark of oak trees, but not under the bark, at Woking and Wimbledon. With this he agreed, but said they were too young to be named with any certainty. Accordingly I determined to follow the matter up, and discover if possible, the adult form. On subsequent visits I continually met with this insect under bark of various trees, where the ant occurred (it is not confined to oak, as I found it in poplar, elm, etc.), and on May 14th the examples found were considerably larger; but it was not until June 6th that the problem was solved—I then found many very fat, large examples, grey in colour, and swollen with young, and from these Laing was able to decide that the species was *S. longirostris*, F., a very interesting addition to the British list.

These plant-lice generally have the end of their very long proboscis buried in the wood of the tree, and it is with considerable difficulty that they can be removed without breaking it. However large they may be the ants drag and jerk at them unmercifully to make them leave go, so that they can carry them off.

This is evidently the species which André [1882] referred to when he said that *brunneus* feeds almost exclusively on the excreta of large aphides, which it rears in the galleries of the nest; and also the large grey plant lice, which Schenck [1852] said are found with it.

The egg is very large, 3mm. long by 1.5mm. broad, zeppelin-shaped, with a smooth surface. In spirit specimens the embryo may be seen shining through the cortex, fully developed, the antenna 5-segmented, and the rostrum a little shorter than the body.

The young are green with 5-segmented antennae.

Fabricius [1787] described the species in the following words:—“Cinereus, rostro corpore triplo longiore. Habitat Dresdae sub arborum corticibus formicarum larvis victitans. Medius. Rostrum longissimum, cylindricum, quo larvarum succum haurit.” This species does not appear very frequently in literature. Passerini [1860 and 1863] undoubtedly describes this species, and Altüm [1881] describes a species under the name of *Rhyncholes longirostris*, which may be Fabricius' species; though Laing is of the opinion that it is the same as *L. quercus*. Del Guercio, in his Monograph of the *Lachninae* [1908], gives additional references (but some of the synonymy is obviously incorrect), and an excellent description with illustrations. The illustration of the apterous viviparous ♀ has been done from uncleaned specimens, and does not therefore convey a good impression of the appearance of a mounted specimen. Fresh material (such as I have supplied Laing with) of *S. longirostris* and *S. quercus* could not be confused. The former is of a light ashy-grey, with the two dorsal longitudinal rows of dark areas and the median ventral longitudinal areas standing out more conspicuously than they do in the case of *S. quercus*. The latter is of a dark coffee brown, if anything more shining and smaller, while the dark dorsal areas (when in spirit or when mounted) are not so compact, and in the anterior abdominal segments especially are apt to become diffuse and disappear. The surest distinction lies in the antennal segments. In *S. quercus* segments 4 and 5 are subequal and considerably shorter than 6, while in *S. longirostris* segment 4 is consistently and plainly shorter than 5, while 5 is not very

much longer than 6 (the average proportions of the three last segments being 16, 21, 23). There are from 2 to 3 circular sensoria on segment 4, and 2 to 3 smaller ones apically on 3; the sensoria on the antennae of *S. quercus* do not appear to be constant.

I am much indebted to Mr. Laing for the particulars concerning the specific differences.

COLLEMBOLA.

28. *Cyphodeirus albinus*, Nicol., was found with several colonies of *brunneus*, on June 6th and 25th, etc. This little creature is absolutely panmyrmecophilous, and occurs with all species of ants in Europe.

ARANEINA.

29. *Harpactes hombergi*, Sep., was taken with the *Theale brunneus*, on February 6th, 1923. On April 22nd, 1924, and on various subsequent occasions, it was found with this ant at Windsor. As I pointed out in my Myrmecophilous Notes for 1923 [1924a] this spider constantly occurs with ants on which it preys.

CRUSTACEA.

30. *Platyarthrus hoffmanseggii*, Brdt.,* was found with two colonies of this ant on June 25th. This is another panmyrmecophilous arthropod. Both Schmitz [1915] and Wasmann [1894] have taken it with *brunneus* in Holland, etc. In my notes quoted above, I dealt with its geographical distribution and how it had extended its range.

REFERENCES TO LITERATURE QUOTED IN THE TEXT.

- | | | | |
|------------------|-----|-------|---|
| Altüm, B | ... | 1881 | <i>Forst. Zool.</i> , 3 , 356 (1881). |
| André, Er. | ... | 1874 | <i>Rev. Mag. Zool.</i> (s. 3), 2 , 204-35 (1874). |
| " | " | 1882 | <i>Spec. Hym. Europe</i> , 2 , 198 (1882). |
| Bedwell, E. C. | ... | 1915 | <i>Ent. Mo. Mag.</i> , 51 , 119 (1915). |
| Crotch, G. R. | ... | 1862 | <i>Zoologist</i> , 1862 , 8140. |
| Donisthorpe, H. | ... | 1909 | <i>Trans. Ent. Soc. Lond.</i> , 1909 , 397-411. |
| " | " | 1919 | <i>Ent. Record</i> , 31 , 24 (1919). |
| " | " | 1921 | " " 33 , 23 (1921). |
| " | " | 1922 | " " 34 , 4 (1922). |
| " | " | 1923 | " " 35 , 21-23 (1923). |
| " | " | 1924a | " " 36 , 49-53, 69-75 (1924). |
| " | " | 1924b | " " 36 , 117 (1924). |
| " | " | 1924c | <i>Ent. Mo. Mag.</i> , 60 , (1924). |
| Ellis, H. W. | ... | 1908 | <i>Ent. Record</i> , 20 , 57 (1908). |
| Fabricius, J. C. | ... | 1787 | <i>Mant. Insect.</i> , 314 (1787). |
| Fowler, W. W. | ... | 1888 | <i>Col. Brit. Isles</i> , 2 , 290 (1888). |
| " | " | 1889 | " " " 3 , 140 (1889). |
| " | " | 1890 | " " " 4 , 181 (1890). |
| Guercio, G. Del. | ... | 1908 | <i>Redia</i> , 5 , 259 (1908). |
| Joy, N. H. | ... | 1923 | <i>Ent. Mo. Mag.</i> , 59 , 279 (1923). |
| Linnell, J.... | ... | 1898 | <i>Reigate List</i> , 27 (1898). |
| Matthews, A. | ... | 1872 | <i>Trichopterygia</i> , 125 (1872). |
| Passerini, J. | ... | 1860 | <i>Gli. Afidi Parma</i> . (1860). |
| " | " | 1863 | <i>Arch. Zool. anatom. fisiologia</i> , 2 , fas. 2 (1863). |

Schenck, A.	...	1852	<i>Jahrb. Ver. Naturk. Nassau</i> , 8 , 53 (1852).
Schmitz, H.	...	1915	<i>Naturk. Genoots., Limburg</i> , 1915 , 72-75.
Sharp, D.	...	1869	<i>Trans. Ent. Soc. Lond.</i> , 1869 , 130.
Walker, J. J.	...	1920	<i>Ent. Mo. Mag.</i> , 56 , 210 (1920).
Walsh, G. B.	...	1923	<i>Naturalist</i> , 64 (1923).
Wasmann, E.	...	1891	<i>Tijds. v. Entom.</i> , 34 , 61 (1891).
"	"	...	1892 <i>Deutsch. Ent. Zeitschr.</i> , 1892 , 350.
"	"	...	1894 <i>Krit. Ver. Mer. Ter. Art.</i> , 1894.

A Locality in the High Alps, Névache-le-Château.

By WILLIAM FASSNIDGE, M.A.

(Concluded from p. 60.)

LIST OF LEPIDOPTERA OBSERVED AT NÉVACHE FROM JULY 30TH TO
SEPTEMBER 10TH, 1923.

Altitude 5,000 feet unless otherwise stated.

RHOPALOCERA.—*Papilio podalirius*, imagines and larvae; *P. machaon*, imagines common, larvae rare, all nearly full-fed; *Parnassius apollo* race *substitutus*, abundant and variable, 5-8,000 feet; *Aporia crataegi*, very abundant; *Pieris brassicae* and *P. rapae*, common, both imagines and larvae; *P. napi*, one specimen, early in August; *Pontia (Leucochloë) daphnice*, not common; *Pontia (Synchloë) callidice*, fairly common, 6-9,000 feet; *Anthocharis (Euchloë) crameri*, a few larvae, 5-7,000 feet; *Euchloë (Anthocharis) cardamines*, a few larvae; *E. (A.) euphenoides*, three specimens, second week in August; *Gonepteryx rhamni*, common; *Colias palaeno* race *europomene*, not common, 8,000 feet; *C. phicomone*, abundant and variable, 5-9,000 feet; *C. hyale* and *C. croceus*, abundant, one var. *helice*; *Leptosia sinapis*, a few; *Erebia epiphron* race *cassiope*, common but local, 7,000 feet; *E. euryale*, not common; *E. mnestra*, common, 6-8,000 feet; *E. gorge* and ab. *erynnis*, locally common, 7,000 feet; *E. stygne*, common; *E. pharte*, very common, 5-7,000 feet; *E. goante*, abundant, 5-7,000 feet; *E. neoridas*, very abundant, some very small specimens; *E. scipio*, a few; *E. tyndarus*, very abundant; *Melanargia galathea*, common just over the frontier, 4,500 feet; *Satyrus briseis*, one; *S. statilius*, locally common; *Hipparchia semele*, a few; *Pararge megera* and *P. maera*, a few; *Epinephele lycaon*, common, 5-6,000 feet; *Coenonympha arcania* race *satyrion*, fairly common, 5-6,000 feet; *C. pamphilus*, common, 5-6,000 feet; *Limenitis rivularis (camilla)*, a few; *Pyrameis atalanta*, common, imagines and larvae up to 7,000 feet; *P. cardui*, common, larvae abundant up to 7,000 feet; *Fanessa io*, fairly common; *Aglais urticae*, very common, larvae up to 7,000 feet; *Eugonia polychloros*, a few; *Polygonia c-album*, a few; *Euanessa antiopa*, common, larvae abundant; *Melitaea cynthia*, a few, 8,000 feet. We were too late for this and the following species; *M. aurinia* var. *debilis* [= *nerope* ?], a few very small specimens, 8,000 feet; *M. cinxia*, a few males; *M. phoebe*, common; *M. didyma* and race *alpina*, very abundant and variable, 5-6,000 feet; *M. dictynna*, common and variable; *M. varia*, fairly common, 7-8,000 feet; *Argynnis aglaja*, very common, 5-6,000 feet; *A. cydippe (adippe)*, common; *A. niobe* and var. *eris*, type not common, var. *eris* abundant, 5-7,000 feet; *Issoria lathonia*, common, 5-6,000 feet; *Brenthis ephrosyne*, two; *B. ino*, fairly common, worn; *B. amathusia*, fairly common, worn; *B. pales*,

very abundant and variable, 6-9,000 feet; *Heodes virgaureae*, very abundant, females very variable, 5-7,000 feet; *H. (Chrysophanus) hippothoë* var. *eurybia* (almost), common, 5-7,000 feet; *H. (Loweia) alciphron* var. *gordius*, not common, females variable; *H. (L.) dorilis* var. *subalpina*, common; *H. (Rumicia) phlaeas*, a few, all nearly ab. *eleus*; *Lycaena arion* and var. *obscura*, a few, worn, 7,000 feet; *Cupido minimus*, a few; *Plibeius (Aricia) donzelii*, common, 5-6,000 feet; *P. (A.) medon* (*astrarche*) and race *alpina*, very abundant, 5-6,000 feet; *P. (Albulina) pheretes*, locally common, 7-8,000 feet; *P. argus (aegon)*, common, beginning of August; *P. argyrognomon*, very common, later than preceding species; *Polyommatus (Nomiades) semiargus*, common and variable, 5-7,000 feet; *P. (Aricia) eumedon*, a few, worn; *P. (Hirsutina) damon*, abundant; *P. (Agriades) coridon*, very abundant and fairly variable; *P. (A.) thetis*, one male; *P. hylas*, fairly common; *P. escheri*, abundant, females variable, 6-8,000 feet; *P. icarus*, common, some very small, 5-6,000 feet; *P. eros*, fairly common, 5-6,000 feet; *P. orbitulus*, abundant and variable, 6-8,000 feet; *P. (Vacciniina) optilete*, not common, 7,000 feet; *Everes argiades*, one, worn; *Lycænopsis (Cyaniris) argiolus*, one, September 8th; *Lampides boeticus*, common; *Ruralis (Zephyrus) betulae*, a few, females very large; *Strymon (Thecla) spini*, abundant; *Erymnis (Carcharodus) lavaterae*, not common, worn; *E. alcaeeae*, fairly common; *Hesperia alveus*, very common; *H. fritillum (cirsii)*, common; *Pyrgus sao*, fairly common; *Urbicula comma*, very abundant and variable, 5-8,000 feet; *Adopaea lineola*, locally common; *A. flara (linea)*, not common.

HETEROCERA.—*Agrilus convolvuli*, seven; *Hyles euphorbiae*, larvae 5-7,000 feet; *Phryxus livornica*, a few; *Smerinthus ocellatus*, a few larvae; *Sesia (Macroglossa) stellatarum*, very abundant, 5-9,000 feet; *Trochilium apiformis*, a pair; *Aegeria (Sesia) ichneumoniformis*, fairly common; *A. (S.) ramburi* (?), one, worn; *Bembecia hylaeiformis*, a pair; *Adscita geryon* and *Zygaena purpuralis*, locally fairly common; *Z. achilleae*, abundant; *Z. exulans*, common, 8,000 feet; *Z. trifolii*, abundant; *Z. fausta*, abundant and variable; *Z. carniolica*, abundant, a few red-belted specimens; *Z. filipendulae* and *Z. transalpina*, abundant; *Nola cicatricalis*, a few; *Setina aurita* var. *ramosa*, common, 5-8,000 feet; *Coscinia cribrum* var. *candidum*, 5-8,000 feet; *Lithosia lurideola*, a few; *L. complana*, fairly common; *L. deplana*, a few; *L. caniola*, two; *Nemeophila plantaginis* and var. *hospita*, abundant and variable, 5-8,000 feet; *Dasychira fascelina*, a few larvae; *Stilpnotia salicis*, a pest; *Lasiocampa quercus*, small larvae common; *L. rubi*, a few larvae; *Lemonia taraxaci*, one; *Lachneis lanestris* race *arbusculae* (?), larvae common, 8-9,000 feet; *Malacosoma castrensis*, one, two egg-rings; *Pygaera nigra*, larvae common; *Saturnia pavonia*, a few larvae; *Cerura vinula* and *Notodonta ziczac*, larvae fairly common; *Lophopteryx camelina* and *Pterostoma palpina*, a few larvae.

NOCTUINA.—*Acrionicta euphorbiae*, one; *Bryophila perla*, a few; *B. algae*, two; *Leucania virens*, common; *L. andereggi* var. *engadinensis*, *L. vitellina*, *L. conigera*, *L. albipuncta* and *Laphygma exigua*, a few of each; *Neuronia popularis*, fairly common; *Mamestra soritida*, one; *Caradrina ambigua*, fairly common; *C. terreae*, common; *C. quadripunctata* and *Amathes (Orthosia) helvola (rufina)*, a few; *Xanthia (Cosmia) paleacea*, one; *Citria (Xanthia) fulvago* and var. *flavescens*, common; *C. (X.) lutea (flavago)*, one; *Amphipyra tragopogonis*, abundant; *Triphaena pronuba*, common; *Agrotis augur*, one; *A. alpestris*,

a few; *A. gemina*, a few; *A. depuncta*, a few; *A. obelisca* and *A. ocellina*, fairly common; *A. nigricans*, a few; *A. simulans*, fairly common; *A. birivia*, two; *A. cuprea*, *A. tritici*, *A. ypsilon* (*suffusa*), *A. simplonia*, *A. griseus* and *A. saucia*, a few; *A. decora* and *Rhyacia elegans*, common; *Derthisa* (*Episema*) *trimacula*, one; *Miselia oxyacanthae*, one; *Polia flavocincta*, one; *P. polymita* and *Dianthoecia caesia*, a few; *D. clavipalpes* (*cubicularis*) and *D. capsincola*, fairly common; *Hadena chenopodii*, one; *H. chrysozona* and *H. ochroleuca*, a few; *H. lateritia*, very common; *H. platinea* and *H. monoglypha*, a few; *Mamestra glauca*, fairly common; *M. nana* (*dentina*) and *Phlogophora meticulosa*, a few; *Crymodis exulis*, a few; *Rhizogramma detera*, very common; *Cucullia lychnitis*, six larvae; *C. artemisiae*, larvae abundant; *C. absinthii*, one larva; *Heliothis peltigera*, a few imagines and larvae; *Abrostola tripartita*, one; *Plusia v-argenteum*, a few; *P. festucae*, common; *P. gamma*, very abundant; *P. ain*, a few; *P. hoehenwarthi*, common, 8,000 feet; *Acontia luctuosa*, fairly common; *Catocala puerpera*, one; *C. fraxini*, one; *Spintherops dilucida*, a few; *Toxocampa craccæ*, two; *Hyppena obesalis*, a few.

GEOMETRÆ.—*Epione apiciaria*, common; *Crocallis elingværia*, a few; *Gnophos obscurata*, *G. glaucinaria*, *G. obfuscata*, *G. myrtilata* and *G. serotinaria*, common; *Psodos coracina*, fairly common, 8,000 feet; *Acidalia flaveolaria*, very common; *A. immorata* and *A. promutata*, a few; *A. incanata*, common; *Asthena candidata*, *Xanthorhoë montanata* and *X. munitata*, a few; *Halia vanaria* and *H. brunneata*, abundant; *Diastictis artesiaria*, a few larvae and imagines; *Cleogene lutearia*, abundant; *Lythria purpuraria*, a few; *Abraaxas grossulariata*, two; *A. marginata*, a few; *Lygris prunata* and *L. populata*, abundant; *Larentia fulvata*, *L. immanata* and *L. didymata*, common; *L. flavicinctata* and *L. minorata*, common; *Thera cognata*, fairly common; *Anticlea berberata*, a few; *Hydriomena sordidata*, abundant; *Entephria caesiata*, a few; *Entephria cyanata*, fairly common; *Coenotephria verberata*, common; *Calostigia olivata*, a few; *C. aptata*, *Triphosa dubitata* and *T. subandata*, common; *Eupithecia venosata*, one; *E. lariciata*, *E. distinctaria* and *E. sobrinata*, a few; *Eubolia limitata* and *E. bipunctaria*, common; *Anaitis plagiata* and *Lithina rippertaria*, a few; *Rhodostrophia ribicaria*, common; *Chlorochlystamiata*, *Oreana alpustralis* and *Tephronia sepiaria*, a few; *Odezia atrata*, abundant.

PYRALES, TORTRICES, ETC.—*Catastia marginea*, common; *Nomophila noctuella*, very abundant; *Odontia dentalis*, one; *Pyrausta aurata*, a few; *Scopula lutealis*, common; *S. alpinalis*, a few, 8,000 feet; *Ebulea crocealis*, a few; *Botys hyalinalis*, one; *B. sophialis*, common; *Cnaemidophorus rhododactylus*, common; *Mimaeseptilus phaeodactylus*, common; *Platyptilia calodactyla*, fairly common; *Stenoptilia pterodactyla*, *Peronea permutana*, *P. variegana* and *Exanthes argentana*, common; *Crambus luctiferellus*, a few; *C. lithogyrella*, common; *C. selasellus*, a few; *C. fuscicellus*, common, 8,000 feet; *Scoparia muralis* and *Tortrix crataegana*, fairly common; *Depressaria florella*, *D. applanella*, *D. thapsiella*, *Adela rufimitrella*, common; *Rhyacionia resinella*, one; *Pamplusia mercuriana* = *monticolana*, *Sciaphila penziana*, *S. wahlbomiana*, common; *Semasia pupillana*, *Conchylis straminea* var. *alternana*, *Phycis fusca*, *P. ampliata*.

The writer offers his best thanks to Mr. Hy. J. Turner for his kindly aid in identifying some of his captures.

NOTES ON COLLECTING, etc.

A HOLIDAY IN NORTH-WEST CORNWALL IN 1924.—Visions of *Lycaena arion* made us decide this year to break fresh ground, and so the last week in June we piled up the car with luggage and set off for the West, spending the first night at Taunton. The next day, June 29th, we made Okehampton for lunch, and there a scout around with net in hand resulted in one *Melitaea aurinia*, the species being apparently over, *Brenthis selene*, *Euclydia mi*, and a number of *Zygæna lonicerae* also being taken.

We arrived at our destination in a Scotch mist, and for the first week the weather was very showery with frequent gales and mists. Reports from other collectors were very depressing; one party had taken no *L. arion* at all, and another party only five or six between them. However, in spite of the weather, hard work produced five or six, and during the next two weeks, which turned out beautifully fine and hot, a fair series was obtained. The following butterflies were also taken or observed, when searching for *L. arion*:—*Argynnis aglaia*, *Dryas paphia*, *Brenthis selene*, *Pararge megera*, *P. aegeria*, *Aphantopus hyperantus*, *Hipparchia semele*, *Melanargia galathea*, *Epinephele jurtina*, *E. tithonus*, *Coenonympha pamphilus*, *Callophrys rubi*, *Polyommatus icarus*, *Hesperia malvae*, *Nisoniades tages*, *Adopæa flava* (*thaumas*). During the afternoon *Ruralis* (*Bithys*) *quercis* soared about the cliff tops, but were very wild and difficult to catch, while *Ortholitha plumbaria* and *O. bipunctaria* were very common on the hillsides.

A number of trips were made around the district with the car, and I was glad to observe *L. arion* at points on the coast fifteen miles apart, which shows the species to be fairly widely distributed. Several trips were made with the object of getting *Melitaea athalia* but without success; although, of course, other insects were taken. One solitary fresh *Leptosia sinapis* was netted, and once we were rewarded by spotting a *Cleora jubata* (*glabraria*) on the trunk of an old apple-tree at Week-St.-Mary.

Dusking produced, among other things, *Perizoma flavofasciata* (*decolorata*), *P. alchemillata*, *Ortholitha cerninata*, *O. limitata* (*mensuraria*), *Pseudoterpna pruinata*, *Acidalia aversata*, *A. dimidiata*, *A. imitaria*, *Hemithea strigata* (*thymiaria*), *Mesolenca bicolorata*, *Timandra amata*, *Xanthorhoë mangulata*, and *Cucullia verbasci*.

Sugaring was tried most nights with varying success (after the first week, which was hopeless). Crowds of *Xylophasia monoglypha*, *Leucania lithargyria*, and *Agrotis exclamationis* were always present, and we were very pleased to get a short series of beautifully fresh *A. lunigera*. Sugar or flowers also produced *Leucania littoralis*, *Agrotis corticea*, *A. lucerneæ*, *A. cinerea*, and *Phaetra runcicis* (one of each), and numbers of *Habrosyne derasa*, *Xylophasia lithoxylea*, *Mamestra brassicae*, *M. oleaceæ*, *Miana strigilis*, *M. literosa*, *M. fascimacula*, *M. bicoloria*, *Hadena nana* (*dentina*), *Agrotis segetum*, *Axylia putris*, *Noctua plecta*, *Leucania conigera*, *L. pallens*, etc. A fresh *Gonoptera libatrix* turned up on July 11th, an exceptionally early date for this species, considering the season.

Aegeria musciformis was neglected until the end of the holiday, when they were nearly over, and only three were taken. A day was also spent at Starcross, beating the hedges for *Callimorpha quadripunc-*

taria, but we only succeeded in getting a few *Geometridae* and a profound thirst. Altogether we had a holiday to look back to.—CECIL WORSSAM, "Little Warden," Station Road, Harpenden, *September 14th, 1924.*

MELITAEA AURINIA VAR. DEBILIS.—The late M. Oberthür named the race of *M. aurinia* which occurs in the Pyrenees Orientales and French Hautes-Alpes le Lauteret, as var. *debilis*. It resembles the Swiss race *merope*, de Prün., by its small size, with diffuse markings and generally worn appearance. There flies in the forests of Rennes, in Ille-et-Vilaine, a similar form to this so-called *debilis*. From paper descriptions it seems hardly correct to separate the two races; of course one's judgement might be considerably altered if one could compare series of the two forms. We remember how *Apamea guenei* appeared on paper, compared with *A. testacea*, and yet how distinct they are when one places the two series side by side.—HY.J.T.

COENONYMPHA ARCANIA.—In the recently issued List of the Butterflies of France, issued under the auspices of the periodical *L'Amateur de Papillon*, *Coenonympha arcania*, *C. darwiniana*, and *C. philea = satyrion*, are treated as three separate species. As these three forms intergrade into each other by every possible form, and their areas of distinction are in touch everywhere as a matter of elevation, there seems every probability of there being only one species, as treated in Seitz, with extreme susceptibility to elevational environment.—HY.J.T.

BUTTERFLIES IN LATE AUTUMN.—For the last fortnight butterflies have been much more numerous, many *Vanessa io*, *Pyrameis atalanta*, and a few *Aglais urticae*, but still very few "whites."—WALDEGRAVE, Chewton Priory, Chewton Mendip, Somerset, *September 19th, 1924.*

ABERRATION OF AGLAIS URTICAE.—When collecting to-day near Biggleswade, I took a specimen of *Vanessa urticae* with the ground colour a pale biscuit. The insect appears to be perfectly fresh.—CECIL WORSSAM, "Little Warden," Station Road, Harpenden, *September 14th, 1924.*

DOUBLE-BROODEDNESS IN T. PUNCTULARIA.—On September 14th I found a specimen of *Tephrosia punctularia* on a tree-trunk at Westerham. So far as I know there has been no previous record of this species producing a second brood in the same year.—F. B. CARR, 41, Handen Road, Lee.

ABUNDANCE OF LARVAE LOCALLY.—My small suburban garden is this year devastated by many larvae of the common garden species of all sorts. I do not remember it to have been so badly treated before. At Chiselhurst, on the Common, about ten larvae of *Drepana falcula* were found on a small bush of birch, and near by a bunch of fair-sized *Phalera bucephala*, quite conspicuous on another bush about a foot from the ground. A day's beating at Westerham produced about an average number of the usual autumn larvae, including five *Aeronicta leporina* in their early stage, when they are not at all like the full-grown larva which is covered by long silky hair. Beating oak produced hardly

a single larva. On Ranmore Common beating oak was useless, the birch was very unproductive, and the few larvae obtained came from nut and hawthorn. An hour or two in Ashted Woods, beating birch, was quite comparable to Westerham in the variety and number of larvae obtained. Again a larva of *A. leporina* turned up, and one of *Notodonta dictaeoides*.—Hy.J.T.

AUTUMN BUTTERFLIES.—An afternoon spent at Kew in the beautiful gardens on one of the few days this autumn, when the sun has deigned to shine sufficiently, gave one a short interview with the Vanessids preparing for hibernation by imbibing the sweets from the abundance of flowers there provided. In one part there was about half an acre of asters of all colours in full bloom. Flitting from flower to flower plenty of *Aglais urticae* and a fair number of *Pyrameis atalanta* with an occasional *Pieris brassicae* formed a beautiful sight. In another part a more restricted bed of the same flowers was favoured with the same three species and in addition a few *Vanessa io*. I noted one of the *A. urticae* was a very fine lemon yellow form. In vain I tried to capture it with fingers and thumb, it was too wary. A very large *Pieris brassicae* ♀ struck me as being of a quite yellow suffusion all over. Strangely another bed of asters backed by a wall, a long narrower bed, had not a single butterfly on or around it.—Hy.J.T.

CURRENT NOTES AND SHORT NOTICES.

A gathering of the Entomological Club was held at Eastbourne from September 6th to 8th, by the invitation of Mr. and Mrs. Robert Adkin. Other Members of the Club present were Messrs. J. E. Collin, Horace Donisthorpe, and H. Willoughby-Ellis. The Visitors were Messrs. R. A. Adkin, W. H. Miles, A. L. Rayward, Edward Step, H. J. Turner, Capt. N. D. Riley and Dr. Malcolm Burr. The guests met at "Hodeslea" where luncheon was served about 1 o'clock. In the afternoon an Entomological excursion was made to the Downs in the neighbourhood of Beachy Head and a number of interesting captures were made. In the evening a meeting of the Club was held, Mr. Robert Adkin in the Chair, and supper was served about 7 o'clock. On the 7th an excursion was made in motor cars to Abbots Wood and after our return to luncheon, Mr. Adkin's valuable collection of Lepidoptera were inspected and also his extensive library, which contains most of the standard entomological books, was much enjoyed. After dinner the guests joined in an informal Entomological meeting when many subjects of interest were discussed, during which Mr. R. A. Adkin's collection of British Shells, which contains most of the local forms, was also on view, and added considerable interest to the meeting. The guests dispersed on Monday morning to their various destinations after a most enjoyable visit.—H.W.E.

In the life of every Society the Housing Problem becomes a pressing business at some time or other. Societies grow and require more space, not only for their meetings, but for their effects. As it was with our own Entomological Society of London so it is now with the Société Entomologique de Belgique. The Belgian Society has solved their difficulty by finding a new home in the Library of the University of Brussels, in which to hold their meetings and with

ample space for housing their extensive library. The Société Zoologique de Belgique had already found accommodation in the same buildings, so that, by a fortuitous circumstance, students of general natural history will find close together a series of the libraries likely to furnish them with all the literature they may wish to consult.

Part I-II of the *Transactions of the Entomological Society of London* has just been issued to the Fellows. It contains some 260 pages and 14 plates, 1 being coloured. One is pleased to find the Proceedings issued as in the past with the Transactions and not deferred to the end of the year before issue. In fact one would be inclined to advocate the issue of these at more frequent intervals as is the custom of the Société Entomologique de France, were it not for the great increase of expenditure it would entail. The present parts contain (1) Dr. E. A. Cockayne, "The Distribution of Fluorescent Pigments in Lepidoptera." (2) W. H. T. Tams, "Notes on some species of the genus *Cosmophila*, Bdv." (3) Kenneth J. Morton, "The Dragon-flies of Palestine, based primarily on collections made by Dr. P. A. Buxton, with Notes on the Species of the Adjacent Regions." (4) Miss N. Pulikovsky, "Metamorphosis of *Deuterophlebia* sp. (Dip.)." (5) L. G. Higgins, M.A. "On the Ethiopian species of the genus *Hesperia*, with descriptions of two new species." (6) Prof. E. B. Poulton, F.R.S., "The Relation between the larvae of the Asilid genus *Hyperechia* and those of Xylocopid bees." (7) Gilbert Arrow, F.Z.S., "Vocal Organs in the Coleopterous families *Dytiscidae*, *Erotylidae* and *Endomychidae*." (8) Cedric Dover, "Some Observations on the Bionomics of *Xylocopa aestuans*, L. (Apidae), with a Note on the Beetle Larvae, by K. G. Blair, B.Sc." (9) James Waterston, B.D., D.Sc., "On the Mallophaga of the Spitzbergen Expedition, 1923." (10) H. Eltringham, M.A., D.Sc., "Dr. V. G. L. van Sommeren's observations on the early stages of *Mimacraea marshalli* race *dohertyi*, Roth." (11) Malcolm Cameron, R.N. "New Species of *Staphylinidae* from India." The Proceedings of the ordinary meetings consists of 90 pages of most interesting matter dealing among other things with Luminosity in insects, Insect Food of the Little Owl, Parasitism of the Earwig, Wet and Dry seasonal forms of *Precis*, Various cases of Mimicry in African Butterflies, Cases of Migration, Bees devouring Thrips, Terrifying appearance in *Laternaria* (Lantern-flies), Tsetse-flies and dummy animals, a new European "Skipper," Insect remains from Trinidad oil-sand, Inheritance of colour in Pierines, Insects on Ant-trees, etc.

The British Association for the Advancement of Science has sent out the *Report of the Delegates of Corresponding Societies* including the Annual List of Papers bearing upon Zoology, Botany and Prehistoric Archaeology of the British Isles for the year 1922. This most useful list is compiled by Mr. T. Sheppard, M.Sc., of the Hull Museum.

The *Proceedings of the Entomological Society of British Columbia* for 1923, has been issued recently. The papers printed witness much good work in progress, both from a faunistic and an economic standpoint. The President in his annual address urges the object of compiling check lists of the various orders of which none exist for British Columbia, not even in the usually well worked Lepidoptera. The Proceedings contain a Preliminary List of the *Aphididae* of B.C., Notes for the List of Orthoptera of B.C., Collecting at Flowers and Blossoms, Leaf-rollers (Tortrices) attacking orchard-trees, New Records of Hemiptera from

B.C., and an intensive economic study of the elm-currant aphid (*Eriosoma ulmi*), with illustrations.

The U.S. National Museum have recently published a Revision of the N. American Wasps of the sub-family *Platygasterinae*, by R. M. Fouts. It is illustrated with numerous figures of parts where necessary, deals with the synonymy, and type specimens and furnishes tables of species, frequently redescribing them in the view of more recent knowledge.

The Trustees of the British Museum (Nat. Hist.) have decided to catalogue and label all the type specimens of Rhopalocera in the collections, largely from a desire to prevent the recurrence in the future of the replacing by "better" specimens, which took place in the not very remote past. As a first instalment Part I., *Satyridae* has just been issued. It contains details of nearly 4000 specimens, giving the Mus. no., Name, Genus under which originally described, Original reference, Date, Sex, etc. The *Morphinae* and *Brassolinae* are included in the *Satyridae*. That the compilation is well done we can be assured as it has been done by and under the supervision of Mr. N. D. Riley, Assistant in the Department of Entomology.

The Entomological Society of Ontario has just issued its 54th Annual Report, 1923. The Balance Sheet is enlightening; the subscriptions of members for the year amount to \$612.22 and Government Grant \$1000. The good work is recognised in Canada for the insect pest is a pest in earnest and the citizen is compelled to call in those who can give their skilled, technical aid. The papers printed are nearly all strictly economic or economic in their bearing, although nearly 20 large pages of captures in all orders are given. As usual there is a series of short reports from different districts on economic insects of the year, life-histories of the clover weevil (*Hypera punctata*), the cabbage worm (*Pieris rapae*), the control of the corn-borer, the chicken-louse, the onion maggot, Notes on the ever-present Gypsy-moth, with articles on Taxonomy, Legislative Regulations, Value of Natural Enemies, etc.

We must congratulate the Zoologisch-Botanischen Gesellschaft in Wien (Vienna) on the *Verhandlungen* for 1923 which has just been issued. In size it is quite closely approaching its pre-war status. It consists of 222 pages of Proceedings and 252 pages of Memoirs, with a coloured plate of Lepidoptera and 183 text-figures. Dr. Schawerda treats of the Lepidoptera of the Kaisergebirge in N. Tyrol, Prof. Rebel introduces many aberrations, forms and races of Lepidoptera, Herr Fritz Wagner treats of his holiday near Salzburg, Dr. Galvagni announces numerous new aberrations, Herr Bubacek describes the Lepidoptera of his collecting tour in Andalusia in 1922, Dr. Fulmek writes of the notable species he met with in Sumatra, Dr. Priessecker gives a Prodrömus of the Lepidoptera of Niederösterreich, Herr Schwingenschuss deals critically with all the Palaearctic *Psodos* forms and also with the Gnophids, Herr Winkler describes an excursion to obtain blind beetles, Herr Mandl deals with the coleopterological material obtained by him in E. Asia, Dr. Rebel gives an analysis of the forms of *Philosamia cynthia*, Dr. Schawerda deals with numerous new forms of Lepidoptera, from Mesopotamia, Herr Heikertinger writes

on Nomenclature, Dr. Zerny gives an account of *Anaitis efformata*, and Herr C. Höfer introduces a long series of aberrations of Lepidoptera.

The last part of the *Annales de la Société Entomologique de Belgique* contains a very important series of "Notes sur les Ephemères de la Monographical Revision of Eaton," by J. A. Lestage.

SOCIETIES.

THE SOUTH LONDON ENTOMOLOGICAL SOCIETY.

July 24th.—Dr. Cockayne exhibited the living larvae of *Eumorpha elenor*, *Theretra porcellus*, *Hemaris fuciformis*, *Sesia stellatarum*, *Epione advenaria*, and *Geometra vernaria*.

Mr. R. Adkin, a supposed example of *Dianthoecia compta*, and read notes on its occurrence in Britain.

Mr. Hugh Main, various insects taken by him in Corsica, including a large specimen of *Scarabaeus sacer*, from Evisa, where it was abundant.

Mr. Hy. J. Turner, short series of *Parnassius discobolus* and ab. *romanovi*, with *P. delphius* race *albulus*, from Turkestan, taken at 12,000 feet elevation.

Mr. Enefer, photographs of a swarm of bees at Blackheath.

Mr. Coulson, a remarkable series of *Rhagium bifasciatum*, taken among cut firs at Peaslake, in May; all showed extensive aberration of colour and marking, and also *Melanophila acuminata*, from Wimbledon, usually only taken near burning forest timber.

Mr. Grosvenor, a series of the Indian *Papilio polytes* showing its polymorphism; one ♀ like them, another resembling *P. hector* ♀, and a third like *P. aristolochiae* ♀.

August 14th.—Dr. Cockayne exhibited the larvae of *Cucullia umbratica* feeding on dandelion.

Mr. R. Adkin, a strongly banded *Eupithecia* thought referable to *E. satyrata* from Essex.

Mr. H. Main, an *Empusa* sp. from Digne, a stridulating beetle, *Passalus* sp. from Trinidad, and a Syrphid (Dip.) larva found feeding on a larva of *Cucullia graphalii*.

Mr. S. A. Blenkarn, a series of *Agonum sexpunctatus* (Col.) from Oxshott, where it now occurs since the destruction of the trees.

Mr. Andrews, the Dipteron *Trypeta tussilaginis* on burdock in N. Kent in July.

Dr. Fremlin, a *Pieris napi* with very dusky veins below, taken in early July.

Mr. K. G. Blair, *Crabro vagus* and its prey and contributed a note on its burrow and habits, with details of the rationing of its cell.

Mr. Hy. J. Turner, specimens of *Melanargia titea* from Syria with its summer form *palaestinensis* from Jerusalem, and an unocellated aberration of the latter form. He also showed *Anthocharis belemia* from Algeria and the summer form *glauca* from Gibraltar, and the summer form *palaestinensis* of the Syrian race.

Mr. Farmer, some *Zygaena filipendulae* bred from Eastbourne cocoons, the first portion and last to emerge were large and the rest were small.

August 28th.—Dr. Cockayne exhibited living larvae of *Eupithecia subnotata* and of *Hadena trifolii* on *Atriplex* and of *Mesolenca ocellata* on *Galium*.

Mr. T. H. L. Grosvenor, a long series of *Melanitis ismene (leda)*, an universally common Satyrid in South and East Asia, showing extreme variation in colour, marking and eyespot development on the under surface.

Mr. H. J. Turner, living larvae of *Abrostola triplasia* and of *Eupithecia assimilata* on hop, both species usually common in the London suburbs.

Mr. Dennis, a photograph of the fruit of *Erodium moschatum*, a wild geranium, and pointed out the peculiar mode of seed dispersal.

Mr. Enefer, larvae and pupae of *Hipocrita jacobaeae* from Alum Bay, and the Spider, *Theridion lineatum* found at Ventnor with its green bundle of eggs on *Verbascum thapsus*.

Mr. R. Adkin, specimens of *Zygaena filipendulae* bred from pupae collected at Eastbourne near together, and noted the variation in expanse was from 30 mm. to 38 mm. In 200 examples the variation of marking was very slight, but a specimen captured on the same ground had *achilleae*-like markings. He also showed a short series of *Acidalia immorata* which was still fairly plentiful in its restricted haunts.

Mr. S. R. Ashby, specimens of the Coleopteron *Nebria livida* found in the cracks in the Cromer cliffs, where it was locally common.

Mr. K. G. Blair, a recently described new Psocid, *Cocilius corticis* from Hendon.

Mr. E. J. Bunnnett, several species of Coleoptera.

September 11th.—Mr. O. R. Goodman exhibited *Melitaea didyma* and *M. phoebe* taken in cop. in August, 1923, at Reazzino.

Mr. Hy. J. Turner, living larvae of *Acrionicta leporina* from Westeham and of *Drepana falcula* from Chiselhurst, both species on birch.

Mr. E. Step, the fungi *Clavaria formosa*, *Geaster fimbriatus*, and *Craterellus cornucopioides* from Box Hill, where there was now a great variety of species.

Mr. Priest, an *Aretia caja* with united blotches on the hindwing submargin.

Dr. Cockayne, living larvae of *Plusia chrysitis*, *Manduca atropos*, and the spotted form of *Amorpha populi*.

Mr. Jacobs, *Tortrix unifasciana* taken on September 7th, a late date for the species.

Mr. Dennis reported the local plant *Senecio viscosus* as growing on waste ground in Westminster, and *S. squalidus* as abundant on railway banks in N.W. London.

Mr. Sims, a teratological specimen of *Aeschna grandis*, with the 3rd leg on the R. side extremely small but perfect proportionately.

Mr. Enefer, a living *Vanessa io* taken seeking winter quarters in a bedroom, and *Megachile centmularis*, the leaf-cutter bee, with samples of its depredations on rose.

Mr. Riley, a pair of the three specimens so far captured, of the new *Ornithoptera*, *O. titan*, from Papua. The ♂, surprisingly perfect, was brought to the collector by a native boy.

Mr. Dunster, a series of underside aberrations of *Polyommatus icarus*, obsolete and striate forms.

Mr. Hodgson, a series of Royston aberrations of *Polyommatus (Agriades) coridon*, obsolete, striate and clay-coloured forms.

Subscriptions for Vol. XXXVI. (10 shillings) should be sent to Mr. Herbert E. Page, "Bertrose," Gellatly Road, New Cross, S.E. 14 [This subscription includes all numbers published from January 15th to December 15th, 1924.]

Non-receipt or errors in the sending of Subscribers' magazines should be notified to Mr. Herbert E. Page, "Bertrose," Gellatly Road, New Cross, S.E. 14

ADVERTISEMENTS of Books and Insects for Sale, or Books wanted will be inserted at a minimum charge of 2s. 6d. (for four lines). Longer Advertisements in proportion. A reduction made for a series Particulars of Mr. Herbert E. Page, "Bertrose," Gellatly Road, New Cross, S.E. 14

Subscribers who change their addresses must report the same to Mr. H. E. PAGE "Bertrose Gellatly Road, New Cross, London, S.E., otherwise their magazines will probably be delayed.

Desiderata.—Foreign examples, local races, vars. and abs. from all parts of the world of any butterflies included in the British list. Setting immaterial; exact data indispensable. Liberal return made.—*W. G. Pether, "Thelma," 4, Willow Bridge Road, London, N. 1.*

Duplicates.—*Cinxia*, *Bellargus*, *Coridon*, *H. Comma*, *Lineola*, *Galathea*, *Moneta*, *Nupta*, and many others. *Desiderata*.—*Blandina*, *Irish Icarus*, *Carmelita*, *Cuculla*. *Gonostigma*, *Ashworthii*, *Templi*, *Australis*, *Undulata*, *Smaragdaria*, *Testacea*.—*W. Gifford Nash, Clavering House, Bedford.*

Duplicates.—*Cinerea* ♀, fine forms, grey, brown and blackish, *Maritima* and vars. *Immorata* and other East Sussex species.

Desiderata.—Pupæ. *Luteago* (*Barrettii*), *Caesia*, *Albimacula*, *Alpina*, *Xanthomista*, *Sparganii*, *Dissoluta* (*Arundineta*), *Graphalii*. Also imagines of extreme forms *Noctua* in fine condition only.—*A. J. Wightman, 35, Morris Road, Lewes.*

N. American Lepidoptera in papers in exchange for ditto from any part of the world. *J. C. Woodward, Training Ship "Cornwall," Purfleet, Essex.*

MEETINGS OF SOCIETIES.

Entomological Society of London.—41, Queen's Gate, South Kensington, S.W. 7. 8 p.m. October 15th, November 5th, 19th, December 3rd, 1924.

The South London Entomological and Natural History Society, *Hibernia Chambers*, London Bridge. Second and Fourth Thursdays in the month, at 7 p.m. November 13th, H. W. Andrews, "Flies and Disease." November 27th, Annual Exhibition.—*Hon. Sec.*, Stanley Edwards, 15, St. German's Place, Blackheath, S.E.3.

The London Natural History Society (the amalgamation of the City of London Entomological and Natural History Society and the North London Natural History Society) now meets in Hall 40, Winchester House, Old Broad Street E.C. 2, first and third Tuesdays in the month, at 6.30 p.m. Visitors welcomed. *Hon. Sec.*, W. E. GLEGG, 44, Belfast Road, N. 16.

All MS. and editorial matter should be sent and all proofs returned to *HY. J. TURNER*, 98, Drakefell Road, New Cross, London, S.E.14

We must earnestly request our correspondents NOT to send us communications IDENTICAL with those they are sending to other magazines.

Lists of DUPLICATES and DESIDERATA should be sent direct to Mr. H. E. Page, Bertrose, Gellatly Road, New Cross, S.E. 14

OVA, LARVÆ, AND PUPÆ.

The Largest Breeder of Lepidoptera in the British Isles is

H. W. HEAD, Entomologist,
BURNISTON, Nr. SCARBOROUGH.

Full List of Ova, Larvæ, and Pupæ, also Lepidoptera, Apparatus, Cabinets, etc., sent on application.

Many Rare British Species and Good Varieties for Sale.

GREAT REDUCTION IN PRICES.

Cabinets.

Hardwood finished rich mahogany, panelled or glass doors. Drawers, $17 \times 16 \times 2\frac{1}{4}$ ", on hidden runners.

Lift-off glazed tops. Camphor cells. Lined cork or peat.

40-drawer, 12/6 per drawer. 20-drawer, 1/- per drawer extra.

Store Boxes.

10×8 13×8 14×10 16×11 17×12
3/11 5/- 6/6 7/9 9/-

G. A. BENTALL, 392, Strand, W.C.2.

IMPORTANT

TO ENTOMOLOGICAL SOCIETIES and MUSEUMS.

BACK VOLUMES OF

The Entomologist's Record and Journal of Variation.

(Vols. I-XXXV.)

CONTENTS OF Vol. I. (*Most important only mentioned.*)

GENUS *Acronycta* and its allies.—Variation of *Smerinthus tiliae*, 3 coloured plates—Differentiation of *Melitæa athalia*, *parthevie*, and *aurelia*—The Doubleday collection—Parthenogenesis—Paper on *Taeniocampidae*—Phylloxera—Practical Hints (many)—Parallel Variation in Coleoptera—Origin of *Argynnis paphia* var. *valesina*—Work for the Winter—Temperature and Variation—Synonymic notes—Retrospect of a Lepidopterist for 1890—Lifehistories of *Agrotis pyrophila*, *Epunda lichenea*, *Heliophobus hispidus*—Captures at light—Aberdeenshire notes, etc., etc., 360 pp.

To be obtained from—

Mr. H. E. PAGE, "Bertrose," Gellatly Road, New Cross, London, S.E. 14
to whom Cheques and Postal Orders should be made payable

The Entomologist's Record Journal of Variation

EDITED BY

RICHARD S. BAGNALL, F.L.S., F.E.S.
GEORGE T. BETHUNE-BAKER, F.L.S., F.E.S.
M. BURR, D.SC., F.L.S., F.Z.S., F.E.S.
(REV.) C. R. N. BURROWS, F.E.S.
E. A. COCKAYNE, M.D., F.E.S.

JAS. E. COLLIN, F.E.S.
H. ST. J. K. DONISTHORPE, F.Z.S., F.E.S.
JOHN HARTLEY DURRANT, F.E.S.
ALFRED SICH, F.E.S.
(REV.) GEORGE WHEELER, M.A., F.E.S.

and

HENRY J. TURNER, F.E.S.,
Editorial Secretary.

CONTENTS.

	PAGE.
Yellow eggs in <i>L. hirtaria</i> , <i>E. A. Cockayne, M.A., M.D., F.E.S.</i>	149
<i>Euplectus decipiens</i> , a Species of Coleoptera new to the British List, by <i>H. Donisthorpe, F.Z.S., F.E.S.</i>	150
The Variation in <i>Larentia variata</i> , by <i>Carl Höfer.</i>	151
Insect Control—An Outline of the Principles	154
Aberrations nouvelles de Coccinelles, by <i>J. A. Lestage</i>	155
SCIENTIFIC NOTES AND OBSERVATIONS	156
NOTES ON COLLECTING:—Autumn Captures, <i>H. B. D. Kettlewell</i> ; The Season, <i>Rev. W. F. Johnson</i> ; Entomology at Wembley, <i>H. Moore</i> ; Unusual Foodplant of <i>P. bifasciata</i> , <i>E. A. Cockayne</i> ; <i>M. atropos</i> at Eastbourne, <i>F. T. Grant</i> ; Beetle Pupates in and emerges from a Piano, <i>Jos. Anderson</i> ; Some Notes from Braemar, <i>L. E. Esson</i>	156
SOCIETIES:—The Entomological Society of London	160
REVIEW:—L'Orientation Sidérale des Fourmis, <i>Dr. Santschi, W.C.C.</i>	160

NOVEMBER 15th, 1924.

Price ONE SHILLING (NET).

Subscription for Complete Volume, post free
(Including all DOUBLE NUMBERS, etc.)

TEN SHILLINGS.

TO BE FORWARDED TO

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

"BERTROSE," GELLATLY ROAD, NEW CROSS, S.E.14.

Communications have been received or have been promised from Messrs. H. Donisthorpe, Dr. Verity, J. H. Durrant, Rev. C. R. N. Burrows, Wm. Fasnidge, Orazio Querci, H. J. Turner, Karl Höfer, S. G. Castle-Russell, with Reports of Societies and Reviews.

SPECIAL ANNOUNCEMENT !!

Watkins & Doncaster,

(ESTABLISHED 1879.)

36, Strand, London, W.C.2.

Begin to announce a **Special Offer** of Bound Volumes of the important Work

"MACRO-LEPIDOPTERA OF THE WORLD,"

By DR. A. SEITZ.

FOR ORDERS RECEIVED BEFORE DEC. 31st, 1924.

PRICES AFTER
DEC. 31st WILL BE.

Divn. I. Palearctica, Complete (Vols. I.-IV.)	£27	...	...	£36
„ II. American Rhopalocera (Vol. 5)	£19	...	...	£25

Volumes IX. (Indo-Australian Rhopalocera) and XIII. (African Rhopalocera), are nearing completion.

Reduced terms are offered to *former* Subscribers who wish to renew their Subscription if application is made at an early date.

Send us your enquiries regarding any part or Section of this work and we will send fullest particulars immediately.

OUR NEW CATALOGUE of Collecting Apparatus, Books and Specimens sent **POST FREE** per return.

TELEPHONE—**GERRARD 9451**
P.O. Box. No. 126.

TO ALL ENTOMOLOGISTS.

Notice is hereby given that I am instructed to sell

The Collection of the late **M. CHARLES OBERTHÜR.**

(who died on June 1st, 1924, at Rennes, France.)

This Famous Collection—one of the greatest and richest in the world—comprises all the Families of the Macro- and Micro-lepidoptera of the whole Palaearctic and Exotic Faunas.

In the interests of Science it will be sold in Complete Groups to Specialists. Of very Rare and hitherto Unobtainable Species, Single Specimens in A1 quality and setting will be available.

Will all those who intend purchasing kindly send to my address below the fullest information of their wishes in their particular speciality.

Correspondence in English, French, German and Italian.

G. HOFER, Rennes (France), Imprimerie, Oberthur.

Bexley]

L. W. NEWMAN

[Kent

Has for sale a superb stock of 1920 specimens in fine condition, including Varleyata; *Bicuspis*; *Pendularia* var. *Subroseata*; Melanic forms *Lariciata*, *Consortaria*, *Consonaria*, *Abietaria*; Irish forms *Aurinia* and *Napi*, fine vars. *Tiliae*, *Yellow Dominula*, etc., etc. Quotations and Insects sent on approval with pleasure.

Also a huge stock of fine PUPÆ and OVA.

Write for latest price lists.

Relaxing Tins are now 4/- small and 6/- large, pos free **Re-fills, 2/3**
small, 3/3 large, post free.

Yellow Eggs in *Lycia hirtaria*.

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

An interesting paper entitled "Blue-green caterpillars: the origin and ecology of a mutation in hemolymph colour in *Colias (Eurymus) philodice*" was published in the *Journal of Experimental Zoology*, vol. XXXIV., pp. 385-412. In this Professor J. H. Gerould related his discovery of a blue-green form of larva, which behaved as a Mendelian recessive to the normal, and owed its peculiar colour to the absence of xanthophyll in the haemolymph. In the normal larva both xanthophyll and chlorophyll are present, having been absorbed unchanged from the tissues of the plants they feed on. These pigments remain unaltered in the pupa and imago and are transmitted to the eggs. Blue-green eggs containing chlorophyll alone were laid by the imagines bred from the abnormal larvae. After reading this paper I remembered that many years ago I had seen yellow and orange eggs laid by some females of *Lycia hirtaria* and *Ithysia lapponaria*, and wondered whether their colour was due to the absence of chlorophyll. It seemed possible that they were complementary to Professor Gerould's *Colias* larvae, and that in these geometers there existed a form, which either failed to absorb chlorophyll or destroyed it in the alimentary mucosa or elsewhere and so possessed a haemolymph containing xanthophyll alone. In 1922 a hundred females of *hirtaria* were collected from the London squares, in which I found my former ones. Some had paired, but many were virgin, and these were fertilised in captivity.

Each female was placed in a separate box, and the ones found still paired or virgin were carefully labelled. All of the ones, which I was certain had laid no eggs before capture, started by laying green eggs. Eleven females, which began by laying deep green eggs, finished by laying pure yellow ones. In some the change was abrupt, but in others the transition was gradual, and the eggs became less and less green until pure yellow ones appeared. One laid about 200 very pale greenish-yellow eggs, three laid quite 200, and another about 100 pure yellow ones.

The last eggs of one female were a clear deep orange colour. One female laid nothing but yellow ones to the number of 210, but may have laid some before capture. These were kept for my experiment. The females of the F 1 generation all laid green eggs and a cross pairing was obtained, but many of the resulting larvae soon died. Only 13 females of the F 2 generation were bred, and all laid green eggs. Had the form with yellow eggs been a recessive, and had the F 1 generation been heterozygous for egg-colour, there should have been one homozygous female laying yellow eggs to three laying green eggs. Three of my females in this case would have laid yellow eggs. The number bred is too small to allow of a certain deduction, but the probability is that the yellowness of the eggs in this female was not hereditary, but that it started by laying green eggs like the others.

About 10% of my females ended by laying yellow eggs, and Mr. Robert Adkin recorded the same phenomenon in the *Entomologist*, 1892, vol. XXV., p. 129, so that it is not at all unusual in this species. I am unable to suggest a satisfactory explanation. It does not seem likely that the chlorophyll in the haemolymph is all used up before

NOVEMBER 15TH, 1924.

the last eggs are laid, and that these in consequence contain nothing but xanthophyll. The number of yellow eggs laid by some females appears too large for this to be the case, and in others the change from green to yellow seems to be too sudden.

In the female, which laid paler and paler eggs as she proceeded, the alteration may have been due to deficiency of both pigments, because even the last were tinged with green. But the yellow and orange eggs seem to be quite devoid of chlorophyll.

It would be interesting to know whether their colour is really due to xanthophyll, or whether the chlorophyll undergoes a chemical change into a yellow or orange pigment. Owing to the small amount of pigment available it would be difficult to demonstrate its nature even by using the micro-spectroscopic method, but until this has been done further speculation is useless.

Euplectus decipiens, Raffr., a species of Coleoptera new to the British List.

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

On May 25th, 1924, Mr. Collins and I were collecting in a damp place at Yarnton, near Oxford, and when sifting moss from an old tree-stump I captured a rather large *Euplectus*, which Mr. Collins at once recognised as the same species taken by himself near this locality in 1922. He told me it was a new species, and not known to the British list. I therefore sent my specimen to my friend Major Sainte Claire Deville, who returned it as *Euplectus decipiens*, Raffray, with the remark: "Détermination certaine." As the synonymy, etc., of many of the species of *Euplectus* is considerably mixed, it seems best to give a translation in full of the description of the insect in question which occurs in Raffray's revision of the Palaearctic species of *Euplectus* (1910).

"*F. decipiens*, nom. nov. *duponti*, ♂ Reitter, *Verh. Zool. bot. ges. Wien.*, 1881, p. 524—Ganglbauer *Käf. Mitteleur.*, 2, 1895, p. 785. Pl. 2, fig. 1, 2.

Elongate subparallel, slightly convex, reddish ferruginous; legs and antennae lighter, somewhat shining, pubescence fine and sparse. Head large, as long as broad and not broader than the thorax, noticeably contracted in front; front squarely truncate, in the form of a pad "or cushion," ("en bourrelet"); anterior angles well marked, but little raised, bearing a fairly strong fossette; sides oblique; temples rounded; posterior border arcuately impressed and very finely carinate in the centre; frontal furrows deep and enlarged in the centre, reaching the fossettes of the anterior angles; two, not broad but deep, fossettes on the vertex, joined to the frontal furrow by two furrows slightly arched and well marked; the whole head covered with a puncturation slightly varying according to sex; not deep but close together, and a little irregular. Eyes fairly large. Antennae medium, moniliform; joints 9-10 slightly transverse, 11 fairly large, ovoid. Prothorax not broader but a little longer than the head, almost hexagonal, sides rounded except a little in front of the middle, and very feebly sinuate at the height of the lateral fossettes, which are large and slightly oval, the central fossette is large; transverse, *accentriformé* (of the form of an inverted v), i.e., like a circumflex accent; the transverse furrow is obliterated between the central and lateral fossettes; discoidal furrow abbreviated and a little more marked in front, becoming narrower behind to rejoin the central fossette; sides crenulate; puncturation much finer, and above all more sparse than on the head. Elytra longer than broad, sides nearly straight and parallel; shoulders scarcely dentate; three basal fossettes, the external one large; dorsal striae reaching the middle; puncturation very fine

and sparse. Abdomen longer than the elytra, obtusely acuminate behind; 4th tergite large; striae of the first two tergites passing the middle, with a basal impression between them. Metasternum furrowed. Legs robust, femora a little swollen.

♂ Puncturation stronger and more dense, extremely fine on the abdomen; 5th sternite moderately contracted in the middle, but transversely convex, with the posterior border lightly bent and arched; 6th transversely impressed at the base, a fine circular furrow near the posterior border; 7th "en losange," (lozenge-shaped or diamond-shaped), not quite as long as broad, convex, a very fine asymmetrical carinule, "en sens inverse de la normale," (in the opposite direction from the normal).

♀ Puncturation less strong on the head, very fine and very sparse on the thorax, practically nil on the elytra, invisible on the abdomen. Long: 1,66—1,80 mill.

France: Mont-Doré, Lioran; Christiania; Moraive; Silésie; Carpathes (Types Reitter in coll. Raffray)."

[A. Raffray, "Revisions des *Euplectus palearctiques*," *Ann. Soc. Ent. France*, 79, 208-10 (1910).]

In the same work Raffray points out that *M. ardeanus*, Reitter, and *E. abeillei*, Guillebeau, are both synonyms with *E. duponti*, Aubé.

Mr. Champion has shown [*Ent. Mo. Mag.*, 45, 74 (1909)] that the two largest specimens then in the British list are *E. aubeanus*, Reitt., and *E. brunneus*, Grim.; but as we now see the former name is a synonym of *E. duponti*, Aubé.

E. brunneus, Grimmer (*kunzei*, Aubé), is the largest species, measuring 2mm. in length.

E. villifrons, Raffr., is a distinct and good species, and the male characters are very different from those of the others.

The Variation in *Larentia (Thera) variata*, Schiff.

By CARL HÖFER of Klosterneuburg (Vienna).

(Translated by Hy. J. TURNER, F.E.S.)

(Continued from page 120.)

At any rate, in most recent works it is agreed to place *stragulata* as a *variata* form. Although till now, I myself, have always thought of *stragulata* as a *variata* form, and also at the present time there exists no other explanation, yet I must confess that, in recent years, from my own experiences of *stragulata*, and from those of my colleague, Herr Fritz Preissecher, a few doubts have arisen in our minds concerning the *variata* connection.

1. We have in the same likely places, where *stragulata* is always to be obtained as an imago, beaten far more than a hundred larvae from pine (*Picea excelsa*), without therefrom breeding even a single *stragulata*.

2. The *stragulata* females which have been kept for egg-laying—in spite of their bodies being full of ova—as was subsequently ascertained—died, or they deposited only a few eggs, which in most cases proved to be infertile. A few young larvae, which my colleague Herr Preissecher obtained, very soon died, although he supplied them wholly with fresh pine twigs. I must note that *variata* lays its eggs in confinement, very readily and quickly.

3. From the results of the ova, which were deposited by normal *variata* females obtained on the *stragulata* ground, we have obtained

neither a *stragulata* nor a transitional form. Notably the progeny from the eggs of *albonigrata*, as that particular *variata* form from which *stragulata* in all probability arose, produced neither a *stragulata* nor even a transition form.

4. *Stragulata* appears to be absent in many neighbourhoods. For instance we, my colleague Herr Preisseecker and I, among many hundreds of *variata* captured and bred from ova and larvae at Klosterneuburg, have never met with a single *stragulata*. Fritz Hoffman, in his *Styrian Fauna*, reports the same absence from the Mürz valley, and in England it appears to be altogether absent.

This form, not only in its general appearance, but also in its peculiar biological characteristics, shows sufficient indications, that must appeal to the serious entomologist, to throw light on this question. In spite of the apparently opposite indications afforded by the breeding experiments up to the present, I will hesitate a while, and will take upon myself to correct these indications from the really final results.

As to what the markings of the forewings in *stragulata* indicate, I must strongly urge that the statement by Prout in *Seitz*, that behind the costal spot, as in his figure, "there are *always* visible small traces of the back portions of the band," is not correct. As may be seen by a few specimens in my collection, there are existing *stragulata* which have no traces at all of black spots behind the costal spot.

The reduction of the middle band also in *stragulata* follows in the way already mentioned by me: *interrupta* (4.VII.19, Rekawinkel ex coll. Preisseecker), *dissoluta* (9.VI.01, H. Mandling, agreeing with the figure given in *Seitz* on pl. 8), *costimaculata*; and this successive step-wise disappearing process of the middle band is to be observed very clearly in these examples on the white ground colour. In one specimen of the last form there is left over only a mere trace of a small costal marginal spot, and thus it is very apparent that it affords a *stragulata* without any trace of the middle band.

The shape of the costal spot can be very variable: triangular, rhomboid, rectangular, even almost quadrangular. It is interesting—as de la Harpe and others have already stated—that towards the apex of the wing it usually is more rounded and appears to be approaching the margin, and but rarely shows the characteristic angle of the *variata* band.

In addition, in our native *stragulata*, the undulated line is never so sharply toothed as is the case usually in *variata*.

ab. *grisescens*, mihi. I have before me an example of *stragulata* in which the typical white ground colour appears evenly dusted all over with scattered grey scales (*grisescens*, mihi). It is a fresh, uninjured, captured male, and was taken by Dr. Galvagni on May 13th, 1916, at Tullnerbach.

var. *obeliscata*, Hb. It is probably not generally known that the first figure of *obeliscata* to appear, with its original description, was published by Jacob Hübner in his work *Beiträge zur Geschichte der Schmetterlinge*, Augsburg, 1786-1789; its rare form was given, in which basal and middle area are represented as blackish brown, and thus therefore stand out sharply in contrast with the light fawn coloured ground. Also Hübner's figure 296, which appeared later, represented this same form. Herrich-Schaeffer was the first to give the very excel-

lent long-desired figures of the usual *obeliscata* form in his figures 240-242. I have before me three examples of both sexes of both these forms, differing so strongly in their appearance. For the common uniformly light fawn-coloured form, which Herrich-Schaeffer has so naturally figured, I propose the name HERRICHI, so that the Hübnerian name *obeliscata* may remain for the rarer aberration with dark basal and middle area twice figured by Hübner.

ab. *reducta*, mihi. I can also show a ♀ of *obeliscata*, coming from Podersam, in Bohemia, and now included in my collection, with a central band reduced to a costal spot (ab. *reducta*, mihi). Intermediates leading to this rare form, which Treitschke has already mentioned in the *Nachträge*, I cannot show up to the present.

ab. *mediolucens*, Rössler. This form was announced in 1866, by Dr. Adolph Rössler, in his *Verzeichniss der Schmetterlinge des Herzogtums Nassau*, and described as dark grey with pale central area. It was reported from Lower Austria by Dr. Schawerda in his paper, which appeared in the 24th volume of the *Proceedings of the Vienna Entomological Society*, dealing with the lepidopterous fauna of the south-western corner of Lower Austria. The same entomologist has also quite recently again obtained a few specimens of this aberration in Payerbachgraben. It thus appears to belong rather to the Alpine zone, and we cannot, up to the present, claim it for the neighbourhood of Vienna.

Obeliscata, aberr. At the end of my series I have two *obeliscata* female forms, which, on account of their more grey than brown coloration, and their somewhat more sharply defined blackish markings, can be referred to as intergrades to *variata*.

One of them comes from the collection of my collecting companion Fritz Preissecker, and has already been referred to and described in his "Fauna of the Waldviertel," in the 23rd, annual volume of the *Proceedings of the Vienna Entomological Society*, as *variata*. It was disturbed on June 29th, 1908, at Buchsbühel, near Heidenreichstein, from a young pine plantation, which was situated near a wood of tall firs (*Pinus sylvestris*). The second, a very similar specimen, was caught by Dr. Galvagni on June 3rd, 1916, in Enzenreith.

With this I come to the question whether *obeliscata* be a species in itself, or merely a modification of *variata*.

This question Treitschke has already taken up. But since that time almost a hundred years have elapsed, a hundred years of wholly uninterrupted advance in our illustrious science, and yet there is found, even to-day, in our great and modern works, no reasoned comprehension of this question.

But before I give you my own observations, I must repeat what Treitschke said in his *Nachträge*, in 1835.

"*Variata*: After long and careful observations I must unite the two species *variata* and *obeliscata* as varieties of one. With the aid of my friends I brought together a considerable number of bred or freshly caught specimens, which formed a complete series of the slightest gradations from one form to the other. The brown of the forewing, which is met with in the ordinary *variata*, and sometimes inclines to olive-green, often becomes reddish, and even red in tone. Never does there occur a point of separation from *variata* to *obeliscata*, but again the possibility arises that it is a case, which is well illustrated in *prasi-*

varia and *fasciaria*, that undoubtedly the food influences the colour. Herr Fischer von Rösslerstamm and Herr von Tischler, who often reared the varied larvae, which occur indiscriminately pale or dark green, with white or yellow streaks, think with other friends, that *obeliscata* thus obtained live on the scots fir, and that, on the other hand, those feeding on the needles of pine usually produce *variata*. *Variata* should emerge in July, *obeliscata* at the end of August or in September. But Herr Köppe, in Brunswick, took the larvae on the pine, and bred *obeliscata* from them in June. Then he caught the same form for the second time in September. The cause may not be very far from the kind of food (what causes the intermediate forms?), but more probably from the greater or lesser dryness of the food. This influence, which in many genera, for instance *S. tiliae*, *S. populi*, etc., is so potent, may also here be the only natural one. The green-brown form may be attributed to the young fluid sap of May, the yellow reddish coloured form to the dry viscous sap of August. If the larvae were reared in confinement and the food-plant allowed to be dry habitually, the result would be the same; the early emergence in June and July would be of the reddish-coloured form. Fabricius and Hübner in their works are also correct when they unite the two varieties into one species, just as did Borkhausen with his *pinetata*.

"The oldest name is that of the *Wiener Verzeichniss* for the type, since the var. *obeliscata* was first made known to us later.

"Subsequently the occurrence of two generations had to be recognised."

(To be concluded.)

Insect Control—An Outline of the Principles.

(From the *Canadian Entomologist*.)

A. NATURAL CONTROLS.

1. CLIMATIC.

- a. *Winter Conditions*.—Relation of hibernation, winter protection, etc.
- b. *Humidity*.—Relation to insect development.
- c. *Soil Moisture*.—Some insects thrive in damp soil, to others moist conditions are disadvantageous.
- d. *Precipitation*.—Rain effects emergence. Driving rain destroys.
- e. *Wind*.—Very important in promoting distribution of insects.
- f. *Seasonal Weather*.—Long seasons may allow extra generations.

2. NATURAL ENEMIES.

- a. Parasites of harmful insects.
- b. Predaceous insects attacking harmful insects.
- c. Predaceous birds, mammals, fish, and other vertebrates.
- d. Fungus and bacterial diseases and lower animal parasites.

B. ARTIFICIAL CONTROLS.

1. FARM PRACTICES. (Almost all favourable to insect control.)

- a. *Cultivation*.—Develops conditions unfavourable to insect life; promotes good growth to overcome insect attack.
- b. *Ploughing*.—Develops conditions unfavourable for insect life, and mechanical destruction of insects in the soil.
- c. *Good seed, good fertility, and good planting conditions*.—Healthy vigorous plants best overcome insect injuries.

- d. *Rotation of Crops*.—Rotation with unrelated crops minimise favourable conditions for insect generation.
- e. *Time of Planting*.—Timeliness of planting to avoid a particular insect.
- f. *Time of Harvesting*.—Prompt harvesting and threshing avoid many opportunities for insect development.
- g. *Resistant Varieties*.—Some plants resist attack better than others; native plants are particularly resistant.
- h. *Clean Culture*.—Sanitation in garden, orchard, field, and farm.
- i. *Drainage*.—To remove conditions favourable to some insects.
- j. *Kind of Cropping*.—Avoid susceptible crops. Secure unfavourable conditions for insect generation.
- k. *Trap Crops*.—Planting in alternate rows specially attractive plants, to be easily removed and destroyed at a particular time to secure destruction of the insect pests.
2. MECHANICAL METHODS AND DEVICES.
- a. *Methods*.—Handpicking and jarring of foliage.
- b. *Protectors*.—Screens. Insect-proof packing.
- c. *Mechanical Traps*.—Devices for entrapping and collecting.
3. INSECTICIDES.
- a. *Stomach Poisons*.—For mandibulate insects.
- b. *Contact Insecticides*.—Sucking and soft-bodied insects.
- c. *Fumigants*.—For enclosed spaces.
- d. *Soil Insecticides*.—Poisons, contact insecticides: often kill by asphyxiation.
- e. *Repellants*.—Materials which are distasteful.
- f. *Combinations*.—Insecticides and Fungicides together for more than one kind of pest at the same time.

Aberrations nouvelles de Coccinelles.

Par J. A. LESTAGE, Membre Soc. Entom. Belg., Assistant de la Station Biologique d'Overmeive, Belg.

HIPPODAMIA 13-PUNCTATA, L.

- ab. *tonnoiri*, n.ab., Elytres avec 2 points: 1, 6.
- ab. *beffai*, n.ab., Elytres avec les points: 1, 2, 3, 4, 6, $\frac{1}{2}$.
- ab. *guilleaumei*, n.ab., Elytres avec les points: 1, 2, 3, 4, 5+6, $\frac{1}{2}$.

HIPPODAMIA 7-MACULATA, Degeer.

- ab. *scutellata*, ab.n., 1+3+ $\frac{1}{2}$, 2, 4, 5, 6.
- ab. *trifasciata*, ab.n., 1+2+3+ $\frac{1}{2}$, 4+5, 6.
- ab. *bifasciata*, ab.n., 1+3+ $\frac{1}{2}$, 2, 4+5, 6.
- ab. *bioculata*, ab.n., 1+3+ $\frac{1}{2}$, 2, 4+5+6.

ADONIA VARIEGATA, Goeze.

- ab. *bonaerti*, ab.n., Elytres avec les points: $\frac{1}{2}$, 4, 5, 6, et 1 point supplémentaire entre les points, 5 et 6.

ANISOSTICT 19-PUNCTATA, L.

- ab. *trijuncta*, ab.n., $\frac{1}{2}$, 2+4+5, 3, 6, 7, 8, 9.
- ab. *riparia*, ab.n., $\frac{1}{2}$, 1, 2, 3, 4+5+7, 6, 8, 9.
- ab. *campiniensis*, ab.n., $\frac{1}{2}$, 1, 2, 3, 4, 5+7+9, 6, 8.
- ab. *averbodensis*, ab.n., $\frac{1}{2}$, 1, 2, 3, 4, 5+7, 6+8, 9.

- ab. *simplex*, ab.n., $\frac{1}{2}+3$, 1, 2, 4, 5, 6, 7+8, 9.
 ab. *frenneti*, ab.n., $\frac{1}{2}+3$, 1, 2, 4+6, 5, 7, 8, 9.
 ab. *sinuata*, ab.n., $\frac{1}{2}$, 1, 2, 3, 4+5+7+9, 6, 8.
 ab. *wolvuensis*, ab.n., $\frac{1}{2}$, 1, 2, 3, 4+5+7+9, 6+8.
 ab. *juncorum*, ab.n., $\frac{1}{2}$, 1, 2, 3, 4, 5+7+9, 6+8.
 ab. *schoutedeni*, ab.n., $\frac{1}{2}$, 1+3, 2, 4+5+7, 6+8, 9.
 ab. *rubi-claustri*, ab.n., $\frac{1}{2}+3$, 2, 4, 5+7+9, 6+8.

ADALIA 10-PUNCTATA, L.

ab. *lemanii*, ab.n., Elytres avec la moitié inférieure entièrement noire et la moitié supérieure rouge sauf un gros point noir situé au milieu du bord antérieur de chaque élytre.

(Forme dédiée à Mr. G. B. C. Leman bien connu par ses recherches sur les Coccinelles).

Toutes les formes décrites ci-dessus proviennent de Belgique.

SCIENTIFIC NOTES AND OBSERVATIONS.

"DIVERGENCE OF CHARACTER."—In Wallace's *Darwinism* occurs the following paragraph: "It is no doubt due to the same cause (struggle for existence) that some butterflies, on small and exposed islands, have their wings reduced in size, as is strikingly the case with the small tortoise-shell butterfly (*Vanessa urticae*) inhabiting the Isle of Man, which is only about half the size of the same species in England or Ireland." Is this a real fact? Are the Isle of Man specimens "half the size" of normal specimens? If so some of us would like to see these dwarfs; they could be exhibited at our London societies meetings.—H.J.T.

NOTES ON COLLECTING, etc.

AUTUMN CAPTURES.—A fine specimen of *Manduca (Acherontia) atropos* was taken at Godalming, Surrey, on September 27th, 1924, resting on a telegraph pole some 15 feet up. It harmonised so exactly with its surroundings, that had its profile not been seen against the skyline it would have been overlooked. On September 8th, 1923, a specimen of *Plusia festucae* was taken at Folkestone, sitting on a gas-lamp at night, no doubt the unusual occurrence of a second brood specimen, which is especially rare in the south. From September 12th to September 19th of this year, 18 specimens of *Catocala nupta* were taken in the London area, all on tree trunks. One on the Bayswater Road, four in Hyde Park, and thirteen in Regent's Park. This species appears to have been very common generally this year, but I was not aware that it abounded to this extent in the near London district.—H. B. D. Kettlewell, Pageites, Charterhouse, Godalming.

THE SEASON.—We have had most awful weather, raging gales of wind and torrents of rain. To-day, however, is fine so far (11 a.m.), but there are too many clouds about. I spent July and August at a place called Termonfeekin, about four miles north from Drogheda and half a mile from the sea coast. It is a very out of the way place, but there is a beautiful strand extending from the mouth of the Boyne to Clogher Head, and capital sand-hills. I got a good many insects, but

not so many as I might have done if I had had good weather. I took quite a number of *Ichneumonidae*, and think I have some good species among my captures.—(Rev.) W. F. Johnson, Rostrevor, Co. Down, September 24th.

ENTOMOLOGY AT WEMBLEY.—With so much to attract attention, and so much left over after each visit, it is no wonder individual impressions were so varied, and that many entomologists were disappointed in their expectations. From the popular standpoint, it was the lack of the spectacular; very little forced itself on one's notice. One attempt, a 6 foot square case in the Nigerian section, had evidently suffered in transit. The large bush in the centre, originally covered with butterflies, was practically bare, and the floor strewn as it were with fallen blossoms. Here and there were modest exhibits of the wall-case order, but by leisurely search much of scientific and economic value was to be found, but so far as the writer saw, there was nothing in the insect line from Australia, Canada, or New Zealand. Considering the importance of some knowledge of insect life to the settler, and the success of his crops, and to the merchant, the storing of the produce, one would have thought an adequate display would have been organised for their benefit.

Our remarks may be divided under the headings of Ornamental and Economic. The first is comparatively unimportant though the most attractive, and generally signifies the Lepidoptera, for with the exception of certain notoriously injurious moths and larvae, no great harm is attributed to the remainder, especially the butterflies, while the life-histories of all prove of absorbing interest to those who study them. In most instances butterflies and moths were mixed up in the same cases, and too often unnamed, and many desirable specimens were to be seen by the possessors of moderately good collections. Twelve drawers of Indian lepidoptera, and a like number of Malayan, merited attention. A drawer each of *Lycaenidae* and *Erycinidae* from Trinidad were mostly poor in condition and unnamed. In the Tanganyika section were two cases of named butterflies, lent by the B.M. But in the Nigerian section, while the insects of economic importance, or illustrative of mimicry were named, the butterflies were not, and what seemed singular, in no instance were the sexes of *Papilio dardanus* associated. Kenya Colony was content with a few wall cases of mixed insects. Mauritius had three cases of representative insects of all orders, named.

The economical section is best divided under Health and Commerce (including Agriculture). The Government Health Departments exhibit was as excellent as it should have been, and elaborately illustrative of insects (including ticks) and disease. Here one could see cause and effect in all its loathsomeness, the organism and probable or actual carriers, the internal organs and monstrous growths, rotted muscles and bones from so many hapless victims. Probably the British public have never before been able to realise the horrors of leprosy, elephantiasis, etc., as in that chamber of horrors.

The Gold Coast exhibited four cases illustrative of the Tsetse-flies. *Glossina palpalis*, *G. longipennis*, *G. brevipalpus*, carriers of the sleeping-sickness organism.

The Punjab had a case of blood-sucking and other disease-carrying

insects (including ticks), taken on various domestic animals, and some excellent enlarged drawings of *Tabanidae*, etc., by the native artist Manawarud-din.

Agriculture and Commerce. Insect pests of the cotton plant, boll and stem, were exhibited by Nigeria and the Punjab. Every state entomologist, customs officer, and planter throughout the Empire, where cotton is, or is likely to be, grown, cannot know too much of these if the growing is to succeed.

Something more than passing interest is attached to certain bugs, known as cotton stainers. The red cotton stainer, *Dysdercus supersticiosus*, F., appears in two forms, typical and banded, and has a natural enemy and mimic, another bug, *Phonoctonus picturatus*, Faim. The black cotton stainer, *Dysdercus melanoderes*, Karsch, has for enemy and mimic another carnivorous bug, *Phonoctonus formosus*, Dist. *Dysdercus* is further controlled by dipterous parasites. The enlarged models by Grace Edwards of *Phonoctonus* giving the coup-de-grace to the *Dysdercus*, seemed to attract something more than a casual notice.

Kenya had four cases of insects injurious to sugar-cane and their parasites.

The wild silk worms of Africa. Tanganyika and Kenya, both exhibited the large silk nests of the gregarious larvae of the *Anaphe* moths, *A. ambrizia*, *A. venata*, and *A. moloneyi*, with their parasites. Tanganyika, in addition, showed the larger and rougher nests of *Diapalpus congregarius*. The commercial possibilities of the silk was demonstrated by dyed skeins and woven fabrics. But if it is to be a paying proposition, some means of controlling their natural enemies (hymenopterous and dipterous) will have to be adopted, further the *Anaphe* larvae are large and rapidly denude the trees of leaves, and the farming of the insects on a large scale would probably be negatived by the food supply. It is of interest to note, that while in most cases it is of importance to foster the natural enemies of insects, in the present instance it would be necessary to suppress them or protect their would be victims. In the Tanganyika exhibit numbers of diptera (? Tachinid) had emerged after the nests were put in the case, also a few moths.

Of other exhibits mention might be made of the large piece of a termitarium, and the driver ants (*Dorylus*) from Nigeria, and the floral mimic *Flata pallida*, Oliv., the pink and green forms settled (?arranged) on the stem of a plant, and resembling the flowers of a legume.

In the Trinidad section was to be seen a small plaster nest containing living workers of the leaf-carrying ant, lent by Dr. Neave, interesting because living, but it struck one as somewhat incongruous.

Doubtless many other exhibits of interest escaped me. The above remarks are founded on notes taken on several visits, but weeks, not days, would scarcely exhaust the wondrous show. Yet I have a strong impression full justice was hardly done to what has become an important study, with such great possibilities.—HARRY MOORE, October, 1924.

UNUSUAL FOODPLANT OF PERIZOMA BIFASCIATA.—On October 19th Mr. T. Nash and I found half-a-dozen larvae of *Perizoma bifasciata* (*Emmelesia unifasciata*) on a clump of common eyebright, *Euphrasia officinalis*. Further search led to the discovery of six more feeding on the seeds of another clump of the same plant. The insect is common in the field on the North Downs, in which these were found, and a

good many larvae were detected on the usual food-plant *Bartsia odoratites*. Millière gives *Euphrasia lutea* as a food-plant in the South of France, and this is treated by some botanists as a variety of *officinalis*, and by others as a distinct species. It does not occur in England. Apart from the record I am not aware of larvae of *bifasciata* having been taken on any plant except red *Bartsia*.—E. A. COCKAYNE, 116, Westbourne Terrace, W. 2.

MANDUCA ATROPOS AT EASTBOURNE.—A fine female specimen of this insect, in perfect condition, and measuring $4\frac{7}{8}$ inches across the wings, was sent to me from Eastbourne by my daughter. It entered a bedroom window on October 3rd, 1924, attracted by the electric light.—F. T. GRANT, 37, Old Road West, Gravesend.

BEETLE PUPATES IN AND EMERGES FROM A PIANO.—One day in June last Mr. Palmer, of this city, sent me a beetle, which he had found emerged from the top of his piano, to which it had caused some disfigurement. The piano was bought about about two years ago. I sent the beetle to Mr. Guermontprez (of Bognor) for identification, and by him it was forwarded to Mr. G. K. Blair, of the British Museum, who pronounced it to be a variety of *Xylotrechus undulatus*, Say. The insect is a N. American species, resembling a small *Clytus mysticus* in build. I quote Mr. Guermontprez's description: "Normally the white pubescence of the elytra is confined to three sharply defined wavy bands, or rows of spots; but in this specimen the wing covers are greatly whitish haired, the purplish brown ground colour showing only in three transverse rows, two each of two oblong, and one of one quadrangular spot on each cover, as the colour of the legs, thorax, and antennae. The length of the insect is about three-eighths of an inch."—JOSEPH ANDERSON, Chichester.

SOME NOTES FROM BRAEMAR IN 1918.—This being my first visit to Braemar I had to find out the whereabouts of the place. *Zygaena exulans* of course was the most important of the expected captures to be made. I reached Braemar on June 24th, with the weather somewhat rough and cold. Little could be done the first week, and not until July 3rd did I get an opportunity of working for *Z. exulans*. From my previous experience of hill-work I had little difficulty in locating the hill resort of this species; in fact I picked out the spot on my first day of arrival. As I neared the top *Z. exulans* began to appear over the heather and cranberry, but on reaching the top they were flying everywhere, although a good breeze was blowing at the time. They were flying very low, just skimming the stunted vegetation, and one can net quite enough in one day from flowers of the bedstraw, the small buttercup, and the bird's-foot trefoil. But on this occasion they were not in good condition on account of the prevailing bad weather, and the fact that I was somewhat too late. The cocoons (empty) were in abundance on heather, bilberry, and cranberry. My other captures were *Plebeius (Aricia) medon* race *artaxerxes*, *Coenonympha davus*, a nice ab. of *aglaia*, swarms of *Thaemnomoma brunneata*, *Gnophos myrtillata (obfuscaria)*, plenty of *Hyppa rectilinea*, and *Agrotis hyperborea (alpina)* just out of pupa.—L. E. ESSON, Aberdeen.

SOCIETIES.

THE ENTOMOLOGICAL SOCIETY OF LONDON.

October 1st, 1924.—OBITUARY.—The President announced the deaths of M. Charles Oberthür, Hon. Fellow of the Society, and of Mr. George A. Booth, Mr. W. E. Butler, Major F. W. Cragg, Colonel Turenne Jermyn, Mr. R. C. Treherne, and Mr. J. H. A. Jenner, Fellows of the Society.

ELECTION OF FELLOWS.—The following were elected Fellows of the Society:—Mr. Alan Druitt, Willow Lodge, Christchurch, Hants., and Mr. S. E. Wace Carlier, Morningside, Dorrington, Warwickshire.

GIFTS TO THE SOCIETY.—The Treasurer called attention to the seventeen new portraits added to the Society's collection and now hung on the walls of the Meeting Room.

EXHIBITIONS.—Mr. H. Donisthorpe exhibited the following five species of Coleoptera new to Britain and all taken by himself during the year.

Mr. W. C. Crawley exhibited and made remarks on carton and other nests of Ants' from Sumatra and North Australia.

Mr. W. G. Sheldon exhibited four examples of *Leioptilus brachydactylus* and discussed the previous records of this moth in Britain.

Dr. K. Jordan exhibited a series of a very polymorphic Zygaenid moth, *Ensphalera* sp., from New Ireland, and discussed its variation.

Lord Rothschild exhibited *Aporia crataegi* ab. *flava*, Tutt.

Mr. R. Adkin exhibited an example of the extremely rare *Dianthoecia compta* from Sussex.

Professor E. B. Poulton, F.R.S., exhibited and discussed (1) a dull black Tenebrionid beetle rejected by the insectivorous lizard *Sphenodon*. (2) the detailed resemblance of an Indian Lepidopterous larva to the excrement of a bird.

Mr. A. E. Tonge exhibited varieties of *Polyommatus (Agriades) coridon* and *P. (Aricia) medon (astrarche)* from Kent.

Mr. H. Main exhibited the pupae of the beetle *Scarabaeus sacer* from Corsica, where it was abundant in all stages near goat's dung.

PAPERS.—The following Paper was read:—"A revision of the *Liphyrinae* (Rhopalocera) with a description of the structure of the puparium of *Liphya brassolis* and of the pupae of *Asalanga viningra* and *A. lamborni*," by Mr. G. T. Bethune-Baker.

REVIEWS AND NOTICES OF BOOKS.

"L'ORIENTATION SIDÉRALE DES FOURMIS."—Dr. Santschi's latest paper on orientation in ants, under the above title, is perhaps the most suggestive of all his contributions towards the solution of this problem. The paper consists of some 40 pages with diagrams, and can only be treated briefly here.

He begins with a classification of the different possibilities of orientation, which he divides into two broad divisions: (a) "L'orientation topoesthésique," where the insect is obliged to move under direct contact with the source of irritation; and (b) "L'orientation télésthésique," controlled by organs specialised to deal with irritations

arising from a distance. Thus in (a) the animal is entirely dependent on the surface over which it is moving, and in (b) it is much less dependent.

(a) He subdivides into:—(1) “orientation baphéique,” purely tactile, by which the insect learns of the consistence and position of the solid, liquid or gaseous substances through the sensorial hairs and other epidermic elements; (2) “topostéréique,” *i.e.*, the shape, roughness or otherwise of substances is used by the insect to recognise its path and even its direction, the organ employed being the antennae; (3) “topochimique,” *i.e.*, the chemical quality of substances is used to recognise direction, the most common being that of smell (antennae). This may be confused with (1) and (2). It is phylogenetically the oldest and exists without exception in all ants; (4) “isokinétique.” This he explains as the muscular contraction whose intensity is recorded by a special sense. By this means the insect may preserve an already acquired orientation, should the means by which it has acquired this orientation disappear for a short time. It necessitates the exact repetition of the muscular movements already acquired.

(b) He subdivides into:—(1) “orientation baresthésique.” Gravity has developed different organs permitting vertical direction to be used as a guide. Ants do not appear to have any special apparatus for this purpose, but muscular sense may replace it to a certain extent, such as the movement of the abdomen as a lever against the muscles of the pedicel; (2) “téléosmique,” *i.e.*, orientation by smell from a distance, very reduced in ants; (3) “termesthésique”: that ants recognise the direction from which heat comes is shown by their transporting their brood several times a day from one chamber to another according to the variation of temperature.: (4) “acoustique,” or the recognition of direction by sound. Here the author says that all myrmecologists do not yet admit the power of hearing certain sounds by ants, though several subfamilies possess stridulating organs. This doubt we find it difficult to credit, as we have made careful experiments with stridulating species such as *Myrmica* and have found that an ant held by forceps close to the door of an artificial nest, but in no way in contact with the nest or table, and stridulating continually, as these ants do when in difficulties, invariably called out several ants from the nest, although none were stirring before. Other simple experiments leave little doubt on this point; (5) “magnétique.” which he considers not yet proved; (6) “optique,” which, with the “orientation topochimique,” is that most used by these insects. This may be divided into (a) orientation based on the perception of direct sources of light, such as sun, moon, stars: these are virtually in infinity, and the orientation which depends on them takes the name of “Orientation sidérale”; (b) light reflected from objects on the earth provides landmarks at a moderate distance (large objects such as trees, walls, etc., seen more or less indistinctly, are the landmarks of georamic orientation) and is the foundation of “orientation géoramique”; (c) the two above forms of orientation have as organ the compound eye, but the ocelli, being adapted to another order of vision, are associated with an orientation arising from them and with its special characters. This is called “orientation ocellaire.”

Ocellar orientation is direct vision based on the use of the ocelli or stemmata, and is most developed in the alate forms. It exists in all

hymenoptera that are not degenerate, and has thus disappeared from the majority of the worker caste among ants. The author considers that workers that still possess ocelli use them for recognising landmarks near the nest, prey, or other insects. Such ants have a freer and more rapid movement than others. The ocelli seem necessary even among the large-eyed genera, such as *Gigantiops*, *Pseudomyrma*, etc.

Dr. Santschi then leads up to his new theory, which we consider of great interest, as follows:—When a hymenopteron leaves its nest, the image of the latter gradually grows smaller and ends by disappearing. While the image lasts, it constitutes the landmark which allows of its returning, and is thus direct visual orientation. When it disappears, the successive images which take its place must be noted by the insect to permit of its return. This is indirect visual orientation, demanding a mental effort which can hardly go very far in the insect with its reduced mental plasticity. It is thus easy to understand that the use of a guide-mark placed as it were in infinity, *e.g.*, the sun, is finally preferred on the score of ubiquity. In this manner his "orientation sidérale" comes into play.

By Sidereal Orientation Dr. Santschi understands every form of orientation which makes use of the sun, moon, or stars as guides, and it is rendered possible owing to the anatomical construction of the compound eye.

Starting with Lubbock's classical experiment with candles, Dr. Santschi traces the history of the discoveries which led up to his own experiments which we will not go into, mentioning Turner (1907), Pieron (1904), and Cornetz, who took Pieron's experiments and repeated them, finding them correct. Cornetz however tried to explain the ants' power of finding their way by the hypothesis of an internal sense of orientation requiring no landmark. Because the insect, when transported from its line of march, continues on a course parallel to its original one ("virtual" as against "real" orientation), he rightly eliminated topoesthetic orientation, but knowing, *e.g.*, that a *Messor* could only see distinctly at a distance of less than a centimetre, and a *Cataglyphis* a distance of 5 centimetres, he concluded that their eyes did not serve them any better than their sense of smell, and consequently inferred the existence of a special sense. It did not occur to him that ants, instead of being short-sighted, may be long-sighted, and find their way by indirect means.

Cornetz' conclusions so impressed Dr. Santschi that he repeated the experiments, with modifications, and he was led to search for an external source of irritation whose action was ubiquitous, such as the magnetic pole for sailors. If one could transport a ship on a certain course, from one ocean to another unknown to its navigators, it would preserve its parallel course.

He then began his experiments with the sun as the most obvious source. Abruptly shading the sun from ants returning to their nest only rarely caused them slight trouble, but the experiment with a mirror produced very striking results. It was necessary to choose for the experiment a worker returning to its nest without the aid of "orientation topoesthétique," presumably too far from the nest for the surface of the ground to be recognisable, or on barren ground untraversed by other ants.

With the help of an assistant acting as a screen between the sun and the ant, Dr. Santschi placed himself slightly behind or at the side of the ant and projected on it, from time to time, the rays of the sun by means of a large mirror (40×60 cm.), holding it as still as possible. The result was that the insect often diverged from its course for a considerable time, at an angle corresponding fairly exactly to that of the apparent displacement of the sun. For instance, when the sun was at the ant's right, and he displaced it by means of the mirror to its left, 180 degrees, the insect turned through 180 degrees and proceeded in an exactly contrary direction to its original course. In short, when the sun was on the ant's right and was displaced to any other position, the ant turned so as to still have the sun on its right.

It must be admitted that this experiment does not always succeed, a high wind, the presence of a large object close by, the too close proximity of the nest, or a mirror too small, being sufficient to nullify it. However, other methods of orientation being excluded, the use of the sun as a guide is readily demonstrated. Similar results are obtained by the experiment known as Brun's "temporary fixation," which consists in placing an opaque box over the ant and removing it after the sun has reached another position. Given conditions similar to the above, the ant continues on its way to the nest in virtual orientation, *i.e.*, on a line that takes it away from the nest at an angle equal to that of the sun's displacement.

The moon also can serve as a guide in sidereal orientation. This is illustrated by an experiment as follows. On a moonlight night a fig on which numbers of *Monomorium salomonis* var. *didonis* were feeding was carried some distance away, to ground unknown to the ants that were still clinging to the fig, and replaced on the soil.

A number of the ants, disturbed by the operation, at once left the fig and proceeded northwards in correct virtual orientation. They were walking each on its own, some distance apart, but in parallel lines. Suddenly they scattered and wandered on all sides. On looking up, Santschi saw that the moon was obscured by a small cloud. As soon as the cloud passed, the ants resumed their northward direction, though now they were separated by greater distances. A second time the moon was hidden, and a similar perturbation took place among the ants, and on the moon appearing again, the former direction was resumed, the ants then reaching a grass border and disappearing from view. Thus these ants, removed to unknown ground, at once took the moon as guide, and its momentary eclipse by a cloud was sufficient to lead them astray.

Finally the author considers orientation by means of the stars during the night, in twilight and in full daylight. (a) Stellar orientation during darkness. Here we may divide ants broadly into 3 categories, (1) species of a dark colour, in which the predominant colours are black and red, because these colours best prevent the penetration of the chemical rays of the sun. These species for the most part are diurnal and possess well-developed compound eyes; (2) pale and blind species living mostly underground, with which we are not concerned here; (3) pale species with well-developed eyes. These come out at night time, or in the shade of woods. There are, it is true, some of this category that come out in full daylight, but they are protected by a thick pubescence (*e.g.*, *Cataglyphis bombycinus*).

Yellowish species such as *Camponotus thoracicus* come out very rarely during daytime, but often are found walking on the sheet on which a lamp is placed to attract flying insects on moonless nights, and it is well-known how often the winged sexes of ants will come to light at night. In Tunisia during summer nights, even moonless ones, great numbers of workers habitually come out. What then is the function of these large compound eyes in nocturnal species, eyes often larger than in allied diurnal species? From experiments made by placing screens over ants on the march, either in daylight, or after sunset and before the appearance of the stars, Santschi concluded that it is probable that there is something in the sky itself, apart from the sun and the moon, that can serve ants for a guide. When a cylindrical screen, *i.e.*, one hiding the surrounding ground but not hiding the sky, is placed over an ant, the ant continues her way undisturbed, but when a horizontal screen is held for a moment so as to hide the sky, the ant at once becomes disturbed, wanders round, and is plainly at a loss for the right direction. It must be noted that on nearing the nest, or known ground, the cylindrical screen may derange the ant, because on arriving at known ground the insect avails itself of georamic orientation and no longer depends on the sky.

The author is led to the conclusion that ants can see stars in daylight. Stars may be seen in daytime from the bottom of a deep well; the eye of the insect is composed of numerous tiny wells directed to all points of the sky. In dealing with the objections to his hypothesis, which he first stated in 1913, Santschi investigated the wide-spread idea of stars being visible from a well, but this phenomenon, if actually possible, appears only to be so under certain conditions and under favourable circumstances. Stars can however undoubtedly be seen during an eclipse of the sun, and it is well-authenticated that under certain conditions stars can be seen in daylight without an eclipse, from the top of mountains or by reflection in mountain lakes. It is clear therefore that star-light traverses the atmosphere in daylight, and the fact that we can only see it rarely is due to physiological not physical causes.

In support of his theory, the author goes into a careful anatomic and physiologic survey of the eye of the ant.

In conclusion, he says it is perhaps because he lives in a flat, "desert" country that he has been led to the discovery of sidereal orientation, because in such a country landmarks are low, and therefore not suitable for use as distant guides to finding the way.

While sidereal orientation is not found in all ants, it is not confined to these insects. Nesting hymenoptera return to their nests in a direct line from considerable distances, and where the conditions exclude georamic orientation, astral vision may be the sole agent. Experiments on a *Scolia flavifrons* gave results similar to the experiments on ants.

Sidereal orientation appears to be the cause of the relatively large development of the eyes in desert-living ants. The sand, constantly disturbed by the wind, is a bad preserver of topochemical traces, and under these circumstances ants are obliged to have greater recourse to sight.—W.C.C.

(*Mémoires de la Société vaudoise des sciences naturelles*, No. 4, pp. 137-176, 1923).

Subscriptions for Vol. XXXVI. (10 shillings) should be sent to Mr. Herbert E. Page, "Bertrose," Gellatly Road, New Cross, S.E. 14 [This subscription includes all numbers published from January 15th to December 15th, 1924.]

Non-receipt or errors in the sending of Subscribers' magazines should be notified to Mr. Herbert E. Page, "Bertrose," Gellatly Road, New Cross, S.E. 14

ADVERTISEMENTS of Books and Insects for Sale, or Books wanted will be inserted at a minimum charge of 2s. 6d. (for four lines). Longer Advertisements in proportion. A reduction made for a series Particulars of Mr. Herbert E. Page, "Bertrose," Gellatly Road, New Cross, S.E. 14

Subscribers who change their addresses must report the same to Mr. H. E. PAGE "Bertrose Gellatly Road, New Cross, London, S.E., otherwise their magazines will probably be delayed.

Desiderata.—Foreign examples, local races, vars. and abs. from all parts of the world of any butterflies included in the British list. Setting immaterial; exact data indispensable. Liberal return made.—*W. G. Pether, "Thelma," 4, Willow Bridge Road, London, N. 1.*

Duplicates.—*Cinxia*, *Bellargus*, *Coridon*, *H. Comma*, *Lineola*, *Galathea*, *Moneta*, *Nupta*, and many others. *Desiderata*.—*Blandina*, Irish *Icarus*, *Carmelita*, *Cuculla*, *Gonostigma*, *Ashworthii*, *Templi*, *Australis*, *Undulata*, *Smaragdaria*, *Testacea*.—*W. Gifford Nash, Clavering House, Bedford.*

Duplicates.—*Cinerea* ♀, fine forms, grey, brown and blackish, *Maritima* and vars. *Immorata* and other East Sussex species.

Desiderata.—Pupæ. *Luteago* (*Barrettii*), *Caesia*, *Albimacula*, *Alpina*, *Xanthomista*, *Sparganii*, *Dissoluta* (*Arundineta*), *Graphalii*. Also imagines of extreme forms *Noctua* in fine condition only.—*A. J. Wightman, 35, Morris Road, Leves.*

N. American Lepidoptera in papers in exchange for ditto from any part of the world. *J. C. Woodward, Training Ship "Cornwall," Purfleet, Essex.*

MEETINGS OF SOCIETIES.

Entomological Society of London.—41, Queen's Gate, South Kensington, S.W. 7. 8 p.m. December 3rd, 1924.

The South London Entomological and Natural History Society, *Hibernia* Chambers, London Bridge. Second and Fourth Thursdays in the month, at 7 p.m. November 27th, Annual Exhibition.—*Hon. Sec.*, Stanley Edwards, 15, St. German's Place, Blackbeath, S.E. 3.

The London Natural History Society (the amalgamation of the City of London Entomological and Natural History Society and the North London Natural History Society) now meets in Hall 40, Winchester House, Old Broad Street E.C. 2, first and third Tuesdays in the month, at 6.30 p.m. Visitors welcomed. *Hon. Sec.*, W. E. GLEGG, The House, Albion Brewery, Whitechapel Road, E. 1.

All MS. and editorial matter should be sent and all proofs returned to *HY. J. TURNER*, 98, Drakefell Road, New Cross, London, S.E. 14

We must earnestly request our correspondents NOT to send us communications IDENTICAL with those they are sending to other magazines.

Lists of DUPLICATES and DESIDERATA should be sent direct to Mr. H. E. Page, Bertrose, Gellatly Road, New Cross, S.E. 14

OVA, LARVÆ, AND PUPÆ.

The Largest Breeder of Lepidoptera in the British Isles is

H. W. HEAD, Entomologist,
BURNISTON, Nr. SCARBOROUGH.

Full List of Ova, Larvæ, and Pupæ, also Lepidoptera, Apparatus, Cabinets,
etc., sent on application.

Many Rare British Species and Good Varieties for Sale.

Thymoplas

MOUNTING OUTFITS.

A simple and permanent method for
mounting insects, &c.

Adapted by the Entomological Dept. Royal
College of Science, London.

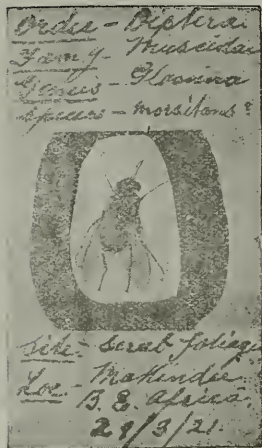
Price 3/- (postage) and 6/- (postage)
6d. 9d.

HARBUTT'S PLASTICINE, LTD.

56, LUDGATE HILL, E.C.4, and
BATHAMPTON, nr. BATH.

AGENT—

G. A. BENTALL, F.Z.S.,
Naturalist,
392, Strand, W.C.2.



BACK VOLUMES OF

The Entomologist's Record and Journal of Variation.

(Vols. I-XXXV.)

CONTENTS OF Vol. I. (Most important only mentioned.)

GENUS *Acronycta* and its allies.—Variation of *Smerinthus tiliae*, 3 coloured plates—
Differentiation of *Melitæa athalia*, *parthenie*, and *arelia*—The Doubleday collection—
Parthenogenesis—Paper on *Taenio campidae*—Phylloxera—Practical Hints (many)—
Parallel Variation in Coleoptera—Origin of *Argyris paphia* var. *ralesina*—Work for the
Winter—Temperature and Variation—Synonymic notes—Retrospect of a Lepidopterist
for 1890—Lifehistories of *Agrotis pyrophila*, *Epunda lichenea*, *Heliophobus hispidus*—
Captures at light—Aberdeenshire notes, etc., etc., 360 pp.

To be obtained from—

Mr. H. E. PAGE, "Bertrose," Gellatly Road, New Cross, London, S.E. 14
to whom Cheques and Postal Orders should be made payable

The Entomologist's Record AND Journal of Variation

EDITED BY

RICHARD S. BAGNALL, F.L.S., F.E.S.
GEORGE T. BETHUNE-BAKER, F.L.S., F.E.S.
M. BURR, D.SC., F.L.S., F.Z.S., F.E.S.
(REV.) C. R. N. BURROWS, F.E.S.
E. A. COCKAYNE, M.D., F.E.S.

JAS. E. COLLIN, F.E.S.
H. ST. J. K. DONISTHORPE, F.Z.S., F.E.S.
JOHN HARTLEY DURRANT, F.E.S.
ALFRED SIGH, F.E.S.
(REV.) GEORGE WHEELER, M.A., F.E.S.

and

HENRY J. TURNER, F.E.S.,
Editorial Secretary.

CONTENTS.

	PAGE.
Seasonal Notes on the Rhopalocera, <i>S. G. Castle-Russell, F.E.S.</i>	165
The Variation in <i>Larentia (Thera) variata</i> , by <i>Carl Höfer (concluded)</i>	167
CURRENT NOTES AND SHORT NOTICES	170
SOCIETIES:—The Entomological Society of London; The South London Entomological Society	171
REVIEW:—"Le Mond Social des Fourmis du Globe," by <i>A. Forel, H.D.</i>	173
CONTENTS	178
SUPP.:—List of the Macro-lepidoptera of Hampshire and the Isle of Wight.. .. .	(37)–(40)
TITLE PAGE.	

DECEMBER 15th, 1924.

Price TWO SHILLINGS (NET).
(WITH INDEX.)

Subscription for Complete Volume, post free
(Including all DOUBLE NUMBERS, etc.)

TEN SHILLINGS.

TO BE FORWARDED TO

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

"BERTROSE," GELLATLY ROAD, NEW CROSS, S.E.14.

Communications have been received or have been promised from Messrs. H. Donisthorpe, Dr. Verity, J. H. Durrant, Rev. C. R. N. Burrows, Wm. Fassnidge, Orazio Querci, H. J. Turner, S. G. Castle-Russell, L. H. Bonaparte Wyse, H. B. D. Kettlewell, G. T. Porritt, R. Adkin, F. T. Grant, O. R. Goodman, K. J. Hayward, with Reports of Societies and Reviews.

SPECIAL ANNOUNCEMENT!!

Watkins & Doncaster,

(ESTABLISHED 1879.)

36, Strand, London, W.C.2.

Begin to announce a **Special Offer** of Bound Volumes of the important Work

“MACRO-LEPIDOPTERA OF THE WORLD,”

By DR. A. SEITZ.

FOR ORDERS RECEIVED BEFORE DEC. 31ST, 1924.

PRICES AFTER
DEC. 31ST WILL BE.

Divn. I. Palearctica, Complete (Vols. I.-IV.) £27 £36
,, II. American Rhopalocera (Vol. 5) .. £19 £25

Volumes IX. (Indo-Australian Rhopalocera) and XIII. (African Rhopalocera), are nearing completion.

Reduced terms are offered to *former* Subscribers who wish to renew their Subscription if application is made at an early date.

Send us your enquiries regarding any part or Section of this work and we will send fullest particulars immediately.

OUR NEW CATALOGUE of Collecting Apparatus, Books and Specimens sent **POST FREE** per return.

TELEPHONE—**GERRARD 9451**
P.O. Box. No. 126.

TO ALL ENTOMOLOGISTS.

Notice is hereby given that I am instructed to sell

The Collection of the late **M. CHARLES OBERTHÜR.**

(who died on June 1st, 1924, at Rennes, France.)

This Famous Collection—one of the greatest and richest in the world—comprises all the Families of the Macro- and Micro-lepidoptera of the whole Palaearctic and Exotic Faunas.

In the interests of Science it will be sold in Complete Groups to Specialists. Of very Rare and hitherto Unobtainable Species, Single Specimens in A1 quality and setting will be available.

Will all those who intend purchasing kindly send to my address below the fullest information of their wishes in their particular speciality.

Correspondence in English, French, German and Italian.

G. HOFER, Rennes (France), Imprimerie, Oberthur.

Bexley]

L. W. NEWMAN

[Kent

Has for sale a superb stock of 1920 specimens in fine condition, including Varleyata; Bicuspis; Pendularia var. Subroseata; Melanic forms Lariciata, Consortaria, Consonaria, Abietaria; Irish forms Aurinia and Napi, fine vars. Tiliae, Yellow Dominula, etc., etc. Quotations and Insects sent on approval with pleasure.

Also a huge stock of fine PUPÆ and OVA.

Write for latest price lists.

Relaxing Tins are now 4/- small and 6/- large, pos free **Re-fills, 2/3** small, 3/3 large, post free.

Seasonal Notes on the Rhopalocera.

By S. G. CASTLE-RUSSELL, F.E.S.

So far as my own experience goes the season has been an exceptionally bad one, one of the very worst that I remember during the last 30 years. The summer has been cold, windy, and sunless, and following upon two very similar ones has no doubt had a very deleterious effect upon insect-life generally, even the wasps being conspicuous by their absence. The want of sunshine prevented the butterflies from moving about and exercising their usual functions of reproduction. I particularly noticed, about August the 20th, a large number of freshly emerged female *Polyommatus (Agriades) coridon* and within three days, owing to the wet and very cold winds, they had practically all disappeared, there being no opportunity for ovipositing. This surely must affect the numbers of next year. I have found in this district every species scarce, with the exception of *Cupido minimus*, which was abundant. *P. (A.) coridon* which was abundant everywhere around here four years ago, has been very scarce, and in some spots has hardly appeared at all. The Argynnids, also generally abundant, have been in dozens where they usually appear in hundreds.

In the New Forest *Dryas paphia* has been scarcer than I have ever seen it, and during the whole month of July only one good aberration was seen, but not taken. *Argynnis aglaia* and *A. cydippe (adippe)* were seen but rarely. *Aphantopus hyperantus* was in fair numbers and some nice aberrations were secured. My wife saw a beautiful silvery grey female *Epinephile jurtina* sitting on a bramble-bush, but made an unsuccessful effort to catch it, owing to the suspected presence of an adder in the near vicinity. At the end of the season the Vanessas were abundant and I heard of two remarkable aberrations being seen in gardens in this district, but not taken as no net was available.

My wife and I expended a very considerable time in field work entailing much hard walking, and during the season we were fortunate enough to capture the undermentioned aberrations which, together with many others of a minor character, constitute a very satisfactory addition to our cabinets.

Brenthis euphrosyne.—Basingstoke. A male with the hindwings on the upperside of a light straw colour.

Argynnis cydippe (adippe).—New Forest. A male with the greater part of the wings on the upperside of a straw colour.

Argynnis aglaia.—Andover District. A silvery white male. This insect was seen one day and caught during a visit to the same down three days after. When first observed in flight it greatly resembled *Boarmia roboraria*.

Aphantopus hyperantus.—New Forest. 1. A male with large symmetrical buff coloured splashes on outer portions of each underside wing: this is a very unusual form.

2. A remarkably fine male form of ab. *lanceolata*; the large pear-shaped spot with a long white dash in the centre of the hind wing, which usually has a small spot connected to it above, has an additional spot beneath, there being a combination of three, instead of the usual two spots

Epinephile tithonus.—Andover District. 1. A male with one upper wing of white coloration.

DECEMBER 15TH, 1924.

2. A female with two upper wings white except portions of the inner margins.

Polyommatus icarus—Andover District. 1. A gynandromorphous specimen with the left upper wing entirely of male colour, the remaining three wings being of female colour (brown) with dashes of male colour on each.

2. A male so heavily dusted with black as to give the appearance of dark blue.

Polyommactus (Agriades) coridon.—Andover District. A number of males of a greenish colour, heavily dusted with black.

Two males and two females ab. *fowleri* all well-defined forms.

A female with underside upper wing striated.

A female with underside lower wing striated.

A female with the wings one side normal: on the other side the upper wing is striated and the lower wing *obsoleta*-form with white ground.

In addition to the above described captured forms we were fortunate enough to breed several very striking forms of *Melitaea aurinia*.

Melitaea aurinia.—Hampshire. 1. Female. On the upper wings the usual fulvous colour is very heavily suffused with black, the hind-wings being almost entirely black with series of elongated straw-coloured spots. The underside is entirely spotless, the wings being of a light fulvous: on the lower wings is a broad white border occupying about half the area of the wings. This specimen is very similar to one I bred last year, which was described by Mr. Frohawk in the *Entomologist* of May, 1923. The underside of this latter specimen instead of being spotless was heavily striated with black.

2. Female. The upperside of this is somewhat similar to the one above described, but with less black suffusion, and the underside is of more normal type, with the exception that on the upper wings there are four large black spots on each, in addition to the usual spotting.

3. Female. This is a difficult insect for a non-technical person to describe properly. On the upper wings the general ground-colour is of a light rosy tint with long rays of a greyish white colour. The hind-wings are nearly entirely black with 12 long pinkish grey streaks. On the underside the upper wings are fulvous with the outer margins of a rosy hue, the lower wings have a wide white border occupying the greater part of the wing. The underside is entirely spotless. This insect has a singularly beautiful appearance.

4. Male. The upper side of all the wings are fairly normal except that there is an entire absence of yellow colouring. All the wings have a wide entirely black border, without spotting.

All these specimens were bred under normal conditions in an unheated green-house in the garden and which, owing to the absence of sunshine at the time, did not greatly exceed the normal temperature. All the imagines emerged in mid-May, about a week before the butterfly was on the wing in a wild state. I have bred this species for several years past but my experience has been that striking aberrations are very rare, and this seems borne out by the fact that no really extreme aberrations were included in the recent sales of famous collections.

Aglaia urticae. A late brood of larvae was taken on September 7th, and produced a number of unusually dark types, the best being several

ab. *bolandii* on which the blue marginal spots are very large and extremely bright.

It may be of interest to note that on Tuesday last a number of very remarkable named forms of aberrations of the *Vanessas* were sold at Steven's Auction Rooms.

Forms of *Euvanessa antiopa*, *Eugonia polychloros*, *Pyrameis atalanta* and *Aglais urticae*, varying beyond one's wildest imagination were included. These specimens were of Continental origin, and the result of submission to extremes of temperature.

It was interesting to note that the well-known collectors present fought shy of the insects, and they realised only a matter of a few shillings each, an unsatisfactory reward for the labour entailed. One collector was heard to remark that probably in a few years time some of these specimens would be found re-pinned and re-set in British collections *improperly* labelled. I sincerely trust not: anyhow they will be easily recognised for what they are I think. [Some of these were bought for a collection of Palaearctic Rhopalocera.—H.J.T.]

The Variation in *Larentia (Thera) variata*, Schiff.

By CARL HÖFER of Klosterneuburg (Vienna).

(Translated by Hy. J. TURNER, F.E.S.)

(Concluded from p. 154.)

NOTE.—In the foregoing portions of the article, by the name "pine" is meant *Abies (Picea) excelsa* (Föhren) Spruce, and by "fir" is intended *Pinus sylvestris*, scots' pine, Fichten.—H.J.T.

To this I must add the following notes from my own experiences.

1. The assertion is not true that an intermediate form is never found—at least among the imagines in our neighbourhood (Vienna)—between *variata* and *obeliscata*. In my own collection there are two males of *variata* identical in their coloration with the *obeliscata* of Herrich-Schäffer's figures. I have a similarly large and similarly coloured example of *obeliscata*, placed with them to show that on the other hand the insect affords quite a different impression.

2. That the food plant has no effect upon the colour, the insignificant results obtained by my colleague Preissecker and myself in breeding from the egg have established. I have five *variata* of both sexes which were reared from the eggs of a normally coloured and normally marked *variata* female, and fed exclusively on *Pinus sylvestris* (Föhren). These examples show very evidently not the slightest trace of an approach to *obeliscata*. Further, I have a female of *obeliscata*, which was bred from an egg laid by a female caught on the Buchberg, near Klosterneuburg, exactly agreeing with the figure of Herrich-Schäffer. The larva was exclusively fed on *Abies excelsa* (Fichten), but there was no indication of the appearance of an *obeliscata* origin.

It is of no good to introduce into this question a parallel between *Ellopija fasciaria* and *obeliscata*. In woods of *Pinus sylvestris* (Föhren) the brown form *Ellopija fasciaria* is found flying together with its green form *prasinaria*, and these *prasinaria*, which fed on *P. sylvestris* of course, are as deep green as the true *prasinaria* found in woods of *Abies excelsa* (Fichten), where only the form *prasinaria* is found.

But if the food really influences the colour why then are not all the *P. sylvestris* (Föhren) *fasciaria* brown?

3. The statement as to the time of appearance is wholly unreliable. With us (Vienna), in favourable years, one can rely upon meeting with the first *variata* well at the end of April—what is stated of the rest of Europe in the literature ought certainly to be that of the whole of Central Europe. The end of May and June then is the chief time of the appearance of the first generation, the few belated examples in July follow with larvae of great diversity of development. At the end of August and in September, even right into October, an intermittent and weak second generation appears. But we—my colleague Preissecker and I—have observed in the open, and bred from larvae, only one generation of *obeliscata*. Relative to a second generation reported by a few authors, it may easily be the chance, that somewhat worn specimens of *Larentia firmata*, which frequent exactly the same localities as *obeliscata*, were confused with the latter. I myself have occasionally got in exchange *firmata* for *obeliscata*, and I have two pairs of *firmata* now before me, to prove that a confusion, especially in the female, is by no means improbable.

4. As to the supposition relative to the influence of the softer or drier food on *variata* there is no confirmation. Both my colleague Preissecker, and I myself, have obtained *variata* last year in confinement in January and February. Then it quite often occurred, as it can in the life of the free larvae, that for days at a time no fresh food has been provided for them, and just as in our case with hard, dry war-food, they had to be satisfied. But the resultant imagines all proved to be recognisable indubitably as *variata*.

As for the remarks of Treitschke, they are not, for the most part, founded upon his own observations, and I think also, moreover, that the information to be found in literature concerning the biological circumstance of *variata* and *obeliscata*, especially for neighbourhoods, where *Abies excelsa* (Fichten) and *Pinus sylvestris* (Föhren) are mixed, must only be considered as really correct, when it originates from absolutely reliable sources.

What evidence do our own observations in the open afford? We have *variata* in numbers always exclusively in fir *Abies excelsa*, (Fichten or Tannen) woods, but *obeliscata* is always met with confined more exclusively to *Pinus sylvestris* (Föhren) woods. The imagines from larvae beaten from *Abies excelsa* (Fichten or Tannen) produce only *variata*, without intermediates. *Variata* appears every season a few weeks earlier than *obeliscata*. Of the former there is always a second—if only a partial—generation in the autumn, of the latter we can only establish the occurrence of one generation.

These observations, so far as one can say, have been made by absolutely reliable guarantors, also for most other neighbourhoods; for instance, Louis B. Prout's statements in his article appearing in the 45th volume of the *Entomologist*, in numerous quotations as well as German literature-citations. Prout knew only a single entomologist who had obtained *obeliscata* from *Abies excelsa* (Fichten), and this was Mr. Raven, of Cambridge, already quoted by me. This information now must be received as quite reliable, since he confirmed it afresh in vol. 46 of the *Entomologist*, of the year 1913, what he had himself stated for Prout's article, that he, from a number of larvae, which were

exclusively beaten from *Abies excelsa* (Fichten), and furnished the same as food-plant, bred both typical *variata*, just as Prout figured in his article, and typical *obeliscata*.

Concerning the larvae of *variata* and *obeliscata*, so very variable are they, that we cannot separate them by any definite, constant, characteristic differences.

Finally, Herr Prof. Dr. H. Rebel and Dr. H. Zerny have, at my request, kindly undertaken an examination of the male genital apparatus of the three chief forms of the *variata* group, and what they have communicated to me is placed below.

"The male genital apparatus in the *Larentia variata* group is constructed on a single plan and uniformly shaped.

"The uncus has the form of a very long, outwardly curved thorn. A scaphium does not stand out as an independent morphological structure. The extended, distally spoon-shaped, spreading valves bear on their inner margin before the first half of the length, a simple pair of fibulae with their apices converged towards one another. In connection with these there stands a much more slender chitinised pair of structures, in the form of a stalked long-bristled pad (2nd pair of fibulae). A heel on the latter more dorsal lying structure is wanting. As the penis duct functions a distal fold appears in one angle.

"The penis is a distal strongly enlarged chitinous tube, of which the distal end is furnished with a border of strong chitinous spines (thorns) lying along the tube. These penis spines, varying in number and position, afford but only individual variations. From this it appears the assertion of Prout differs (*Seitz.*, Vol. IV., p. 217), in which he states in the case of *obeliscata*, 'The spine group on the aedeagus differs from that of the ♂ of *variata*.'

"Investigation was made of the genital apparatus of two each of *variata* and *obeliscata* and of one *stragulata*. A very general conformity of the preparations was so apparent that no further preparations were made."

If now no doubt still appears to exist as to a slight affinity between *variata* and *stragulata*, we may probably recognise in the *obeliscata*-form, retaining itself so different in its biological aspect, in spite of the conformity in structure of the genital apparatus, a species in the making before our eyes, on account of its tendency to isolation.

It would be equally interesting to establish crossings between *variata*, *obeliscata* and *stragulata*, from the results of which probably further conclusions could be demonstrated. Possibly there would arise from such an investigation a conclusion as to which of the three forms, is genetically the oldest.

I will, at any rate, myself endeavour to undertake such an investigation, and it would be a very great pleasure to me if my work were to induce my dear collecting colleague to the same object.

In conclusion I ask all who have aided me in the composition of my small contribution to accept my best thanks. But especially do I tender my thanks to Herr Prof. Dr. Rebel, who in spite of the prevailing intolerable temperature of the unheated rooms of the museum library, in an unselfish, devoted way, afforded me an introduction to the rich collection of literature, and helped me with it.

CURRENT NOTES AND SHORT NOTICES.

ENTOMOLOGY AT WEMBLEY.—One might mention, in addition to the interesting account given by Mr. Harry Moore in our last number, that Professor E. B. Poulton, F.R.S., had an exhibit, No. 207, illustrating Mimicry in an African Swallowtailed Butterfly (*Papilio dardanus*); and Dr. C. J. Gahan an exhibit, No. 208, on Mimicry in Beetles. These two exhibits will be found described in the excellent little Handbook to the Exhibition of Pure Science, arranged by the Royal Society. In this publication also, p. 127, Professor Poulton writes a short article on Insect Mimicry and the Darwinian Theory of Natural Selection.

It will be remembered that the ant *Camponotus (Myrmotrema) perrisii*, Forel., subsp. *nigeriensis*, Sant., recorded by Mr. Crawley and myself [*Ent. Rec.*, **36**, pp. 91 and 92 (1924)], was captured in some numbers by me in the case containing the termitarum and driver-ants in the Nigerian Section, referred to by Mr. Moore.—HORACE DONISTHORPE.

A very successful meeting of the Entomological Club was held on November 4th, at No. 3, Lancaster Place, N.W. 3, the residence of Mr. H. Willoughby-Ellis, F.Z.S., F.E.S., the Hon. Secretary of the Club, and the host of the evening. The other members present were Messrs. Robert Adkin, Jas. E. Collin, H. Donisthorpe, Dr. H. Eltringham, and Prof. E. B. Poulton. In addition the following guests were present. Messrs. F. Balfour-Browne, E. C. Bedwell, K. G. Blair, Dr. E. A. Cockayne, Messrs. E. Ernest Green, Philip Harwood, Dr. A. D. Imms, Dr. S. A. Neave, Capt. N. D. Riley, Messrs. Rait-Smith, W. G. Sheldon, and Hy. J. Turner. The visitors were received by Mrs. Willoughby-Ellis in the drawing-room, where tea was served. An inspection was made of the host's private museum, especially of the collections of Coleoptera, Hemiptera, and Lepidoptera, which were very complete, many rare and local species being either of his own collecting or obtained by well-known collectors. During the evening the fine original drawings of Tineina and of *Staphylinidae*, by the late John Sang, were on view. The original drawings of the late John Scott and of the late A. Matthews, of the figures published in their respective entomological works were also on view. Supper was served at 7.45, and at a late hour the very pleasant gathering closed.

Prof. Giacomo Ceconi, Director of the Royal Regional Observatory of Fano, Italy, has just issued an admirable treatise on Forest Entomology (*Manuale di Entomologia Forestale*) consisting of XX.+680 pages with 786 figures in the text, many very beautiful photographs mostly original. The cost is 120 lire. There is an introduction by the well known entomologist, Prof. B. Grasse.

Subscribers will no doubt see again in the present issue the advertisement of the great Oberthür collection in France. It has been offered to the National Museum of France at a moderate figure as a whole, we hear, but was refused, hence the advertisements now issued. Intending buyers of species, series, families, groups, etc., must write to Rennes for particulars. Our contributor M. Carl Höfer will send all information if one writes to him at Imprimerie Oberthür, Rennes, France.

Signor Querci has returned from his Spanish tour with an extremely

large collection of butterflies and moths collected by himself, his wife, daughter, niece and latterly Dr. Romei. Tripolitania was worked by the last and latterly by Sig. Ederli, and large collections were obtained there. To those working on the Mediterranean section of the Palaearctic Region there is a fine opportunity to obtain species and races somewhat difficult to get by the average business man, whose continental collecting must be limited to his annual holiday.

In the *Revue Mensuelle de la Société Entomologique Namuroise*, M. Derenne describes and names a new form of *Pieris napi* as ab. *elongata*, in which the wings are teratologically affected, all four wings being elongated with a waved outer margin. In so doing he follows the action of M. Gelin, *Soc. Ent. Fr.*, 1914, in naming a similar aberration (cripple) of *P. brassicae*.

Dr. Holland, in the *Entomological News* for October, reports the occurrence in numbers of *Eurrhynx urticata*, from Machias, Maine. This species is not included in Dyar's *List of Lepidoptera of North America*.

It is curious that *Papilio podalirius* is an indigenous species in Belgium and is not found even in the southern part of Great Britain. In the *Rev. Mens.* M. Derenne discusses the question of generations, and on all the evidence falls back on the statement of the late M. Lambillon, that there was only one generation of *P. podalirius* in Belgium, in May-June, and that the occasional specimens obtained later were individuals retarded, for some reason or another, in their appearance.

Nomenclature is a complicated question. The editor of the *Entomological News* calls attention to a recent remark by Dr. Holland, that "the laws of priority do not have precedence over the laws of correct language," and he (the editor) asks the following cogent question, "Are names in biology convenient and arbitrary tags to designate material things, or are they a field for linguistics?" He further remarks that our "great needs in nomenclature are stability, and finality which leads to the former." The obvious comment is that if the classical fiend is let in to the controversy there will never be finality, and we shall be further off than ever from stability.

SOCIETIES.

THE ENTOMOLOGICAL SOCIETY OF LONDON.

October 15th.—ELECTION OF FELLOWS.—The following was elected a Fellow of the Society:—Mr. E. P. Sharp, 1, Bedfordwell Road, Eastbourne.

ALTERATION OF BYE-LAWS.—The Secretary read for the first time the alterations in the Bye-laws proposed by the Council.

EXHIBITIONS.—The President exhibited intermediate forms between typical *Pachys betularia* and var. *doubledayaria* bred from wild larvæ taken at Camberley.

Mr. H. Donisthorpe exhibited a number of insects and other Arthropods found associated with the ant *Acanthomyops brunneus* in Windsor Forest.

The Secretary, on behalf of Mr. C. Dover read a summary of observations by Dr. H. Brauns on the habits of some South African Carpenter-bees.

Dr. K. Jordan exhibited some beetles of the genus *Urodon* and

discussed their systematic position, expressing the opinion that they belonged to the *Bruchidae* rather than to the *Anthribiidae*.

Professor E. B. Poulton, F.R.S., discussed further evidence of the pale yellow fluorescent pigment in the males and primitive forms of mimetic females of *Papilio dardanus*. He also read a letter from Mr. R. H. Harris throwing further light on the attractiveness of dummy animals to Tsetse-flies discussed at the meeting on May 7th, 1924.

Mr. J. J. Lister exhibited a fine series of *Teracolus nouma* and the local form of *Lycaenopsis argiolus* from Algeria.

Mr. W. J. Lucas, on behalf of Mr. G. Bateson, exhibited examples of a rare dragonfly *Leucorrhinia dubia* from Surrey.

PAPERS.—The following papers were read:—

- (1) On Australian *Histeridae* (Coleoptera), by Mr. A. M. Lea.
- (2) On the Morphology of the Male genitalia in Rhynchota, by Hem Singh Pruthi.
- (3) Some aspects of the Biology and Morphology of the Neuroptera, by Dr. C. L. Withycombe.
- (4) Notes on the Orthoptera in the British Museum. No. 4, by Mr. B. P. Uvarov.

THE SOUTH LONDON ENTOMOLOGICAL SOCIETY.

September 25th.—EXHIBITION OF ORDERS OTHER THAN LEPIDOPTERA.—Mr. Robt. Adkin exhibited specimens of a Collembola he believed were referable to *Podura aquatica*. It was common in his garden at Eastbourne.

Mr. W. J. Lucas, coloured drawings of the Naiads of the dragonflies *Aeschna juncea* and *Agrion mercuriale*.

Mr. Hugh Main, living specimens from S. France of (1) *Ephippigera* sp., ♂ and ♀, both of which stridulate; (2) two species of Mantis, one of which was *M. religiosa*, the female had not eaten the male, as, he suggested, they were well supplied with food; (3) *Scarabaensacer*, Corsica, common near goat's dung, with their "pear balls" and pupae; (4) the larva of a *Myrmeleon* sp., common on the Mediterranean shores; (5) a ♀ of the large wolf-spider, *Lycosa narbonensis*, with her family on her back; (6) and the banded spider, *Epeira fasciata*, with her egg-cluster.

Mr. B. Williams, Coleoptera from Wicken, Harpenden, Luton, and Bricket Wood.

Mr. O. R. Goodman, a brown Viper taken at the Field Meeting at Westerham, on September 13th.

Mr. S. R. Ashby, the *Carabus intricatus* taken in 1857 by the late Mr. Reading; and *Calosoma sycophanta* taken by Mr. Tugwell, jun., at Freshwater, in 1873.

The almost complete collection of Paraneuroptera from the Society's cabinet was on view.

Mr. H. W. Andrews, a long series of a very scarce Asilid dipteron, *Entolmus rufibarbis*, from N. Kent, and a number of typical specimens of *Anthomyiidae* and *Empidae* he was presenting to the Society's reference collection.

Mr. R. A. R. Priske, series of several specimens of *Helix* (Mollusca) from High Wycombe, and *H. acuta* from Sussex.

Mr. Stanley Edwards, the giant hemipteron, *Macroceraea* sp., taken by Mr. Dawson in Tenasserim, and the striking Lycaenid *Lohita grandis*.

Mr. Enefer, a cactus dahlia sport, a red and a yellow flower on the same stem ; an embryo of the Cocoa-nut ; and an embryo of the Date Palm.

Mr. L. E. Dunster, an underside of *Polyommatus (Agriades) thetis* with forewings striated and hindwings normal, except that the ground colour was whitish.

Mr. H. Moore, various species of Ants, including *Camponotus herculeanus*, the largest European species, and stink ants, stinging ants, leaf-carrying ants, and foraging ants.

Mr. S. Blenkarn, four boxes containing many species of Coleoptera from his collection.

Mr. H. Willoughby-Ellis, several species of *Carabus* (Col.) which showed melanic aberration, and also several maritime species which occasionally were met with inland.

October 9th.—Mr. R. Adkin read a paper, "Entomology : Ancient and Present-day," and illustrated it with many slides of portraits of ancient naturalists, and of plates and pages from old and famous works.

Mr. Step exhibited the vaulted earth-star fungus (*Geaster minimus*) from Mickleham, found on the Foray on October 4th, and new to the British List.

Mr. A.A. W. Buckstone reported the second flowering of rhododendron on Netley Heath.

Captain Crocker exhibited a ♀ of *Polyommatus (Agriades) coridon* with distinctly blue hairs covering its abdomen, with many other Royston aberrations, and an aberration of *P. (A.) thetis* underside forewing ab. *obsoleta*, and hindwing ab. *striata*.

REVIEWS AND NOTICES OF BOOKS.

"LE MONDE SOCIAL DES FOURMIS DU GLOBE," by Dr. Auguste Forel, Geneva : Librairie Kundig, Editeur, Tome 5^e, 1923. Pp. I-VI. +174 ; 2 coloured plates, 1 black and white plate, and 30 text figures.—This, the fifth and last volume, treats of the specialised habits of ants, followed by an Epilogue on Ants, Termites, and Man ! The frontispiece is a reproduction of a recent photograph of Dr. Forel in his study.

There are as usual seven chapters ; briefly as follows :—

- Ch. I. The wars of driver ants, or *Dorylinae*, against other living beings.
- Ch. II. The granaries of harvesting ants.
- Ch. III. The *Attini* ; ants which cultivate mushrooms.
- Ch. IV. Weaving ants.
- Ch. V. Ant door-keepers.
- Ch. VI. The *Rhagomyrmecinae*.
- Ch. VII. Diversa.
 - (1) The *Ponerinae*.
 - (2) The *Pseudomyrmini*.
 - (3) The *Crematogastrini*.
 - (4) The *Pheidole*.
 - (5) The tree ants.
 - (6) Ants of the deserts and steppes.

- (7) Agile and sluggish ants.
 (8) Jumping and projecting ants,
 The Epilogue.

CHAPTER I.—Good descriptions are given of the well-known raids and habits of the formidable Driver-ants (*Annoma*) of Africa, etc., and the Wander-ants (*Eciton*) of S. America, etc. The author refers to and quotes some of the observations of Bates, Belt, Bruch, Müller, Savage, Vosseler, etc., and gives an account of his own experience with *Dorylus* (*Typhlopone*) *fulvus* in Tunis, in 1889.

Speaking of *Dorylus* (*Alaopone*) *orientalis* in India, he says that it appears to be herbivorous and not carnivorous, and that according to Green it eats the bark of trees and various tubers, such as potatoes, etc. He adds, however, "This requires confirmation, although Green was a good observer." Our friend Mr. Ernest Green tells us that there is not the slightest doubt about this. He has observed it himself over and over again, both in his own garden and elsewhere, in Ceylon. The habits of the quite eyeless genus, *Aenictus*, are given, chiefly from the observations of Wroughton. They are more subterranean than *Dorylus*, and their military organization is said to be more perfect.

Finally the *Leptanillini*, the smallest ants in the world, are dealt with. These tiny creatures hide under stones, and probably hunt the very smallest living beings.

CHAPTER II.—Gives an account of the "Harvesting ants." The writings of Solomon are quoted (as the author truly remarks, he was more observant than some of the scientists at the beginning of the last century), as also those of Horace, Virgil, and others of the ancients.

The "Seed-Collectors" belong to the *Myrmicinae*; in Europe chiefly ants of the genus *Messor*; in Asia *Halcomyrmex* and *Pheidologeton*; in America *Pogonomyrmex*; and numerous *Pheidole* everywhere; some *Solenopsis*, and others.

The observations of Sykes (1829) and Jerdon (1851) are referred to, and a good account of the work of Moggridge (1871-2), at Mentone, on two species of *Messor*, and *Pheidole pallidula*, is given. Moggridge also mentioned that *Lasius emarginatus* and *Tetramorium caespitum* occasionally stored seeds; and Forel himself once found a granary of *Lasius brunneus* at Martigny. In the same way we have several times found *T. caespitum* storing seeds in England.

Next the more experienced experiments of Emery in Italy, and Wheeler in America are related, and finally Laméere's interesting observations on the harvesting ants of the Sahara are recapitulated.

CHAPTER III.—This is a very interesting chapter, dealing with the "Leaf-cutting Ants" (*Attini*), which cultivate mushroom gardens, and the observations of nearly all the workers on the subject are referred to. Forel, when recording his own experiences in Colombia, mentions that *Trachymyrmex marthae* carries the petals of flowers into its nests. This reminds us that we once found *A. (D.) fuliginosus* at Woking carrying the petals of the privet into its nest; and though of course it does not cultivate fungus gardens, a fungus does grow on the walls of its carton nests.

On page 86 he says that the fecundated ♀♀ of *Atta* fight together and mutilate each other; whereas, in his third volume, he said he did not believe this.

As an appendix to this chapter a resumé of the recent discoveries

of Dr. Carlos Bruch, at Buenos Aires, is given.

CHAPTER IV.—This is quite a short chapter, devoted to those ants which use their larvae as spinning machines to fasten together leaves, etc., to form their nests.

Forel truly says that the Englishman, Ridley, first discovered this remarkable fact in 1890, and he also refers to the work of Doflein, Dodd, Bugnion, Goeldi, and Jacobson, on the subject. The list of the observers in their proper order should read as follows:—Ridley (1890); Savil Kent (1891); Hammond (1900); Green (1900); Dodd (1902); Chun (1903); Doflein (1905); Goeldi (1905); Jacobson (1905); Karawaiew (1906); Bugnion (1908); O'Brien (1910); and Wheeler (1914).

The ants which practice this remarkable habit belong to the genera *Oecophylla*, *Polyrhachis*, and *Camponotus*, which are all in the sub-family *Formicinae*. This phenomenon is perhaps most widely known with the first named genus, and the author reproduces some of Doflein's figures, showing a worker ant holding its larva; a number of workers holding and sewing together two leaves; and the silk glands of the larva. Forel explains how, if two leaves are too far distant from each other, the ants form a chain by each grasping a fellow-worker by its long petiole. He mentions that Bugnion has given a drawing of one of these chains (but Green also published an account of the same) in Ceylon. Wheeler has suggested that this habit may account for the very long petiole possessed by these ants. Finally an account is given of various kinds of *Polyrhachis* nests spun together with larval silk.

CHAPTER V. is also a very short one. Forel explains that by the term "fourmis portiers" he means the soldiers, or large workers, whose special office consists in guarding the doors, or entrance to a nest, either in the earth, or in branches, or carved in wood. He says they only occur in the *Camponotinae* (should be *Formicinae*) and *Myrmicinae*. There are all possible transitions between the door-keepers entirely adapted to this purpose, and the semi-doorkeepers. The most perfect examples occur in the sub-genus *Colobopsis*, in which the front of the head in the soldier is cut off quite flat, and it fits exactly into the round hole which forms the entrance into the twig, or wood, in which the nest is situated. These forms Wheeler has most aptly called living front-doors.

The author describes how he discovered this habit in the European *Camponotus* (*Colobopsis*) *truncatus* at Vaux, in 1872; and discusses the intermediate forms, and how the more perfect cases have been developed.

CHAPTER VI.—Three tribes of the *Myrmicinae*—*Cataulacini*, *Cryptocerini*, and *Dacetini*—are dealt with. In the first two the integument is very hard, and the head and thorax are sharply bordered, no doubt as a protection against other ants and different enemies. The eyes are hidden beneath the borders of the head, and Forel suggests that this accounts for the fact (as observed by himself in Colombia) that these ants are unable to walk in a straight line, like other ants can.

In *Cryptocerus eduarduli* the eyes in the female are flatter and smaller than in the ♀, contrary to what usually occurs with ants. The gizzard also in *Cryptocerus* is entirely unlike that of any other Myrmicine ant. The males in the *Cryptocerini* are so entirely unlike their ♀♀ and ♂♂, that they might easily be thought to belong to quite a different family of insects.

In certain *Cryptocerini* (of which a good figure is given) the ♀ ♀ and ♂ ♂ have the head not only enlarged, but cut off short, and scooped out in front like a saucer. It is suggested that these species act as front-doors in the same way as do *Colobopsis* species.

In the *Dacetini* the rule is for them to possess curiously formed and long jaws, and the genus *Strumigenys* is said to use the latter for jumping. Many of these species are covered with curious scale-like hairs and spongy growths.

Finally the author points out that all the *Rhagomyrmicinae* present a vast field for observation, and experiment, on their biology and habits.

CHAPTER VII.—This chapter embraces a number of observations on many different and widely separated species of ants.

It is pointed out that in the *Ponerinae* the ♂ ♂ as well as the ♀ ♀ and ♂ ♂ are able to escape from their cocoons, and rid themselves of the pupal skin unaided. Forel says that they neither rear plant-lice, *Coccidae*, nor any other "cattle." We, however, have taken the coccid *Ripersia donisthorpei* with *Ponera coarctata* in England; and the colembolid *Cyphodeirus albinus*, and several beetles, including *Bythinus glabratus* (a regular guest of this ant), are found in its nests.

Tepper is said to have observed the marriage flight in *Myrmecia*, but he [1882] only mentioned swarms of the ♂ ♂ and winged ♀ ♀. Wheeler, however [1916], gives a very graphic account of a remarkable marriage flight of the "Bulldog" ant *Myrmecia sanguinea*, observed by Froggart, and described by the latter observer in a letter to him (Wheeler).

The *Ponerinae* are mostly insect feeders, some specializing in Termites, woodlice, etc. We may mention that Wheeler pointed out in 1904 that *Leptogenys elongata* is a crustacean-eater.

Under *Pseudomyrmini*, their habits are briefly dealt with. The reasons why Wheeler separated this tribe from the *Myrmicinae* and raised it to the rank of a sub-family (and also the *Cerapachyini* from the *Ponerinae*), with which Forel does not agree, are only given as follows—on his studies on the gizzard; the larvae; and the feeding of the latter by these ants. Wheeler, however, also pointed out that the shape of the head, especially the clypeus and frontal carinae, is unique; the eyes are very large, the construction of the petiole, post-petiole, and tibial spurs is peculiar; and that the antennae are 12-jointed in the ♂ as well as in the ♀ and ♂. We consider that not only was Wheeler justified; but that he entirely proved his case.

Under *Cremastogasterini*, a very compact group of Myrmicine ants, the peculiarly flexible form of the abdomen, and their habits of constructing carton nests, etc., etc., are touched upon. The feeding of gnats by these ants is also described and figured. In the painting, however, on Plate I. (fig. d) the position taken up by the gnat is incorrectly represented! The fly should face the ant, with a posterior pair of legs raised in the air [see Jacobson's actual photographs, *Tijd. v. Entom.*, 54, Plates 12 and 13 (1911)]; whereas it is shown standing over the ant, facing in the same direction, with all six feet touching the ground.

The immense and widely distributed genus *Pheidole* (which exhibits extraordinary polymorphism in the ♂ ♂; the ♀ ♀ possessing large heads, which are enormously developed in some species), and the

nearly allied genera, are next touched on, and their terrestrial and seed-collecting habits are pointed out.

A few remarks follow on various ants which inhabit trees, and the old belief is quoted, that some species with very big eyes inhabit the tree-tops. "*Gigantrops*" (should be *Gigantops*) of Brazil is mentioned as an example; but Wheeler (1922) has shown that it really belongs to a forest-floor ant fauna.

The ants of deserts and steppes: agile and sluggish ants; and the jumping species, complete the seventh chapter.

The epilogue runs to 35 pages and, with the exception of six pages on the role of ants in nature, has little to do with these insects. The author takes the opportunity of expressing his socialistic views, and other eccentricities. On page 160 he speaks of the horrible ferocity of our ancestors, and maintains that the orang-utans and gorillas are truly angels in comparison. I might with more justice assert that Nero, and all the tyrants of antiquity were angels of light compared to the brutal Bolsheviks who have utterly crushed the Russian peoples in our own day. He refers to the immense numbers of human beings destroyed during the great war, but says nothing of the post-war tragedy of the 3,000,000 souls in Russia alone for whose death Lenin and his bloodthirsty associates were directly responsible. I should wish in particular to protest against the ants being employed as a supposed weapon in political controversy. In my opinion an entomological work is not the appropriate channel for the introduction of views on socialism, or politics of any kind, still less as the means for their glaring advertisement. Let those, however, who are so ready to set forth the social life of ants as a lesson to human beings, and in favour of a socialistic community ponder on the following facts:—To all intents and purposes the working classes of ants are sterile! They have no trade-union rules; each worker does as much work as she can from early morn to dewy eve, and often during the hours of the night as well. All are willing to sacrifice their lives at a moment's notice for the good of the State, and are ever industrious and contented. In some of the harvesting ants the large workers possess enormously developed heads in order to contain the powerful muscles of the jaws with which they crush the hard seeds required for food; but when these workers are no longer needed by the colony, the other ants cut off their heads and throw them on the refuse heap! This is, as I have pointed out elsewhere, a very drastic, but effective, method of getting rid of a superfluous working class!

Forel maintains that the true queens of ants are the workers, whose labour gives to them at once their royalty and liberty; while they are denied the marriages and debauchery which, according to him, form the sole ideal of human queens. Was ever such libellous nonsense written? Where is the Queen, who in the memory of any of us, has ever spent such an existence?—HORACE DONISTHORPE.

P.S.—Reviews of the first and second volumes of this work may be found in the *Ent. Record*, Vol. XXXIII., pp. 59-60 (1921), and Vol. XXXIV., pp. 38-40 (1923); and the third and fourth in the *Ent. Mo. Mag.*, Vol. LX., pp. 89-93, 140-142 (1924).—H.J.D.

CORRECTION.—Page 151, line 18 from the top for "specimen" read "species" and for "*ardeanus*" read "*aubeanus*."

CONTENTS OF VOLUME XXXV.

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

	PAGE		PAGE
Aberations in, <i>S. ligustri</i> , 13; <i>P. atalanta</i> , 29; <i>T. pronuba</i> , 29; <i>P. napi</i> , 29; <i>P. megera</i> , 29; <i>C. pamphilus</i> , 29; <i>M. aurinia</i> , 30; <i>P. coridon</i> , 30; <i>A. caja</i> , 30, 148; Eggs of Blackheaded Gull, 30; <i>Z. filipendulae</i> , 30; <i>A. hyperantus</i> , 42; <i>M. tiliae</i> , 42; <i>E. cardamines</i> , 42; <i>P. dejeanü</i> , 62; <i>S. ligustri</i> , 64; <i>H. marginaria</i> , 64; <i>A. exclamationsis</i> , 80; <i>T. variata</i> , 88; <i>V. macularia</i> , 129; <i>C. arvensis</i> , 130; <i>A. urticae</i> , 143; <i>R. bifasciatum</i> , 147; <i>P. napi</i> , 147; <i>M. titea</i> , 147; <i>T. obeliscata (variata)</i> , 153; <i>B. euphrosyne</i> , 165; <i>A. cydippe</i> , 165; <i>A. aglaia</i> , 165; <i>A. hyperantus</i> , 165; <i>E. tithonus</i> , 165; <i>P. icarus</i> , 166; <i>P. coridon</i> , 166; <i>M. aurinia</i> , 166; <i>P. thetis</i> 173		Description of, ab. <i>plumbea</i> of <i>B. euphrosyne</i> , 8, 27; ab. <i>aurata</i> , of <i>H. variegata</i> , 1; ab. <i>triangularis</i> of <i>H. variegata</i> , 1; race <i>anglia</i> of <i>H. semele</i> , 22; race <i>anglorum</i> of <i>H. semele</i> , 22; race <i>paeninsulitaliae</i> of <i>H. semele</i> , 24; larva of <i>T. verhuellella</i> , 65; <i>B. delaportei</i> , 117; <i>B. adnexus</i> , 117; <i>T. villifrons</i> , 118; larva of <i>E. sinuata</i> , 134; egg of <i>S. longirostris</i> , 137; <i>E. decipiens</i> .. 150	
Aberations Mosaic, explained, 18; List of, 19; Striate 30		Descriptions, Barebones 115	
"Aberations Nouvelles de Coccinelles," by <i>J. A. Lestage</i> 155		"Digne and the Basses Alps, July 1923," by <i>Lt. E. B. Ashby</i> , 102, 122	
Abnormal specimens of Lepidoptera .. 33		Dimorphic larva of a Nymphaline .. 64	
Abundance of Orthoptera in the Alps, 59; of larvae 143		Distribution of <i>S. telicanus</i> 10	
"Additions and Corrections to List of Grypocera and Rhopalocera of Peninsular Italy," by <i>Dr. R. Verity</i> 106		Divergence of character query .. 156	
Affinities of Psychids 81		Double-broodedness in <i>T. punctularia</i> 143	
Analysis of species of <i>Taphrorhynchus</i> .. 118		Duplicated fore-wing in <i>Z. filipendulae</i> 30	
Ants, Lycaenid Larvae and, 8; Castes, 44; Relation of, to other organisms, 45; In I. of Man, 50; Mixed colony of, 52; and Coleoptera, 69, 133; and Diptera, 70; Nigerian, imported into England .. 91		Dwarf, <i>E. pustulata</i> 64	
Asymmetry in <i>A. grossulariata</i> 42		Early appearance of <i>E. punilata</i> .. 26	
Autumn, Butterflies in Late, 143, 144; Captures 156		"Eggs in <i>L. hirtaria</i> , Yellow," by <i>Dr. A. E. Cockayne</i> 149	
" <i>Batrissodes delaportei</i> and <i>B. adnexus</i> , two additions to the British List of Coleoptera," by <i>H. Donisthorpe</i> 117		Entomological Club, 115, 127, 144, 170	
Bee-Anatomy 16		"Entomological Notes for the Season 1923" by <i>Comm. G. C. Woodward</i> 4, 20	
Bees, Solitary and Social 43		Entomology in Russia, 79; in Armenia, 79; at Wembley 157, 170	
Biographical Dictionary, A. 11		" <i>Euchloë (Anthocharis) ausonia (belia)</i> and its second brood," by <i>P. P. Graves</i> 90	
<i>Boarmia abietaria</i> at Gravesend 26		" <i>Euplectus decipiens</i> , a species of Coleoptera new to Britain," by <i>H. Donisthorpe</i> 150	
British Museum illustrations 11		Foodplant of <i>P. bifasciata</i> , Unusual .. 158	
"Cannibal Coccinellid, The," by <i>C. C. Leman</i> 60		Forcing of, <i>P. aegeria</i> , 116; <i>D. paphia</i> 116	
Classification, of <i>Papilio</i> , 132; of Orientation in Ants 161		Freyer on <i>L. variata</i> 119	
Comparison of brood of <i>P. thetis</i> .. 116		Generations of <i>L. rivularis</i> in Italy .. 127	
Contest, A Homeric 11		"Geographical Variation in <i>H. semele</i> ," by <i>Dr. R. Verity</i> 21	
"Cumberland Coccinellidae," by <i>T. F. Marriner</i> 85		Genital characters of <i>T. variata</i> .. 168	
		Guests of Ants, 45, 49, 69, 121, 133, 176	
		Gynandromorph of, <i>P. coridon</i> , 30; <i>A. populi</i> 130	
		Habits of, Water-bugs, 15; <i>L. hirtaria</i> , 61; <i>L. grandis</i> , 62; Psychid Larvae, 98; larvae of <i>H. rostralis</i> 130	
		Harpe, de la, on <i>L. variata</i> , 119; Ants 174	
		"Hermaphroditism" in the Hesperiliidae 9	
		" <i>Hippodamia variegata</i> ," by <i>G. B. C. Leman</i> 1	
		"Holiday in N.W. Cornwall, A," by <i>Cecil Worssam</i> 142	

	PAGE		PAGE
Hybrid, Suggested, <i>P. coridon</i> and <i>P. hylas</i>	116	Rearing beetles in confinement ..	63
Hybrids,	6, 29, 116	Records of Lepidoptera from Witley District of Surrey, Further, by <i>W. H. Smith</i>	75
Immigration to the Alpine region	59	References to Ant Literature ..	138
Inheritance in <i>A. grossulariata</i> ..	17	Relationship of Psychids, Suggested, by <i>Rev. C. R. N. Burrows</i> 81,	97
Insect Control—an outline of the Principles	154	Rio de Janeiro Entomological Society	12
Irregular copulation of <i>M. phoebe</i> and <i>M. didyma</i>	148	Reviews :—Fabre's "Book of Insects," 14; "Some Habitat Responses of the Large Water-strider, <i>G. venugis</i> ," Curtis Riley, 14; "Practical Bee Anatomy," A. D. Betts, 15; "Our Butterflies and Moths and how to know them," F. Daglish, 16; "Social Life among the Insects," W. M. Wheeler, 30, 42; Proceedings of the S. London Entomological and N. H. Society, 47; "Life-work of Ld. Avebury," 93; "Ants of Timothy Thummel," 93; "Die Lepidopteren Fauna Aegyptens" Andres and Seitz, 96; "Bulletin of the Hill Museum," 131; "Trans. Ent. Society of London," 145; "Verhandlungen Zool.-Bot. Gesells. Wien," 146; "L'Orientation Siderale des Fourmis," D. Santschi, 160; "Le Monde Social des Fourmis du Globe," Dr. A. Forel, Vol. V.	173
Italian Entomological Society ..	12	Russian Entomological Society, The, <i>Dr. M. Burr</i>	78
Lady-birds hibernating in the House	9, 27	Rare and very local species, <i>E. christi</i> , 3; <i>A. tineana</i> , 13; <i>H. simplana</i> , 13; <i>Larinopoda</i> sp., 14; <i>A. andrenaeformis</i> , 28; <i>A. elegantula</i> , 42; <i>T. aureus</i> , 62; <i>A. mellanarius</i> , 63; <i>B. lignea</i> , 64; <i>C. inquisitor</i> , 129; Coleoptera, 129; <i>D. compta</i> , 147, 160; <i>M. acuminata</i> , 147; <i>T. tussilaginis</i> , 147; <i>A. sexpunctatus</i> , 147; <i>N. livida</i> , 148; <i>O. titan</i> , 148; <i>L. brachydactylus</i> , 160; <i>A. crataegi</i> ab. <i>flava</i> , 160; <i>E. rufibarbis</i>	172
"Larval habits of <i>T. verhuellella</i> ," by <i>Alfred Sich</i>	65	Scarcity of Lepidoptera ..	127, 161
Life-history of <i>T. verhuellella</i> ..	65	"Season in S. Hants, The," by <i>Wm. Fassnidge</i> , 61; The	156
"Locality in the High Alps, Névache-le-Chateaux, A," by <i>W. Fassnidge</i>	55	"Seasonal Notes on the Rhopalocera," by <i>S. G. Castle-Russell</i> ..	165
Longevity of a beetle	63	Second generation in, <i>D. mendica</i> , 29; <i>T. variata</i>	166
Luminous insects	63, 80	Societies of Insects, 31; Ants 30, 42	
Lycaenid larvae and Ants	8	Societies :—Entomological Society of London 13, 41, 62, 94, 130, 160, 171; S. London Entomological Society 13, 29, 42, 64, 80, 94, 116, 129, 147, 172	
Melanic <i>B. repandata</i> , 14; <i>M. dictynna</i> , 29; <i>D. paphia</i> , 30; <i>E. christyi</i> , 30; <i>C. autumnaria</i> , 30; <i>L. multistrigaria</i> , 30; <i>H. defoliaria</i>	30	"Somatic Mosaic or Mutation in <i>A. grossulariata</i> ," by <i>Dr. E. A. Cockayne</i>	17
Migration, Congregation for ..	63	triate aberration	29
Mine of <i>L. verhuellella</i>	65		
Mimicry in W. African Lepidoptera	14		
Myrmecophiles with <i>A. brunneus</i> 121, 133	133		
"Myrmecophilous Notes of 1923" by <i>H. Donisthorpe</i>	49, 69		
New British Cecidomyiidae, by <i>R. S. Bagnall</i> and <i>J. W. H. Harrison</i> 36, 53, 99	99		
New forms of Coccinellidae ..	1, 155		
New, Tinea, A, 63; Aphid, A ..	137		
"Nomenclature—1924" by <i>Hy. J. Turner</i> ,	111, 171		
"Note on <i>C. woodi</i> ," A, by <i>H. Donisthorpe</i> , 60; from Hampshire, 92; on Braemar	159		
"Notes on the Myrmecophiles found with <i>Acanthomyops brunneus</i> in Britain," by <i>H. Donisthorpe</i> , 121	133		
Oberthür Collection, The	170		
Obituary, Col. Swinhoe, 12; A. H. Jones, 41; C. Oberthür, 115; F. Merrifield, 93; J. H. A. Jenner, 94	94		
Occurrence of <i>E. urticae</i> in U.S.A.	171		
Orientation among ants	160		
Parasites in 1924, <i>A. grossulariata</i> and	113		
Pathological aberration of <i>P. dejeanii</i>	62		
Pest of tea-plant	14		
Phoresy of beetle and Acarid ..	63		
Piano, Beetle pupates in and emerges from	159		
Polymorphism in <i>P. polytes</i> ..	147		
Pupation of <i>D. bergmanniana</i> ..	113		
Races of <i>H. semele</i> , 22; Table of races of <i>H. semele</i>	22		
"Rainham Hybrids, The," by <i>Dr. E. A. Cockayne</i>	6		

Subscriptions for Vol. XXXVI. (10 shillings) should be sent to Mr. Herbert E. Page, "Bertrose," Gellatly Road, New Cross, S.E. 14 [This subscription includes all numbers published from January 15th to December 15th, 1924.]

Non-receipt or errors in the sending of Subscribers' magazines should be notified to Mr. Herbert E. Page, "Bertrose," Gellatly Road, New Cross, S.E. 14

ADVERTISEMENTS of Books and Insects for Sale, or Books wanted will be inserted at a minimum charge of 2s. 6d. (for four lines). Longer Advertisements in proportion. A reduction made for a series Particulars of Mr. Herbert E. Page, "Bertrose," Gellatly Road, New Cross, S.E. 14

Subscribers who change their addresses must report the same to Mr. H. E. PAGE "Bertrose Gellatly Road, New Cross, London, S.E., otherwise their magazines will probably be delayed.

Desiderata.—Foreign examples, local races, vars. and abs. from all parts of the world of any butterflies included in the British list. Setting immaterial; exact data indispensable. Liberal return made.—*W. G. Pether, "Thelma," 4, Willow Bridge Road, London, N. 1.*

Duplicates.—*Cinxia*, *Bellargus*, *Coridon*, *H. Comma*, *Lineola*, *Galathea*, *Moneta*, *Nupta*, and many others. *Desiderata*.—*Blandina*, *Irish Icarus*, *Carmelita*, *Cuculla*. *Gnostigma*, *Ashworthii*, *Templi*, *Australis*, *Undulata*, *Smaragdaria*, *Testacea*.—*W. Gifford Nash, Clavering House, Bedford.*

Duplicates.—*Cinerea* ♀, fine forms, grey, brown and blackish, *Maritima* and vars. *Immorata* and other East Sussex species.

Desiderata.—Pupæ. *Luteago* (*Barrettii*), *Caesia*, *Albimacula*, *Alpina*, *Xanthomista*, *Sparganii*, *Dissoluta* (*Arundineta*), *Graphalii*. Also imagines of extreme forms *Noctuae* in fine condition only.—*A. J. Wightman, 35, Morris Road, Lewes.*

N. American Lepidoptera in papers in exchange for ditto from any part of the world. *J. C. Woodward, Training Ship "Cornwall," Purfleet, Essex.*

Desiderata.—English melanism, ova and pupae of English species.

Duplicata.—The splendid Hamburg melanism *Pal.* or *albingensis*. Finest condition only.—*Dr. V. Schultz, Soltau (Hann.), Germany.*

CHANGES OF ADDRESS:—*H. McD. Edelsten, "Hillside," Lindfield, Sussex.*
M. F. Bliss, Butlin's Hill, Braunston, Near Rugby.

MEETINGS OF SOCIETIES.

Entomological Society of London.—41, Queen's Gate, South Kensington, S.W. 7. 8 p.m. January 14th, 1925 (Annual Meeting).

The South London Entomological and Natural History Society, *Hibernia Chambers*, London Bridge. Second and Fourth Thursdays in the month, at 7 p.m. November 27th, Annual Exhibition.—*Hon. Sec., Stanley Edwards, 15, St. German's Place, Blackheath, S.E.3.*

The London Natural History Society (the amalgamation of the City of London Entomological and Natural History Society and the North London Natural History Society) now meets in Hall 40, Winchester House, Old Broad Street E.C.2, first and third Tuesdays in the month, at 6.30 p.m. Visitors welcomed. *Hon. Sec., W. E. GLEGG, The House, Albion Brewery, Whitechapel Road, E.1.*

FOR SALE.

T.S. has **Grand Vars.** of **A. GROSSULARIATA** and other fine vars. Lot of fine *Noctuae*, wild Pupae, ova, etc.

Larvae in season always on hand. A few local Tortrices, etc.

For Price Lists apply—

T. SALVAGE, Abbot's Wood Corner, Arlington, Sussex.

OVA, LARVÆ, AND PUPÆ.

The Largest Breeder of Lepidoptera in the British Isles is

H. W. HEAD, Entomologist,
BURNISTON, Nr. SEARBOROUGH.

Full list of Ova, Larvae, and Pupae, also Lepidoptera, Apparatus, Cabinets, etc., sent on application.

Many Rare British Species and Good Varieties for Sale.

GREAT REDUCTION IN PRICES.

Cabinets.

Hardwood finished rich mahogany, panelled or glass doors. Drawers, $17 \times 16 \times 2\frac{1}{4}$ ", on hidden runners.

Lift-off glazed tops. Camphor cells. Lined cork or peat.

40 drawer, 12/6 per drawer. 20-drawer, 1/- per drawer extra.

Store Boxes.

10×8 13×8 14×10 16×11 17×12
3/11 5/- 6/6 7/9 9/-

G. A. BENTALL, 392, Strand, W.C.2.

IMPORTANT

TO ENTOMOLOGICAL SOCIETIES and MUSEUMS.

BACK VOLUMES OF

The Entomologist's Record and Journal of Variation.

(Vols. I-XXXV.)

CONTENTS OF Vol. I. (Most important only mentioned.)

GENUS *Acronycta* and its allies.—Variation of *Smerinthus tiliae*, 3 coloured plates—Differentiation of *Melitaea athalia*, *parthenie*, and *aurelia*—The Doubleday collection—Parthenogenesis—Piper on *Taeniocampidae*—Phylloxera—Practical Hints (many)—Parallel Variation in Coleoptera—Origin of *Argynnis paphia* var. *valesina*—Work for the Winter—Temperature and Variation—Synonymic notes—Retrospect of a Lepidopterist for 1890—Lifehistories of *Agrotis pyrophila*, *Epunda lichenea*, *Heliothobus hispidus*—Captures at light—Aberdeenshire notes, etc., etc., 360 pp.

To be obtained from—

MR. H. E. PAGE, "Bertrose," Gellatly Road, New Cross, London, S.E. 14
to whom Cheques and Postal Orders should be made payable

SPECIAL INDEX.

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

Coleoptera arranged in order of Genera. The other orders arranged by Species. Genera, Species, etc., new to Britain are marked with an asterisk, those new to Science with two asterisks.

ARACHNIDS.

	PAGE
avellanae, Eriophyes	37
biovata, Thyreosthenius	73
domesticus, Oonops	48
fasciata, Epeira	172
Gamasus	63
hombergi, Harpactes	138
lineatum, Theridion	148
narbonensis, Lycosa	172
Phalangidae	48
reniformis, Phryxus	42

COLEOPTERA.

Acanthosinus, aedilis	64
Adalia	86
obliterata	86
var. fumata	86
var. livida	86
var. sublimata	86
2 punctata	61, 86
10 punctata	156
**ab. lemani	156
Anisosticta 19 punctata	155
**ab. averbodensis	155
**ab. campinensis	155
**ab. frenneti	156
**ab. juncorum	156
**ab. riparia	155
**ab. rubi-claustri	156
**ab. schoutedeni	156
**ab. sinuata	156
**ab. simplex	156
**ab. trijuncta	155
**ab. woluwensis	156
Adonia variegata	155
**ab. bonaerti	155
Agabus melanarius	63
Agapanthia lineaticollis = villosa-viridescens	129
Agonum liveus	129
sexpunctatus	147
Aleochara sanguinea = lugubris = brunneipennis	133
Anatis ocellata	86
Anisoplia floricola	126
Anobium	80
Antherophagus	69

	PAGE
Anthribidae	172
Apion aestivum = trifolii	42
var. ruficrus	32
Apoderus coryli	126, 129
Atheta nitidula	133
sodalis	133
Attelabus curculionoides	126
Batrisodes adnexus	117, 135
delaportei	117, 135
venustus	117
Bembidion aeneum	129
dentellum	129
fumigatum	129
schüppeli	130
Boletophagus reticulata	63
Brachinus sclopeta	64
Bruchidae	172
Bythinus glabratus	176
Calosoma inquisitor	129
sycophanta	172
Carabus arvensis	130
granulatus	129
intricatus	172
Cassida	80
Cervus lucanus	11
Cetonia aurata	125
Chilocorus bipustulatus	88
similis	88
Chlorophorus annularis	63
figurata	125
trifasciatus	126
Chrysomela graminis	130
Cicindela campestris	124
hybrida	122, 125
Cionus serophalariae	60
woodi	60
Clytus arietis	122
mysticus	159
laeviuscula	103
verbasci	123
Coccidula rufa	88
Coccinellidae	60, 85, 87
Coccinella bipunctata	9
hieroglyphica	87
5 punctata	87
7 punctata	87, 126
ab. lucida	87
10 punctata	87

	PAGE		PAGE
11 punctata	87	Leistus rufescens	129
<i>ab. boreolittoralis</i>	87	Leptura cerambyciformis	129
<i>ab. cakiles</i>	87	<i>fulva</i>	126
<i>ab. confluens</i>	87	Lucanus cervus	125
<i>ab. ♀ punctata</i>	87	Melasoma populi	129
Coptocephala unifasciata	126	Micraspis 16 punctata	87
Cosmopolites sordidus	12	Microglossa gentilis	133
Cryptocephalus polonicus	51	<i>pulla</i>	133
<i>sericeus</i>	103	Molytes coronatus	126
<i>aureolus</i>	126	<i>glabratus</i>	123
<i>frontalis</i>	117	Mylabris quadripunctata	126
<i>globicollis</i>	126	Myrmedonia limbata .. 69, 70,	133
Curculionidae	60	Mysia oblongoguttata	86
Dinarda	69	Nebria livida	148
Donacia dentipes	129	Notothecta flavipes	69
Dorytomus salicinus	129	Oedemera nobilis	126
Drusilla caniculata 69, 70,	133	<i>podagrica</i>	126
Dytiscidae	95, 145	Onthophagus	64
Dytiscus circumcinctus	80	Oodes helopioides	129
Endomychidae	145	Opilis mollis	80
Epipolaeus caliginosus	130	Otiorrhynchus sulcatus	126
Erotylidae	95, 145	Oxygaster formiceticola	69
Euplectus	150	<i>haemorrhoea</i>	69
<i>brunneus = kunzei</i>	151	Pachypus	12
<i>decipiens = abeillei = ardeanus =</i>		Paragaeus erux-major	129
<i>duponti</i>	150, 151	Passalus	32, 147
<i>villifrons</i>	151	Phyllopertha horticola	125
Euryusa optabilis = laticollis	133	<i>Phytodecta pallida</i>	13
<i>sinuata</i>	134	<i>ab. borealis</i>	13
Euthia formicetorum	135	<i>ab. nigripennis</i>	13
Exochomus quadripustulatus	88	Podabrus alpinus	103
Exosoma lusitanica	126	Polydrusus sericeus	126
Geotrupes vernalis	130	Priobium castaneum	50
Godonera luperus	129	Ptenidium kraatzi	135
Grammoptera variegatus = analis	129	Pterostichus anthracinus	129
Halyzia conglobata	87	Ptinus subpilosus	135
<i>ocellata (Anatis)</i>	86, 126	Pyrophorus pilucidus	129
14 guttata	87	<i>punctatissimus</i>	63, 80
16 guttata	87	Quedius seitus	134
18 guttata	87	Rhagium bifasciatum	126, 147
22 punctata	87	<i>indigator</i>	129
Hippodamia variegata	1, 86	Rhagonycha fulva	126
** <i>ab. arcuata</i>	1	Rhizobius litura	88
<i>ab. maculigera</i>	1	Scarabaeus sacer .. 32, 147, 160,	172
<i>ab. subarcuata</i>	1	Scymnus capitatus	88
** <i>ab. triangularis</i>	1	<i>discoideus</i>	88
<i>ab. turkmenica = maculigera</i>	1	<i>frontalis</i>	88
7 maculata	155	<i>haemorrhoidalis</i>	88
** <i>ab. bifasciata</i>	155	<i>nigrinus</i>	88
** <i>ab. bioculata</i>	155	<i>pygmaeus</i>	88
** <i>ab. scutellata</i>	155	<i>testaceus</i>	88
** <i>ab. trifasciata</i>	155	<i>var. scutellaris</i>	88
13 punctata	86, 155	Silpha quadripunctata	122, 125
** <i>ab. beffai</i>	155	Staphylinidae	145, 170
** <i>ab. guilleaumei</i>	155	Stenichnus exilis	135
** <i>ab. tonnoiri</i>	155	Suboccinella 24 punctata	85
Histeridae	172	<i>var. saponariae</i>	86
Hydaticus transversalis	129	Taphrorychus bicolor	118
Hypera punctata	146	<i>fuscus</i>	118
Hyperaspis reppensis	87	<i>villifrons = capronatus</i>	118
Ilyobates glabriventris	133	Thiasophila angulata	69
<i>propinquus</i>	133	Tillus elongatus	129
Lampyridae	63	Trechus amplicollis	130
Larinus sternus	123, 126	Trichonyx sulcicollis	135
Melanophila acuminata	147	Trichopteryx montandoni	135

	PAGE
Tricodes alvearius	126
apiarius	126
Trogophloeus corticinus	129
Urodon	171
Xantholinus glaber	134
Xylotrechus undulatus	159

DIPTERA.

agilis, Endopsylla	38
Anthomyiidae	172
anthracinus, Tabanus	126
Aphiochaeta	136
auricomi, Perrisia	37
baccarum, Rhopalomyia	36, 55
betulina, Contarinia	53
bicolor, Ocyptera	105, 126
bombylans, Volucella	126
Bombylius	123
bovinus, Tabanus	105, 122
brachyptera, Peyerimhoffia	73
brasiliensis, Dohrniphora	12
brevipalpis, Glossina	157
bromius, Tabanus	126
calamagrostidis, Mayetiola	37
cautum, Chrysotoxum	105
Cecidomyiidae	36, 53, 99
cerealis, Prolasioptera	36
ciliata, Aphiochaeta	70, 136
clethricola, Jaapiella	37
cornifex, Hormomyia	38
coryligallarum, Arthrocnodax	37
crassimana, Limosina	70, 136
cruciatu, Bombylius	126
cucubali, Contarinia	55
curtiventris, Limosina	70
Deuterothlebia (iidae)	95, 145
devius, Microdon	72
diadema, Selidopogon	122, 126
donisthorpei, Phyllomyza	71
Drosophila	18
eggeri, Microdon	71, 72
elegantula, Agathomyia	42
Empidae	172
eriphori, Stenospatha	36
fagi, Contarinia	36, 38
ferox, Fabricia	122
flexuosa, Lasioptera	53
floriperda, Jaapiella	55
formicae, Phyllomyza	71
fraxinea, Perrisia	54
frireni, Hormomyia	38
fungicola, Limosina	70
gallarum, Dichrona	38
geniculati, Stenodiplosis	53
glaucius, Syrphus	126
globuli, Harmandia	37
gracilis, Amerhapha	38
holci, Mayetiola	37
Hyperechia	94, 96, 145
inanis, Volucella	126
inflatae, Jaapiella	55
juncorum, Livia	38
kneucheri, Hormomyia	38
lancoolatae, Mayetiola	37

	PAGE
lasiae, Phyllomyza	71
latefasciatus, Syrphus	124
latifrons, Microdon	71, 72
lathyri, Asphondylia	54
Limosina	70
liviae, Lestodiplosis	38
longipennis, Glossina	157
manicatus, Platychirus	126
micans, Pangonia	126
mosellana (aurantiaria), Sitodiplosis	38
Mycodiplosis	99, 100, 101, 102
myosotidis, Perrisia	37
oculiperda, Rhabdophaga	37
oelandica, Dioctria	126
ornata (micans ab.), Pangonia	126
ornatum, Xanthogramma	126
palpalis, Glossina	157
pellucens, Volucella	105
Phoridae	12
phragmitis, Porricondyla	53
Phyllomyza	70, 71
pimpinellae, Schizomyia	38
pipiens, Syritta	126
psi, Contarinia	36
psi, Diplosis	38
plumata (bombylans ab.), Volucella	126
populnea, Lasioptera	36
pustulans, Harmandia	36
quator-notatus, Tabanus	103
rhenanus, Microdon	72
ribesii, Syrphus	126
rudis, Erigone	126
rufibarbis, Eutolmus	172
ruficornis, Cyrtopogon	105
ruflabris, Limosina	70
sabaudus, Stenopogon	124, 126
Schizomyia	38
schlechtendaliana, Contarinia	38
securicornis, Phyllomyza	71
similis, Perrisia	55
socialis, Perrisia	37
subterranea, Perrisia	37
subterranea, Peyerimhoffia	73
Tabanidae	158
tanaceticola, Clinorrhyncha	36
tessellata, Empis	105
tremulae, Harmandia	37
tuberifica, Hormomyia	38
tussilaginis, Trypeta	147
valerii, Rhopalomyia	55
variabilis, Bombylius	123
variabilis, Chilosia	105
veronicae, Jaapiella	55
vitripennis, Syrphus	122
zonaria, Volucella	126

HYMENOPTERA.

abdominalis, Camponotus	53
Acanthomyops	117, 133
acervorum, Leptothorax	70
Aenictus	174
aestuans, Xylocopa	131, 145
albisetus, Halictus	126

	PAGE		PAGE
alienus, <i>Acanthomyops</i>	51, 70, 73,	<i>Halictus</i>	43, 44,
Allodape	43	hatterfiana, <i>Andrena</i>	103
amydei, <i>Eumenes</i>	125	herculeanus, <i>Camponotus</i>	173
Annoma	174	Ichneumonidae	157
Apidae, <i>Apis</i>	31,	ichneumonoides, <i>Methoca</i>	130
arcuatus, <i>Allantus</i>	105	innotatus, <i>Conostigmus</i>	136
arenaria, <i>Cerceris</i>	126	instigator, <i>Pimpla</i>	125
Atta, <i>Attini</i>	173, 174	laevinodis, <i>Myrmica</i>	50, 69,
bayeri, <i>Camponotus</i>	91	Leptanillini	174
Bombus	43	manicatum, <i>Anthidium</i> 123, 124,	125
bombycinus, <i>Cataglyphis</i>	163	marthae, <i>Trachymyrmex</i>	174
brachialis, <i>Synaera</i>	136	Messor	162, 174
brevicorne, <i>Exochilium</i>	126	melanaria, <i>Sphex</i>	103, 104,
brunneatus, <i>Camponotus</i>		Melipona (inae)	43,
brunneus, <i>Acanthomyops</i> , <i>Lasius</i>		mixtus, <i>Acanthomyops</i>	50, 52,
50, 51, 70, 73, 117, 121, 122, 133,		molesta (nigricans <i>ab.</i>), <i>Dorylus</i>	64
134, 135, 136, 137, 138, 171, 174		monostagon, <i>Melanichneumon</i>	124
burmeisteri (nigricans <i>race</i>),		muraria, <i>Chalicodonia</i>	105, 122
<i>Dorylus</i>	64	<i>Myrmica</i> (inae) 44, 49, 69, 135, 161,	
caespitum, <i>Tetramorium</i>	70, 174	174, 175,	176
<i>Camponotus</i> (inae)	91, 175	<i>Myrmecia</i>	176
<i>Cataglyphis</i>	162	niger, <i>Acanthomyops</i> 50, 51, 69, 70,	
Cataulacini	175	72, 73, 122, 133,	136
centuncularis, <i>Megachile</i>	148	nigeriensis (perrisii <i>race</i>), <i>Cam-</i>	
Cerapachyinae (ini)	44, 176	ponotus	91, 92,
Chalcididae	62	nigricans, <i>Dorylus</i>	64
chrysoseceles, <i>Andrena</i>	125	nitidulus, <i>Halictus</i>	125
coarctata, <i>Ponera</i>	49, 70, 176	nylanderi, <i>Leptothorax</i>	50,
<i>Colobopsis</i>	175, 176	<i>Oecophylla</i>	175
<i>Conostigmus</i>	136	olivacea, <i>Allantus</i>	122
crassitarsis, <i>Pedanaspis</i>	125	orientalis, <i>Dorylus</i>	174
<i>Cremastogasterinae</i> (ini) 173, 174,	176	palliatorius, <i>Amblyteles</i>	125
cruentatus, <i>Camponotus</i>	125	pallidula, <i>Pheidole</i>	174
<i>Cryptocerinae</i> (ini)	125, 175, 176	paniscus, <i>Ophion</i>	125
cylindricus, <i>Halictus</i>	125, 126	pectoralis, <i>Glyptomorpha</i>	125
Dacetini	175, 176	perrisii, <i>Camponotus</i>	91, 92,
didonis (salomonis <i>var.</i>), <i>Monomorium</i>	163	pharaonis, <i>Monomorium</i>	49
<i>Dolicoderinae</i>	44	<i>Pheidole</i>	173, 174,
<i>Dorylus</i> (inae)	44, 158, 173, 174	<i>Pheidologeton</i>	174
dubiosus, <i>Conostigmus</i>	136	<i>Platygasterinae</i>	146
Eciton	174	<i>Pogonomyrmex</i>	146, 174,
eduarduli, <i>Cryptocerus</i>	175	<i>Polistes</i> (inae)	43
elongata, <i>Leptogenys</i>	176	<i>Polyrhachis</i>	175
emarginatus, <i>Lasius</i>	174	pomiiformis, <i>Eumenes</i>	125
<i>Epiponinae</i>	43	<i>Ponera</i> (inae)	44, 49, 173,
exsecta, <i>Formica</i>	70, 133	<i>Proctotrupidae</i>	136
extensorius, <i>Ichneumon</i>	125	<i>Pseudomyrmecinae</i> (ini) 44, 45, 173,	176
flavifrons, <i>Scolia</i>	164	<i>Pseudomyrmex</i>	162
flavus, <i>Acanthomyops</i> 51, 69, 70,		<i>Psithyrus</i>	43
73, 74,	133	quadrimaculata, <i>Anthophora</i>	124
foraminosus, <i>Camponotus</i>	91	quadripunctata, <i>Discolia</i>	122, 125
<i>Formicidae</i> (inae) 44, 49, 50, 121, 175		<i>Rhagomyrmecinae</i>	173, 176
fuliginosus, <i>Acanthomyops</i> 50, 51,		<i>Rhopalidiinae</i>	43
52, 63, 70, 71, 73, 74, 121, 133,		rufa, <i>Formica</i> 52, 69, 70, 71, 73,	
134, 135, 136, 137,	174	133, 135,	136
fulvus, <i>Dorylus</i>	174	rufabirta, <i>Osmia</i>	125
fusca, <i>Formica</i> 49, 70, 71, 73, 74,		rufiventris, <i>Acropiestra</i>	136
75, 125,	136	ruginodis, <i>Formica</i>	69, 70
gallica, <i>Polistes</i>	125	rugulosa, <i>Myrmica</i>	69
Gigantiops (Gigantrops)	162, 177	rupestris, <i>Psithyrus</i>	123
glebaria (fusca <i>race</i>), <i>Formica</i>	70	sabuleti (scabrinodis <i>var.</i>), <i>Myrmica</i> 50	
graminicola, <i>Myrmecina</i>	49	sabulosa, <i>Ammophila</i>	124
grandis, <i>Leucaspis</i>	62, 125	salomonis, <i>Monomorium</i>	163
<i>Halcomyrmex</i>	174, 175	sanguinea, <i>Formica</i> 52, 70, 71, 133,	
		135,	136

	PAGE
sanguinea, Myrmecia	176
scabiosae (zebrus), Halictus ..	125
scabrinodis, Myrmica 49, 50, 70,	133
sexcinctus, Halictus	124, 125
singulatus, Stronygaster	125
smaragdina, Formica	8, 9
Solenopsis	174
Sphécidae	31
striolata, Acropiesta	136
Strumigenys	176
sulcinodis, Myrmica	70
sylvestris, Vespa	126
thoracicus, Camponotus	164
Trigona	43
truncatus, Camponotus	175
umbratus, Acanthomyops	50, 122
urnarius, Sphex	43
vagus, Crabro	147
varians, Andrena	125
Vespa (inae)	31, 43
vestalis, Psithyrus	124
viatica, Ammophila, Sphex 103,	123
xanthorius, Ichneumon	122, 126
zebrus=scabiosae	125
zonulus, Halictus	125

ISOPTERA.

Mastotermitidae	46
Mesotermitidae	46
Metatermitidae	46
Protermitidae	46
Termitidae	32, 46

LEPIDOPTERA.

abbreviata, Eupithecia	61
abietaria, Boarmia	26
abruptaria, Hemerophila	61
absinthii, Cucullia	141
aceris, Acronicta, Apatela	76
Acidalinae	77
achilleae, Zygaena 103, 105, 125,	140, 148
Acraea	48
Acronyctinae	76
actaea, Satyrus	124
acteon, Thymelicus	105
Adela	83, 84
addenda (jurtina ab.), Epinephele	29, 30
adippe = cydippe	123, 139, 165
admetus, Polyommatus, Hirsutina	103, 104, 123, 124
adonis = thetis	7
adusta, Eumichtis, Hadena	76
advena, Aplecta	76
advenaria, Epione	147
aegeria, Pararge	1, 30, 116, 142
Aegeriidae	78
aegon = argus 6, 14, 20, 30, 105,	122, 125, 140
aesculi = pyrina	78
aestiva (duponcheli a. gen.), Lep-	tosia
tosia	123, 124

	PAGE
aestiva (medon a. gen.), Plebeius,	Aricia
Aricia	109
affinis, Calymnia	77
agathina, Agrotis	76
agavus, Papilio	12
aglaia, Argynnis 20, 75, 139, 142,	159, 165
agrippina, Thysania	94
Agrotinae	171
ain, Plusia	141
albicomella, Tinea	63
albipuncta, Leucania	140
albonigrata (variata ab.), Larentia,	Thera
Thera	88, 152
albulata, Perizoma	5
albulus (delphius race), Parnassius	147
alceae, Erynnis	106, 125, 140
alchemillata, Perizoma	142
alciphron, Heodes 3, 104, 105, 123,	140
aleon, Lycaena	2, 124
alcyone (fagi), Satyrus, Nytha ..	124
alecto, Erebia	29, 106
alexanor, Papilio	102, 104, 105
alexis = icarus	7
algae, Bryophila	140
algorica (semele race), Hipparchia	24, 25, 26
alopocurus (rurea ab.), Xylo-	phasia
Xylophasia	5, 6
alpestralis, Orenaia	141
alpestris, Agrotis	140
alpina (comma race), Urbicola 107,	108
alpina (didyma race), Melitaea 123,	139
alpina (medon race), Plebeius, Aricia	140
alpina = hyperborea	159
alpinalis, Scopula	141
alsoides (minimus race), Cupido ..	2
alternana (straminea ab.), Con-	chylis, Euxanthus
Euxanthus	141
althaeae, Erynnis	106, 125
alveus, Hesperia	57, 105, 140
amata, Timandra	5, 6, 142
amathusia, Brenthis	139
ambigua, Caradrina	140
ambrozia, Anaphe	158
Amicta	98
ampliata, Phycis	141
Anaphe	158
anceps = sordida	76
ancilla, Naclia	125
anderegii, Leucania	140
andrenaeformis, Aegeria	28
**angliae (semele race), Hipparchia	22
**anglorum (semele race), Hip-	parchia
Hipparchia	22
annulata, Ephyra	5
anthedon (dubia var.), Hypolimnas	14
anthyllidis, Zygaena	33
antiopa, Euuanessa 58, 75, 139,	167
antiqua, Orgyia	82, 84
apennina (comma race), Urbicola	107, 108
apenninicola (argus race), Plebeius	110
apenninigena (semele race), Hip-	parchia
Hipparchia	26

	PAGE		PAGE
apiciaria, Epione	78, 141	ballus, Thestor, Tomares	29
apiformis, Trochilium	1, 140	bammakoo, Elymniopsis	14
apollo, Parnassius 33, 57, 103, 105,	125, 139	belemia, Anthocharis	129, 147
applanella, Depressaria	141	belia = ausonia	90
aptata, Calostigta	141	belia = eupheno	129
arbusculae (lanestris race), Lachneis	140	bellargus = thetis	6, 7
arcania, Coenonympha 2, 103, 105,	124, 139, 143	berberata, Anticlea	141
arcuosa, Petilampa	6, 20, 76	bergmanniana, Dictyopteryx	113, 129
Arctiidae (inae)	76	betulae, Ruralis	75, 140
areola, Xylocampa	92	betularia, Amphidasis	141, 171
argentana, Euxanthis	141	bicolorata, Mesoleuca	78, 142
argiades, Everes	125, 140	bicoloria, Miana	142
argiolus (Lycaenopsis), Cyaniris 4,	59, 140, 172	bidentata, Gonodontis	5
argus (aegon), Plebeius 6, 14, 20, 30,	105, 110, 122, 125, 140	bifasciata (unifasciata), Perizoma	158, 159
argus = argyrognomon 103, 105, 140		bilineata, Campptogramma	5
argyrognomon, Plebeius 59, 103,	105, 123, 140	bipunctaria, Eubolia, Ortholitha	20, 141, 142
arion, Lycaena 2, 108, 130, 140, 142		birivia, Agrotis	141
aristaeus (semele race), Hipparchia	21, 22, 24, 25, 26	bivittata (sinapis ab.), Leptosia ..	111
aristolochiae, Papilio	147	blachieri (semele ab.), Hipparchia	25, 26
armoricanus, Hesperia	107	Boarmiinae	78
artemisiae, Cucullia	141	boeticus, Lampides	3, 59, 140
artesiaria, Diastictis	141	bolandii (urticae ab.), Aglais ..	167
arundinis (typhae), Nonagria	77	boleti, Scardia	80
artaxerxes (medon race), Plebeius,	Aricia	brachyactyla, Leiopitilus, Pselno-	phorus
asella, Heterogynis	82, 83	brassicae, Pieris 20, 21, 139, 144,	171
asiliformis (cynipiformis), Aegeria	78, 125	brassicae, Mamestra	142
assimilata, Eupithecia	148	Brassolinae	146
astrache = medon	103, 140, 160	brassolis, Liphyra	160
atalanta, Pyrameis 21, 29, 42, 58,	139, 143, 144, 167	briseis, Satyrus	139
athalia, Melitaea	2, 94, 103, 142	brunnea, Noctua	6
athamanthae (ephialtes ab.), Zy-	gaena	brunneata, Halia	57, 141, 159
atomaria, Ematurga, Fidonia 4, 6,	35	bucephala, Phalera	143
atrata, Odezia	141	cacaliae, Hesperia	106
atropos, Manduca	76, 148, 156, 159	cadmus (semele race), Hipparchia	22, 23, 24, 25, 26
augur, Agrotis, Noctua	140	caesia, Dianthoecia	141
**aurata (comma race), Urbicola	107, 108	caesiata, Entephria, Larentia ..	141
aurata, Pyralis	141	caja, Arctia	30, 42, 148
aureus, Teinopalpus	62	calabrica (argus race), Plebeius ..	110
aurimaculatus (agavus ab.), Papilio	12	c-album, Polygonia	21, 139
aurinia, Melitaea 2, 29, 30, 75, 116,	139, 142, 143, 166	calida (medon race), Plebeius,	Aricia
aurita, Setina	125, 126, 140	callidice, Pontia	139
auroraria = muricata	77	calodactyla, Platyptilia	141
ausonia (crameri race), Anthocharis	29, 90	camelina, Lophopteryx	140
australiformis (altheae race), Eryn-	nis	camilla = rivularis 2, 59, 105, 127,	139
australpina (arion race), Lycaena ..	109	candidata, Asthena	141
australis (alceae race), Erynnis ..	106	candidum (cribrum ab.), Coscinia,	Emydia
autumnaria (ata), Epirrita 30, 42		caniola, Lithosia	125, 140
aversata, Acidalia	6, 142	capsincola, Dianthoecia	141
badiata, Anticlea	5	capsophila (carpophaga ab.), Dian-	thoecia
baja, Noctua	20	cardamines, Euchloë 4, 5, 29, 30,	42, 91, 139
bajularia = pustulata	64	cardui, Pyrameis	21, 123, 139

	PAGE		PAGE
cassandra (polyxena race), Thais,		corylata, Cidaria	5, 89
Zerynthia	29	Cosmophila	95, 145
cassiope (epiphron race), Erebia . .	139	Cossidae	78
castigata, Eupithecia	5, 93	costaestrigalis, Hypenodes	77
castrensis, Malacosoma	123, 140	costalis, Pyralis	125
catilla, Catopsilia	95	*costimaculata (variata ab.),	
caulotosticta (cardamines ab.),		Thera, Larentia	89, 152
Euchloë	29, 91	cotswoldensis (arion race), Lycaena	108
cecropia, Samia	116	craccae, Toxocampa	141
celtis, Libythea	104	cramerii, Anthocharis	29, 139
cembrae (variata race), Thera, Lar-		crataegana, Tortrix	141
entia	40, 41	crataegi, Aporia	105, 139, 160
centaureae, Hesperia	96	crepuscularia, Tephrosia	4
centripuncta (tiliae ab.), Mimas . .	19	cribrum, Coscinia	140
cerago = fulvago	129	cristana, Peronea	92, 96
cerri (ilicis ab.), Strymon	105, 125	crocale, Catopsilia	95, 131
cerninata, Ortholitha	77, 142	croceago, Xantholeuca	77
cerymica, Ploetzia	96	crocealis, Ebulea	141
cespitis, Luperina	76	croceus, Colias	139
ceto, Erebia	2, 122	cubicularis = clavipalpis	141
chaonia, Drymonia	61, 76	culiciformis, Aegeria	61, 78
chenopodii = trifolii	141	cultraria, Drepana	82, 83
christi, Erebia	2, 3, 30	cuprea, Agrotis	141
christyi, Epirrita	30	curtisana (cristana ab.), Peronea .	96
chrysitis, Plusia	6, 148	curtula, Pygaera	61
chrysorrhoea (similis), Nygmia . .	20	cyanata, Entephria, Cidaria . . .	141
chrysozona, Hecatera, Hadena . .	141	cydippe (adippe), Argynnis 29, 123,	
cicatricalis, Nola	140	. . . . .	139, 165
cinctaria, Boarmia	92	cynipiformis = asiliformis = vespi-	
cinerea, Agrotis	142	formis	78
cinnus (coridon ab.), Polyom-		cynthia, Melitaea	2, 139
matus	30	cynthia, Philosamia	146
cinxia, Melitaea	59, 139	cytherea = matura	77
circe, Satyrus	103, 123	damon, Polyommatus, Hirsutina	
circe (dorilis ab.), Heodes	108	. . . . .	57, 105, 124, 140
cirsii = fritillum	140	dan, Coladenia	9
citrata (immanata), Dysstroma . .	141	daphne, Brenthis	104
clavipalpis (cubicularis), Atheta,		daplidice, Pontia	126, 139
Caradrina	141	dardanus, Papilio 14, 95, 132, 157,	
cleodoxa (cydippe ab.), Argynnis . .	29	. . . . .	170, 172
cleopatra, Goneteryx	103, 123, 125	darwiniana (arcania race), Coeno-	
Cochliopodidae	82	nympha	2, 105, 143
cognata, Thera, Larentia	141	davus, Coenonympha	159
Colias	149	debilis (aurinia var.), Melitaea 139,	143
comes (orbona), Triphaena	20	decolorata = flavofasciata	5, 142
comma, Urbicola	107, 140	decora, Agrotis	141
complana, Lithosia	140	defoliaria, Erannis, Hybernia,	
compta, Dianthoecia	147, 160	Larentia	30, 35
confusa (lis), Nola	27, 92	dejeanii, Pyrameis	62, 80
congregarius, Diapalpus	158	Delias	116, 132
coniferata (variata ab.), Thera,		delius, Parnassius	29
Larentia	41	delphius, Parnassius	147
conigera, Leucania	140, 142	dentalis, Odontia	141
conjuncta (filipendulae ab.),		dentina = nana	5, 141, 143
Zygaena	6	deplana, Lithosia	76, 140
consonaria, Boarmia	92	depuncta, Noctua, Agrotis	141
convolvuli, Agrias	59, 76, 140	derasa, Habrosyne	142
coracina, Psodos	141	deserticola (sinapis race), Leptosia	111
cordula, Satyrus	103	designata, Ochyria	5
coridon, Polyommatus, Agriades		detersa, Rhizogramma	141
2, 20, 29, 30, 75, 80, 116, 126, 140,		dictynna, Melitaea 2, 29, 30, 57, 139	
148, 160, 165, 166,	173	dictaeoides, Phaeosia	76, 144
coronata, Eupithecia	93	didyma, Melitaea	59, 104, 123,
coronilla (ephialtes ab.), Zygaena	3	. . . . .	139, 148
corticea, Agrotis	142	didymata, Melenydris, Larentia . .	141

	PAGE		PAGE
diffinis, Calymnia	77	Eupithecia	147
diffusa (semele var.), Hipparchia..	25	europomene (palaeno-race), Colias	139
dilucida, Spinthorops	141	euryale, Erebia	105, 139
dimidiata, Ptychopoda, Acidalia ..	142	eurybia (hippotoë ab.), Heodes ..	140
diensis (sinapis race), Leptosia..	111	Eusphalera	160
dilutata, Epirrita	42	exanthemata, Cabera	6
discobolus, Parnassius	147	exclamationis, Agrotis	80, 142
dispar, Oeneria, Lymantria	33	exigua, Laphygma	58, 125, 140
dissoluta (sertata var.), Acasis,		exulans, Zygaena	3, 58, 140, 159
Lobophora	89	exulis, Crymodes	141
dissoluta (stragularia ab.), Thera,		falcula (falcataria), Drepana ..	20,
Larentia	152	.. ..	143, 148
dissoluta (variata ab.), Thera,		falloui, Anthocharis	129
Larentia	89	fascelina, Dasychira	27, 58, 140
distinctaria, Eupithecia	141	fasciaria, Ellophia	154, 167, 168
divisa (juniperata ab.), Thera,		fasciata, Labanda	95
Larentia	89	fasciuncula, Miana	5, 142
divisa (variata ab.), Thera, Larentia	89	fausta, Zygaena	105, 124, 140
doneata, Eupithecia	92	febretta, Amicta	98, 99
dohertyi (marshalli race), Mima-		fenestrella, Thyris	125
cræa	145	ferschaultella, Luffia	99
donzelii, Plebeius, Aricia 29, 57,		festucae, Plusia	141, 156
.. ..	123, 140	fidia, Satyrus	105, 123, 124
dorilis, Heodes, Loweia 108, 124,		filipendulae, Zygaena 3, 6, 20, 30,	
.. ..	126, 140	82, 84, 103, 130, 140, 147, 148	
dorus, Coenonympha,	103, 125	fimbria, Triphaena	6, 20
doubledayaria (betularia ab.),		firmata, Thera, Larentia	168, 169
Biston, Pachys, Amphidasis	171	flava (linea, thaumas), Adopaea 6,	
dryas, Enodia, Satyrus	123, 124	.. ..	125, 140, 142
dubia, Hypolimnas	14	flava (comma ab.), Urbicola	108
dubitata, Triphosa	141	flava (crataegi ab.), Aporia	160
duponcheli, Leptosia	29, 123, 124	flava (napi ab.), Pieris	64
efformata, Anaitis 30, 42, 64, 77,		flaveolaria, Ptychopoda, Acidalia	
147		.. ..	106, 141
egea, Polygonia	125	flavescens (fulvago ab.), Citria	140
elegans, Rhyacia	141	flavescens (napi ab.), Pieris	64
eleus (phlaeas race), Rumicia,		flavicinctata, Cidaria, Larentia ..	141
Heodes	125, 140	flavicornis, Polyptoca	61
elinguaria, Crocallis	20, 141	flavicincta, Polia	141
elongata, (napi ab.), Pieris	171	flavofasciata (decolorata), Perizoma	
elpenor, Eumorphia	76, 147	.. ..	5, 142
eltola, Suastus	9	florella, Depressaria	141
elutata = furcata	78	fluctuata, Xanthorhoë	5, 14, 120
emarginata, Ania, Acidalia	6	fluctuosa, Palimpestis	76
Endromidae	76	fowleri (coridon ab.), Polyommatus	166
engadinensis (andereggii race),		fraxinata, Eupithecia	92
Leucania	140	fraxini, Catocala	141
ephialtes, Zygaena	3, 124, 125	fritillum (cirsii), Hesperia	140
epiphron, Erebia	2, 122, 139	fuciformis, Hemaris	5, 147
Erebia	127	fuliginosa, Phragmatobia	5
eris (niobe var.), Argynnis	122, 139	fulva, Tapinostola	77
eros, Polyommatus	123, 140	fulvago (Cidaria), Citria 21, 29, 129,	
erosaria, Ennomos	78	140	
Erycinidae	157	fulvata (Cidaria), Larentia	141
erynnis (gorge ab.), Erebia	139	fulvipinnulis (altheae ab.), Erynnis	106
escheri, Polyommatus 2, 103, 123,		fumata (ternata), Pylarge, Acidalia	77
.. ..	124, 125, 140	funesta, Aedia	125
eumedon, Polyommatus, Aricia		furcata (sordida, elutata), Hydrio-	
.. ..	106, 140	mena	6, 20, 78, 141
eupheno (belia), Anthocharis	129	furcatellus, Crambus	141
euphenoides, Euchloë	59, 139	furvata, Gnophos	125
euphorbiae, Hyles, Deilephila 59,		fusca, Phycis	141
.. ..	103, 104, 140	fusca, Pygmaena	106
euphorbiae, Pharetra	140	galathea, Melanargia 13, 123, 124,	
euphrosyne, Brenthis 4, 5, 8, 27, 30,		.. ..	126, 139, 142
42, 139, 165		gallica (medon race), Plebeius, Aricia	109

	PAGE		PAGE
gamma, Plusia	6, 20, 141	icarus, Polyommatus 5, 7, 21, 29,	
gemina, Apamea, Hadena	141	105, 123, 140, 142, 148,	166
gemmaria = rhomboidaria	80	ichneumoniformis, Aegeria	140
genistae, Mamestra, Hadena	5	ilicis, Strymon, Nordmannia 103,	
Geometridae	77, 132, 141, 143	104, 105,	125
geron, Adscita	140	imitaria, Acidalia, Leptomeris	142
glabraria = jubata	30, 93, 142	immanata = citrata	141
glareosa, Noctua	76	immorata, Leptomeris, Acidalia	
glaucia, Mamestra, Hadena	141	141,	148
glauce (belemia race), Anthocharis	147	immutata, Leptomeris, Acidalia	77
glaucinarina, Gnophos	141	imperialis, Teinopalpus	130
gnaphalii, Cucullia	77, 147	impudens (pudorina), Leucania	77
goante, Erebia	2, 139	impura, Leucania	6, 20, 125
gordius (alciphron race), Heodes 3,		incanaria = virgularia = seriata, Aci-	
104, 105, 123,	140	dalia, Ptychopoda	141
gorge, Erebia	122, 139	Incurvaria	83, 84
graeca (ausonia race), Anthocharis	90	iners (suspecta), Dyschorista	77
grandipennis, Butalis	129	infraplumbea (medon ab.), Plebeius,	
grandis, Lohita	172	Aricia	109
grandis (sinapis race), Leptosia	111	infuscata (furcata ab.), Hydriomena	6
grisealis, Zanclognatha	20	ino, Brenthis	139
**griseofulva (alceae race), Erynnis	106	insulata (variata ab.), Larentia,	
griscens, Agrotis	141	Thera	89
griscens, (stragulata ab.), Thera	152	insulata (siliceata ab.), Larentia	89
grossulariata, Abraxas 5, 17, 18,		interjecta, Triphaena	20
19, 29, 42, 113,	141	interrupta (corylata ab.), Cidaria	89
gueneèi, Apamea	143	interrupta (sagittata ab.), Cidaria	89
halterata (hexapterata), Lobophora	92	interrupta (stragulata ab.), Larentia	
hastata, Eulype	5, 6	Thera	152
hastiana, Peronea	94	interrupta (variata ab.), Larentia,	
hector, Papilio	147	Thera	89
hectus, Hepialus	5, 6	io, Vanessa 20, 21, 58, 139, 143,	
helice (croceus ab.), Colias	139	144,	148
heliconia, Asota	96	iota, Plusia	33
helvola (rufina), Amathes	140	iphis, Coenonympha	105, 122
Hepialus	83, 85	irriguata, Eupithecia	92
hera = quadripunctaria	124	ismene (leda), Melanitis	148
hermione = major, Satyrus, Nytha	103	**italaveris (dorilis race), Heodes	108
herminata, Diplocloda	99	italorum (dorilis race), Heodes	108
Hesperia (idae) 9, 96, 107, 109,	145	jacobaeae, Hipocrita	6, 148
Heterocera	140	janthina, Triphaena	20
Heterogynis	82, 84	jubaris (semele race), Hipparchia	
hexapterata = haltera	92	22, 23, 25,	26
hiberna (semele race), Hipparchia	26	jubata (glabraria), Cleora .. 30, 93,	142
hippocastanaria, Pachynemina	6	juniperata, Thera, Larentia	89
hippocoon (dardanus race), Papilio	14	jurtina, Epinephele 5, 6, 20, 29, 30,	
hippomene, Antanartia	64	116, 142,	165
hippothoë, Heodes	140	lactearia, Iodis	5
hirtaria, Lycia 33, 35, 61, 128,	149	lacticolor (grossulariata ab.),	
hispidaria, Apocheima 29, 33, 34,		Abraxas	17, 18, 19
35, 61		ladius, Libythea	63
hispulla (jurtina race), Epinephele	29	lamborni, Aslauga	160
hochenwarthi, Plusia	141	lanceolata (hyperantus ab.),	
hospita (plantaginis race), Nemeo-		Aphantopus	165
phila, Parasemia	140	lanestris, Lachneis	140
hyale, Colias	75, 139	lapidella, Luffia	99
hyalinalis, Botys	141	lappa, Erebia	2, 30
hybridalis = noctuella	125, 141	lapponaria, Ithysia	149
Hydriomeninae	77	Larentia	39
hylaeiformis, Bembecia	140	lariciata, Eupithecia	93, 141
hylas, Polyommatus 2, 103, 116,	140	Larinopoda	14
Hypeninae	77	latelians (galathea race), Melan-	
hyperantus, Aphantopus 6, 42, 142,	165	argia	126
hyperborea, Agrotis, Pachenobia	159	lateritia, Hadena	141
icarius (icarus ab.), Polyommatus	29	lathonia, Issoria	126, 139

	PAGE		PAGE
lathyr (sinapis <i>race</i>), <i>Leptosia</i> ..	111	<i>machaon</i> , <i>Papilio</i> 105, 125, 126, 129,	130, 139
<i>laura</i> , <i>Castnia</i>	12	<i>macularia</i> , <i>Venilia</i>	5, 106, 129
<i>lavaterae</i> , <i>Erynnis</i>	2, 125, 140	<i>maculata</i> (<i>rivata ab.</i>), <i>Larentia</i> ,	
<i>leda</i> = <i>ismene</i>	148	<i>Xanthorh�e</i>	89
<i>leopoldella</i> , <i>Tinea</i>	84, 113	<i>maculata</i> (<i>variata ab.</i>), <i>Larentia</i> ,	
<i>leporina</i> , <i>Acronieta</i>	143, 144, 148	<i>Thera</i>	89
<i>leucographa</i> , <i>Pachnobia</i>	77	<i>maderensis</i> (<i>semele race</i>), <i>Hippar-</i>	
<i>leucomelas</i> (<i>galathea ab.</i>), <i>Melan-</i>		<i>chia</i>	25
<i>argia</i>	13, 123, 124	<i>maera</i> , <i>Pararge</i>	103, 124, 139
<i>leucostigma</i> (<i>secalis ab.</i>), <i>Apamea</i> ..	20	<i>magna</i> (<i>sinapis ab.</i>), <i>Leptosia</i> ..	111
<i>libatrix</i> , <i>Gonoptera</i>	5, 142	<i>**magnaaustralis</i> (<i>alceae race</i>),	
<i>lichenaria</i> , <i>Cleora</i>	78	<i>Erynnis</i>	106
<i>licus</i> , <i>Castnia</i>	12	<i>malvae</i> , <i>Hesperia</i> .. 4, 5, 6, 125,	142
<i>lidderdalii</i> , <i>Armandia</i>	130	<i>manni</i> , <i>Pieris</i>	125
<i>ligea</i> , <i>Erebia</i>	124	<i>margaritaria</i> , <i>Metrocampa</i> , <i>Cam-</i>	
<i>lignata</i> (<i>vittata</i>), <i>Phibalapteryx</i> ,		<i>paea</i>	6
<i>Orthonama</i>	78	<i>margaritosa</i> (<i>saucia ab.</i>), <i>Peridroma</i>	
<i>lignea</i> , <i>Blastobasis</i>	64	<i>marginata</i> , <i>Ania</i>	76, 141
<i>lignicolor</i> , <i>Gnophos</i>	125	<i>marginata</i> , <i>Lomaspilis</i>	141
<i>ligula</i> (<i>spadicea</i>), <i>Cerastis</i> , <i>Orrhodia</i>	116	<i>marginata</i> = <i>umbra</i>	77
<i>ligustri</i> , <i>Sphinx</i>	13, 64	<i>marginaria</i> , <i>Hybernia</i>	64
<i>Limacodidae</i>	83	<i>marginata</i> , <i>Catastia</i>	141
<i>limitata</i> (<i>mensuraria</i>), <i>Eubolia</i> ,		<i>marginepunctata</i> (<i>promutata</i>), <i>Ac-</i>	
<i>Ortholitha</i>	20, 141, 142	<i>dalia</i> , (<i>Leptomeris</i>)	141
<i>lineola</i> , <i>Adopaea</i> .. 103, 125, 126, 140		<i>marshalli</i> , <i>Mimacraea</i>	145
<i>linguliformella</i> , <i>Adela</i>	84	<i>maxima</i> (<i>ausonia g. a.</i>), <i>Anthocharis</i>	90
<i>Liparis</i> (<i>idae</i>)	82, 83	<i>matura</i> (<i>cytherea</i>), <i>Cerigo</i>	77
<i>Liphyrinae</i>	160	<i>maturna</i> , <i>Melitaea</i>	35
<i>literana</i> , <i>Leptogramma</i>	92	<i>maura</i> , <i>Mania</i>	20
<i>literosa</i> , <i>Miana</i>	76, 142	<i>maurella</i> , <i>Lypusa</i>	82, 83
<i>lithargyria</i> , <i>Leucania</i>	20, 142	<i>medon</i> (<i>astrarche</i>), <i>Plebeius</i> ,	
<i>Lithosiidae</i>	76	<i>Aricia</i> 64, 75, 103, 109, 140, 159,	160
<i>lithoxylea</i> , <i>Xylophasia</i>	125, 142	<i>mediolucens</i> (<i>obeliscata ab.</i>), <i>Lar-</i>	
<i>littoralis</i> , <i>Leucania</i>	142	<i>entia</i> , <i>Thera</i>	153
<i>liturata</i> , <i>Selidosoma</i>	5	<i>medionigrans</i> = <i>nigrofasciata</i> ..	39
<i>lividaria</i> , <i>Nychiodes</i>	125	<i>Meesia</i>	113
<i>livornica</i> , <i>Phryxus</i>	59, 140	<i>megea</i> , <i>Pararge</i> 4, 23, 24, 29, 124,	
<i>lobengula</i> , <i>Amauris</i>	95	139, 142	
<i>loniceræ</i> , <i>Zygaena</i>	3, 124, 142	<i>megacephala</i> , <i>Acronieta</i> , <i>Cuspidia</i>	76
<i>lubricipeda</i> = <i>lutea</i>	5	<i>Megalopyga</i>	82, 83
<i>lucernea</i> , <i>Agrotis</i>	142	<i>major</i> (<i>hermione</i>), <i>Nytha</i> , <i>Satyrus</i>	102
<i>lucilla</i> , <i>Neptis</i>	29	<i>melampus</i> , <i>Erebia</i>	2
<i>luctiferellus</i> , <i>Crambus</i>	141	<i>meleager</i> , <i>Polyommatus</i>	103, 124
<i>luctuosa</i> , <i>Acontia</i>	141	<i>mendica</i> , <i>Diacrisia</i>	5, 29, 48
<i>lunaedactyla</i> (<i>phaeodactyla</i>), <i>Mar-</i>		<i>mensuraria</i> = <i>limitata</i>	142
<i>asmarcha</i>	127	<i>menyanthidis</i> , <i>Pharetra</i>	19
<i>lunigera</i> , <i>Agrotis</i>	142	<i>melanella</i> = <i>monilifera</i>	99
<i>lurideola</i> , <i>Lithosia</i>	140	<i>melisanda</i> (<i>ausonia g. a.</i>), <i>Antho-</i>	
<i>lupulinus</i> , <i>Hepialus</i>	82, 83	<i>charis</i>	90
<i>lutea</i> (<i>lubricepada</i>), <i>Diacrisia</i> ..	5	<i>mercuriana</i> (<i>monticolana</i>), <i>Pam-</i>	
<i>lutea</i> (<i>flavago</i>), <i>Citria</i>	140	<i>plusia</i>	141
<i>lutealis</i> , <i>Scopula</i>	141	<i>merope</i> (<i>aurinia race</i>), <i>Melitaea</i> 2,	
<i>lutearia</i> , <i>Cleogene</i>	141	30, 139, 143	
<i>luteolata</i> , <i>Opisthograptis</i>	5	<i>mersina</i> (<i>semele race</i>), <i>Hipparchia</i>	
<i>lutescens</i> (<i>napi ab.</i>), <i>Pieris</i>	64	24, 25, 26	
<i>Lycaenidae</i>	8, 9, 75, 96, 157	<i>meticulosa</i> , <i>Phlogophora</i>	5, 141
<i>lycaon</i> , <i>Epinephele</i>	120, 123, 139	<i>mi</i> , <i>Euclidia</i>	4, 5, 142
<i>lycidas</i> (<i>sephyrus race</i>), <i>Plebeius</i> 2,	30	<i>miata</i> , <i>Cidaria</i> , <i>Chloroclysta</i> 21, 78,	141
<i>lychnitis</i> , <i>Cucullia</i>	141	<i>midas</i> (<i>alciphron ab.</i>), <i>Heodes</i> 104,	123
<i>Lymantriidae</i>	131	<i>minimus</i> , <i>Cupido</i> 2, 5, 105, 122, 140,	165
<i>Lypusa</i>	82	<i>miniosa</i> , <i>Taeniocampa</i>	129
<i>lythargyrellus</i> , <i>Crambus</i>	141	<i>minorata</i> , <i>Larentia</i> , <i>Perizoma</i> ..	141
<i>lyssa</i> (<i>megea race</i>), <i>Pararge</i>	24	<i>mistura</i> (<i>mendica race</i>), <i>Diacrisia</i>	29

	PAGE		PAGE
mnemosyne, Parnassius	2	obsoleta (coridon <i>ab.</i>), Polyom-	
mnestra, Erebia	2, 122, 139	matus	166
moloneyi, Anaphe	158	obsoleta (menyanthidis <i>ab.</i>),	
moneta, Plusia	114	Phaetra	19
monilifera (melanella), Narycia ..	99	obsoleta (thetis), Polyommatus	140, 173
monoglypha, Hadena 6, 20, 141, 142		ocellaris, Xanthia, Mellinia	29, 35
Xylophasia		ocellata, Mesolenca	5, 140, 147
monogramma, Metoptria	125	ocellatus, Smerinthus	33
monovittata (sinapis <i>ab.</i>), Leptosia	111	ocellina, Agrotis	141
montanana, Xanthorhoë	5, 6, 141	**ochrata (cardamines <i>ab.</i>),	
monticolana = mercuriana	141	Euchloë	91
morpheus, Caradrina	6, 20	ochroleuca, Hadena, Eremobia	30, 141
morpheus, Heteropterus	29	oeme, Erebia	122
Morphinae	146	oleracea, Mamestra, Hadena	142
multistrigaria, Malenydris, Lar-		olivialis, Calostigia, Scopula	141
entia	30, 61	onopordi, Hesperia	107, 125
munitata, Xanthorhoë	141	ophiogramma, Apamea	93
muralis, Scopula	141	opima, Taeniocampa	77, 92
muricata (auroraria), Eois, Hyria,		optilete, Polyommatus, Vacciniina	140
Ptychopoda	77	**orae (comma <i>race</i>), Urbicola	107, 108
muscaeformis, Aegeria	142	orbicularia, Ephyra	77
myrtillata (obfuscaria), Gnophos		orbitulus, Plebeius, Latorina	2, 57, 140
.. .. .	141, 159	Orgyia	83
myrtilli, Anarta	6, 20	orientalis (niobe <i>race</i>), Argynnis	29
myopaeformis, Aegeria	78	orion, Scolitantides	2, 3
nana (dentina), Mamestra 5, 141, 142		Ornithoptera	148
nanata, Eupithecia	4, 5	oxyacanthae, Miselia	141
napaeae (napi <i>g. a.</i>), Pieris	64	paeninsulitalia (semele <i>race</i>), Hip-	
napi, Pieris 4, 20, 29, 64, 90, 94, 116,		parchia	24, 25, 26
139, 147, 171		palaeno, Colias	29, 139
neoridas, Erebia	139	palaestinensis (titea <i>race</i>), Melan-	
niavius, Amauris	14	argia	147
niceae (fausta <i>race</i>), Zygaena 105, 124		paleacea, Xanthia	140
niotitans, Hydracina	20	pales, Brenthis	59, 122, 139
nigra, Aporophyla	77	palestinensis (belemia <i>race</i>), Antho-	
nigrescens (sinapis <i>ab.</i>), Leptosia ..	111	charis	147
nigricans, Agrotis	141	pallens, Leucania	142
nigrofasciata (variata <i>ab.</i>), Larentia,		pallida (carpophaga <i>ab.</i>), Dian-	
Thera	39, 40, 41, 88	thoecia	76
niobe, Argynnis	29, 59, 122, 139	pallida (striata <i>ab.</i>), Coscinia	103, 124
noctuella (hybridalis), Nomophila		pallidalgirica (semele <i>race</i>), Hippar-	
125, 141		chia	91
Noctuidae (ina)	76, 132, 140	**pallidula (argus <i>ab.</i>), Plebeius	110
Notodontidae	76	palpina, Pterostoma	125, 140
nouna, Teracolus	172	pamphilus, Coenonympha 5, 20, 29,	
nupta, Catocala	33, 156	30, 139, 142	
Nyctemera	131	paphia, Dryas 6, 19, 20, 21, 29, 30,	
Nymphalidae	75	116, 142, 165	
obelisca, Agrotis	141	Papilio (onidae)	75, 132
obeliscata (variata <i>race</i>), Larentia,		papilionaria, Geometra	6, 140
Thera 39, 40, 61, 92, 120, 152,		parthenias, Brephos	4, 61
153, 154, 167, 168, 169		parthenie, Melitaea	2, 29
obesalis, Hypena	141	pastinum, Ophiusa, Toxocampa ..	77
obfuscaria = myrtillata	141, 159	pavonia, Saturnia	4, 130, 140
obliquaria = rufata	77	peltigera, Heliothis	59, 141
obliterata, Enchoecia	5	penella, Heterogynis	82, 83
obliterata (variata <i>ab.</i>), Larentia,		pendularia, Ephyra, Cosymbia ..	4
Thera	39	penziana, Sciaphila	141
obscura (arion <i>ab.</i>), Lycaena 2, 30,		perla, Bryophila	140
108, 140		perlellus, Crambus	106, 140
obscura (ceto <i>ab.</i>), Erebia	2	permutana, Peronea	141
**obscura (variata <i>race</i>), Larentia,		petraria (chlorosata), Lozogramma,	
Thera	40	Lithina	5
obscurata, Gnophos	141	pencedani (ephialtes <i>race</i>), Zygaena	124
		phaeodactyla = lunaedactyla	127, 141

	PAGE		PAGE
phaeorrhæa (chrysoorrhœa),		psittacata = siderata	77
Nygma	80	Psodos	146
pharte, Erebia	139	Psychides	81, 82, 97
phegea, Syntomis	3, 125	pterodactyla, Stenoptilia	141
pheretes, Plebeius, Albulina ..	140	pudorina = impudens	77
phicomone, Colias	122, 139	puerpera, Catocala	141
philea = satyrion	143	pumilata, Eupithecia	26
philenor, Papilio	116	punctifera (arion <i>ab.</i>), Lycaena	103, 109
philodice, Eurymus, Colias ..	149	punctularia, Tephrosia	4, 143
phlaeas, Rumicia, Heodes 4, 5, 13,		pupillana, Semasia	141
30, 125, 130, 140		purpuralis, Zygaena 3, 124, 125,	140
phoebe, Melitæa	139, 148	purpuraria, Lythria	141
phocas (dorilis <i>race</i>), Heodes ..	108	purpurata, Rhyparia	103
Pieris (inae)	75, 116	purpurata, Arctia	125
pigra, Pygæra	61, 140	pusaria, Cabera	5, 6
pinetata = variata	154	pusillata, Eupithecia	93
pinaria, Ellopia, Bupalus	5	pustulata (bajularia), Euchlora ..	64
piniperda, Panolis	61	putris, Axylia	142
pisi, Mamestra, Hadena	76	Pyralidae	131, 141
pitho (pronoë <i>race</i>), Erebia 3,	30	pyralina, Calymnia	77
plagiata, Anaitis .. 6, 42, 64, 77,	141	pyrenaica, Hepialus	83
plantaginis, Parasemia, Nemeophila		pyrina (aesculi), Zeuzera	78
59, 76, 140		quadrangularis, Amicta	98
platinea, Hadena	141	quadrifasciaria, Ochyria, Coremia	
Platypterygidae	82	78, 142	
pecta, Noctua	142	quadriânae	77
plumbaria, Ortholitha	5, 142	quadripunctaria (hera), Callimorpha	
*plumbea (euphrosyne <i>ab.</i>), Bren-		124, 142	
thiis	8, 27	quadripunctata, Caradrina	140
plumigera, Pilophora	27	quercifolia, Eutricha	104
pluto (alecto <i>race</i>), Erebia	106	quercinaria, Ennomos	78
podalirius, Papilio 103, 123, 124,		quercûs, Lasiocampa	140
139, 171		quercûs, Rurialis, Bithys	142
polonus (tbetis <i>ab.</i>), Polyommatus	30	ramburi, Aegeria	140
polychloros, Eugonia 58, 139, 167		ramosa (aurita <i>ab.</i>), Setina 125, 140	
polycommata, Tricopteryx	129	rapae, Pieris 4, 16, 20, 90, 146,	139
polymita, Polia	141	rectilinea, Hyppa	159
polytes, Papilio	147	reducta (obeliscata <i>ab.</i>), Larentia,	
polyxena, Zerynthia, Thais	29	Thera	153
pomona, Catopsilia	95	repandata, Boarmia	14
popularis, Neuronina	141	resinella, Rhyacionia	141
populata, Lygriis, Cidaria	141	reticulata (saponariae), Neuria ..	76
populeti, Taeniocampa	77	revayana, Sarothrips	92
populi, Amorpha .. 130, 148, 154		rhadamanthus, Zygaena	125
populi, Limenitis	1	rhamnata = transversata	77, 93
porcellus, Theretra	76, 147	rhamni, Gonepteryx .. 4, 21,	139
potatoria, Cosmotriche	6, 33	rhododactylus, Cnaemidophora ..	141
præaustralis (megera <i>race</i>), Pararge	24	rhomboidaria (gemmaria), Boarmia	
**præaustralis (alceae <i>race</i>), Eryn-		80, 125	
nis	106	rhomboidea = stigmatica	76
prasinaria (fasciaria <i>ab.</i>), Ellopia		Rhopalocera	139
154, 167		richardsoni (vinculella), Tinea 84,	113
Precis	145	ridens, Asphalia	61, 92
primulae (festiva), Noctua	5	ripartii (admetus <i>race</i>) Polyom-	
proboscidalis, Hypena	20	matus, Hirsutina 103, 104, 123,	124
procida (galathea <i>race</i>), Melanargia		rivata, Xanthorhoë, Larentia 5, 78,	89
123, 124		rivularis (camilla), Limenitis 2,	
promutata = marginepunctata ..	141	59, 105, 127, 139	
pronoë, Erebia	3, 30	roboraria, Boarmia	165
pronuba, Triphaena .. 20, 29, 30,	140	rippertaria, Lithina	141
prosapiaria, Hylæa, Ellopia	61	roboris, Laeosopsis	103
protea, Hadena	21	romanovi (discobolus <i>ab.</i>), Par-	
pruinata, Pseudoterpna .. 6, 125,	142	nassius	147
prunata, Lygriis, Cidaria .. 5,	141	rosea (glariosa <i>ab.</i>), Noctua	76
pruni, Strymon	75		

	PAGE		PAGE
rostralis, <i>Hyppena</i>	130	sociella, <i>Aphomia</i>	125
rubi, <i>Callophrys</i>	5, 142	sophialis, <i>Botys</i>	141
rubi, <i>Lasiocampa</i>	140	sordida (anceps), <i>Mamestra</i>	76, 140
rubidata, <i>Anticlea</i>	78	sordidata = furcata	78, 141
rubiginata, <i>Leptomeris</i> , <i>Acidalia</i>	125	spadicea = ligula	116
rubiginea, <i>Dasyampa</i>	77	spini, <i>Strymon</i> 103, 104, 125,	140
rufata (obliquaria), <i>Chesias</i>	77, 92	spheciformis, <i>Aegeria</i>	61
rufina = helvola	140	Sphingidae	76, 132
rufimitrella, <i>Adela</i>	141	staticis, <i>Adscita</i>	125
rumicis, <i>Pharetra</i> , <i>Acronicta</i>	142	statilinus, <i>Satyru</i> s	139
rurea, <i>Xylophasia</i>	5, 6	stellatarum, <i>Sesia</i> , <i>Macroglossa</i>	130, 140, 147
russula = sannio	124, 125	stigmatica (rhomboidea), <i>Noctua</i>	76
sacraria, <i>Sterrrha</i>	64	stoechadis, <i>Zygaena</i>	3
sagittata, <i>Larentia</i>	89	stragulata (variata <i>ab.</i>), <i>Larentia</i> ,	
salicis, <i>Leucoma</i>	140	Thera 89, 119, 120, 151, 152,	169
salmacis (medon <i>ab.</i>), <i>Plebeius</i> ,		straminea, <i>Conchylis</i> , <i>Euxanthis</i>	141
Aricia	64	straminea, <i>Leucania</i>	125
sambucaria, <i>Ourapteryx</i>	129	striata (thetis <i>ab.</i>), <i>Polyommatus</i>	173
sannio (russula), <i>Diacrisia</i>	6, 124, 125	striata, <i>Coscinia</i>	103, 124
sao, <i>Pyrgus</i> , <i>Hesperia</i> .. 2,	105, 140	strigata (thymiaria), <i>Hemithea</i>	6, 142
saponariae = reticulata	76	strigata (vibicaria <i>ab.</i>), <i>Rhodo-</i>	
satyrata, <i>Eupithecia</i>	93, 147	strophia	103
Satyridae	146	strigillaria, <i>Perconia</i> , <i>Aspilates</i>	6
satyrion (philea) (arcania <i>race</i>),		strigilis, <i>Miana</i>	142
Coenonympha	2, 139, 143	stygne, <i>Erebia</i> 105, 106, 122, 124,	139
saucia = margaritosa	76, 141	subalpina (dorilis <i>race</i>), <i>Heodes</i>	140
scabiosata, <i>Eupithecia</i>	93	subaudiata, <i>Triphosa</i>	141
scheepdaeli (cardamines <i>ab.</i>), <i>Eu-</i>		subcalida (medon <i>race</i>), <i>Plebeius</i> ,	
chlœ	29, 91	Aricia	109, 110
schmidtii (phlaeas <i>ab.</i>), <i>Rumicia</i>	30	subnotata, <i>Eupithecia</i>	78, 147
scipio, <i>Erebia</i>	124, 139	substitutus (apollo <i>race</i>), <i>Parnassius</i>	139
scolopacina, <i>Xylophasia</i>	76	succenturiata, <i>Eupithecia</i>	6
scota (semele <i>race</i>), <i>Hipparchia</i>	21, 22, 23, 26	suffumata, <i>Lampropteryx</i> .. 5, 92,	129
scotica (variata <i>race</i>), Thera,		suffusa = upsilon	141
Larentia	39, 40	suffusa (semele <i>race</i>), <i>Hipparchia</i>	22
secalis (oculea) (didyma), <i>Apamea</i>	20, 129	suspecta = iners	77
segetum, <i>Agrotis</i>	142	sylvanus, <i>Augiades</i>	6, 20
selasellus, <i>Crambus</i>	141	sylvina, <i>Hepialus</i>	20
selene, <i>Brenthis</i>	30, 96, 142	sylvina, <i>Mesosemia</i>	13
semele, <i>Hipparchia</i> 21, 22, 23, 24,		syringaria, <i>Hygrochroa</i> , <i>Pericallia</i>	6
25, 26, 64, 126, 139, 142		tages, <i>Nisoniades</i>	4, 5, 6, 142
semiargus, <i>Polyommatus</i> (<i>Cyaniris</i>)	140	taraxaci, <i>Caradrina</i>	6
senthes (semele <i>race</i>), <i>Hipparchia</i>	24, 26	taraxaci, <i>Lemonia</i>	140
sephyrus, <i>Plebeius</i>	2, 30	Teichobiinae	65
sepiaria, <i>Tephrosia</i>	141	telicanus, <i>Syntarucus</i> .. 3, 10,	29
serotinaria, <i>Gnophos</i>	59, 141	tenebrata, <i>Heliaca</i>	5
sertata, <i>Lobophora</i> , <i>Acasis</i> ..	89	teres (semele <i>race</i>), <i>Hipparchia</i>	23, 24, 25, 26
sexstrigata (umbrosa), <i>Noctua</i>	76	terrea, <i>Caradrina</i>	140
sibilla, <i>Limenitis</i>	2, 6, 30	tersa (armoricanus <i>race</i>), <i>Hesperia</i>	107
siciliana (semele <i>race</i>), <i>Hipparchia</i>	21, 24, 25, 26	tersata, <i>Phibalapteryx</i> , <i>Horisme</i>	78, 125
sidae, <i>Hesperia</i>	29	tersior (onopordi <i>race</i>), <i>Hesperia</i>	107
siderata (psitticata), <i>Cidaria</i>	77	testacea, <i>Apamea</i> , <i>Luperina</i>	143
silaceata, <i>Eustroma</i> , <i>Larentia</i>	5, 89	thapsiella, <i>Depressaria</i>	141
similis = chrysorrhoea	20	thauamas = flava	6, 142
simplicina, <i>Hedya</i>	13	theophrastus, <i>Tarucus</i>	8, 10
simplonia, <i>Agrotis</i>	141	thetis, <i>Polyommatus</i> , <i>Agriades</i>	6, 7, 30, 59, 67, 116, 127, 140, 165,
simulans, <i>Agrotis</i>	141	thore, <i>Brenthis</i>	29, 30
sinapis, <i>Leptosia</i> 59, 110, 111, 125,		thymiaria = strigata	142
139, 142		Thysania	94
sobrinata, <i>Eupithecia</i>	93, 141	tigris, <i>Amphicallia</i>	64
sociata, <i>Larentia</i> , <i>Xanthorhoë</i>	5	tiliae, <i>Mimas</i>	19, 42, 76, 154
		Tinea	113

	PAGE		PAGE
tineana, Ancyclus	13	versicolora, Dimorpha, Endromis..	76
tipuliformis, Aegeria	78	**veris (argus race), Plebeius ..	110
titan, Ornithoptera	148	vernaria, Geometra	147
titea, Melanargia	147	vespiformis (asiliformis), Aegeria ..	78
tithonus, Epinephele	142, 165	vibicaria, Rhodostrophia 102, 125, 141	141
tityus (bombyliformis), Hemaris ..	5	villica, Aretia	42, 130
togata, Eupithecia	78	vinculella (richardsoni), Tinea 82,	84, 83, 113
tolana (cristana ab.), Peronea	96	vingra, Aslauga	160
Tortrices	141	vinula, Cerura	140
tosna, Suastus	9	virens, Leucania	140
trabealis, Agrophila	125	virescens, Charagris	80
tragopogonis, Amphipyra	140	virgaureae, Heodes 2, 103, 122, 124, 140	140
transalpina, Zygaena 3, 80, 105,	123, 124, 125, 140	viridaria, Phytometra	5
transiens (sinapis race), Leptosia ..	111	viridaria, Amoebe, Larentia 5, 6	6
transversata (rhamnata), Philere	77, 93	viridella, Adela	82, 83
trapezina, Calymnia	28	vitalbata, Philalabapteryx, Horisme	78
trepida, Notodonta	125	vitellina, Leucania	140
triangula (ausonia race), Antho-	90	vitiosata (variata ab.), Larentia,	119, 120
charis	90	Thera	119, 120
Trifinae	76	vittata = lignata	78
trifolii (chenopodii), Haden	141, 147	vulgata, Eupithecia	5, 93
trifolii, Lasiocampa .. 33, 34, 35	35	wahlbomiana, Sciaphila	141
trifolii, Zygaena	6, 140	w-album, Strymon	75, 104
trimacula, Derthisa, Episema ..	141	xerampelina, Cirrhoedia	20
tripartita, Abrostola	141	Zeuseridae	82
triplasia, Abrostola	148	ziczac, Notodonta	76, 130, 140
tritici, Agrotis	141	Zygaena (idae) 48, 82, 85, 124, 129, 132	132
Troides	132		
turca (galathea race), Melanargia	124	NEUROPTERA.	
turfosalis, Schrankia	77	bioculata, Ephemera	125
tyndarus, Erebia	60, 139	italicus, Ascalaphus	60
typhae = arundinis	77	longicornis, Ascalaphus	125
ubaldus, Azanus	8, 9	Myrmeleon	172
ulmifolia (quercifolia race), Eu-	104	pellucida, Hydropsyche	82
tricha, Lasiocampa	104	perla, Chrysopa	125
umbra (marginata), Chariclea	77	Phryganeidae	82
umbratica, Cucullia	147	prasinus, Chrysopa	125
umbrosa = sexstrigata	76		
unangulata, Xanthorhoë, Euphyia	142	ORTHOPTERA,	
uncula, Eustrotia, Hydrelia	77	Arixenia	62
unicolor (lutea ab.), Diacrisia	20	berenguieri, Barbitistes	103
unicolor (xerampelina ab.), Cir-	20	crucigera, Ephippigera	124
rhoedia	20	egena, Empusa	104
unifasciana, Tortrix	148	Empusa	147
unifasciata = bifasciata	158	Ephippigera	172
upsilon (suffusa), Agrotis	141	Forficulidae	32
urticae, Aglais 6, 20, 21, 58, 139,	143, 144, 156, 166, 167	nivea, Panchlora	116
urticata, Eurrhynpara	171	religiosa, Mantis	172
valesina (paphia ab.), Dryas 19, 20,	29	scalaris, Stauroderus	103
v-argenteum, Plusia	141	serriceauda, Barbitistes	104
varia, Melitaea	2, 29, 139	virescens, Panchlora	129
variata, Larentia, Thera 39, 40,	61, 88, 89, 90, 92, 119, 120, 151,		
152, 153, 154, 167, 168,	169	PARANEUROPTERA.	
variegana, Peronea	141	Aeschna	104
vauaria, Halia	141	annulatus, Cordulegaster	104, 125
venata, Anaphe	158	caerulescens, Orthetrum 103, 104, 125	125
venosata, Eupithecia	141	cyanea, Aeschna	60
verbasci, Cucullia	4, 130, 142	dubia, Leucorrhinia	172
verberata, Coenotephria	141	flaveolum, Sympetrum	60
verhuellega, Teichobia, Psychoides	65, 68, 82, 83	forcipatus, Sychogomphus 104, 125	125
		grandis, Aeschna	148
		haemorrhoidalis, Calopteryx 104, 125	125

	PAGE
juncea, Aeschna	172
Lestes	60
mercuriale, Agrion ..	105, 172
nymphula, Pyrrhosoma ..	125
scoticum, Sympetrum ..	60
splendens, Calopteryx ..	104, 125
striolatum, Sympetrum ..	60

RHYNCHOTA.

acutaeangulatus, Gonocerus ..	126
agilis, Stenocephalus ..	124
Aphididae	145
baccarum, Dolycoris ..	126
carcosa, Geocica	73
clavatus, Pilophorus	136
Coccidae	48, 176
donisthorpei, Ripersia ..	176
dumosa, Jalla	126
Dysdercus	158
equestris, Spilotethus ..	126
floccosa, Newsteadia	73
formicaria, Forda	73
formicina, Gesica	73
formosus, Phonoctonus ..	158
fosteri, Psylla	38
fraxina, Cicada	126
Fulgoridae	96
iracundus, Harpactus ..	126
Lachninae	137
lateralis, Campotopus ..	126
Laternaria	145
lineata, Graphosoma	126
litturatus, Piezodorus ..	124
longirostris, Stomaphis ..	136, 137
longirostris (= quercus), Rhyn-	
chocles	137
Macroceræa	172

	PAGE
melanoderes, Dysdercus ..	158
m-flavum, Monodesmus ..	126
najas, Gerris	15
nebulosa, Aphalara	54
nigricans, Carpocoris ..	126
pallida, Flata	158
pandurus, Spilotethus ..	126
perplexus, Pilophorus ..	136
personatus, Reduvius ..	105, 126
Phonoctonus	158
picturatus, Phonoctonus ..	158
Pilophorus	136
quercus, Stomaphis ..	73, 137, 138
radicis, Trama	73
remigis, Gerris	14, 15
sanguinolenta, Cercopis ..	126
saxatilis, Spilotethus ..	126
Stomaphis	136
subterranea, Ripersia ..	73
superstitiosus, Dysdercus ..	158
theivora, Helopeltis	14
ulmi, Eriosoma	146

NOT CLASSIFIED.

albinos, Cyphoderus (Collem.)	74,
	138, 176
Amphisbaena (Rep.)	75
annulosa, Caecilia (Rep.) ..	75
aquatica, Podura (Collem.) ..	172
**corticis, Coecilius (Psocid.) ..	148
Embiidae	32, 46
fragilis, Anguis (Rep.)	74, 75
gigas, Scolopendra	95
hoffmanseggii, Platyarthus (Crus.)	
	74, 138
Platyarthus (Crus.)	74

from *chariclea*, Steph., in the lowlands, chiefly by consisting of individual forms transitional to *razquezi*, Obth., *Et. Lép. Comp.*, IX., II. part, p. 89, fig. 2207 (May, 1914) ["Castile, in Spain"], and by producing well characterised ones of the latter quite frequently. I will deal more at length with all these points in the paper mentioned there. I only wish to remark here that Röber's *catoleuca* is not an Oriental race, but that it is the second generation of the whole of southern Europe. In Italy it stops short on the boundary of the Peninsular subzone, and it is replaced in the Po Basin by nymotypical *brassicae*, which extends northwards to the whole of Central and Northern Europe. My August specimens from Norrwegen, in Central Sweden, and from St. Petersburg, are identical with those from Vienna and Northern Italy. I conclude that, as Stephens by creating his name of *chariclea*, restricted the specific one to the summer form, there is no use for Röber's *lepidii*, which he has simply given to the summer form in a general way, because he considered the spring form to be the nymotypical one. One does meet commonly in Central Europe, both individually and locally, with a form which points to *aestiva* = *catoleuca* of the south by its large size and very scanty dark scaling on the underside; this is presumably not found in Sweden, but I see no way and no reason to use the name of *lepidii* for it in particular, nor to give it any other designation but that of *trans. ad aestiva*. As to the third generation of southern Europe I have called *tertia*, I am not fully satisfied that it is not perfectly identical with the second of northern Europe (which is also the most usual in Central Europe), and consequently nothing but nymotypical *brassicae*, L. In this species, too, Zeller's names have the right of priority and must be used: that of *verna* is the oldest given to a southern form, and in consequence the entire race, as well as the first generation, must be designated by it; the other is *aestiva*, given to the second generation of Syracuse, collected "from the end of May to June 22nd"; this is nothing but *catoleuca*, Röber, identical with my Syrian examples, as it is with Tuscan, Spanish, and others from the south of Europe, so that *catoleuca* falls before *aestiva*, which applies to the very distinct second generation of the entire Mediterranean region. Also the name of *meridionalis*, proposed by Rocci for the southern summer generation, with which he mixed up the second and the third as one, falls before *aestiva*, Z. (R. Verity.)

Tribe: *Aporiidi*.

Aporia crataegi, L. ["Sweden."]

- (a) race *meridionalis*, Vrty., *Rhop. Pal.*, p. 324, pl. LXVI., f. 8. January, 1911 ["Syria"].—C.It., up to 1300m.
- (b) race *crataegi*, L., *trans. ad minor*, Vrty., *Rhop. Pal.*, p. 119, pl. XXVI., f. 8-9 (October, 1907) [Vernet-les-Bains, Pyrénées Or.].—C.It., from 500 (Mainarde Mts.) to 1300m. (Pian di Grà in the Sibillini Mts. in the Marche).
- (c) race *angusta*, Trti., *trans. ad crataegi*, L., (Vrty., *E.R.*, 1921, p. 192)—Calabrian Coast Range, 900m.

Family: *Papilionidae*.

Tribe: *Parnassiidi*.

Parnassius mnemosyne, L. ["Habitat in Finlandia."]

- (a) race *costantinii*, Trti., *Soc. Ital. Scienze Nat.*, 1919, p. 162, and

- 1923, pl. B, fig. 1-6.—“Mt. Cimone, 1600m., on boundary between Modenese and Tuscan Apennines.”
- (b) race *fruhstorferi*, Trti., *Nat. Sic.*, 1909, p. 34, t. I, f. 1-2 (“Mt. Autore in the Abruzzi.”)—C.It., 1200-1600m.
- (c) race *aquilensis*, Bryk. (Trti., *l.c.*, 1919, p. 163).—“Gran Sasso d'Italia, in the Abruzzi.”
- (d) race *calabrica*, Trti., *Ann. Museo Zool. Napoli*, 1911, p. 12, and *Soc. It. Sc. Nat.*, 1915, t. VII., f. 13-17, (“Aspromonte in Calabria.”)—Calabria, 900-1700m.
- Parnassius apollo*, L. [“Frequent in Sweden.”]
- (a) race *apenninus*, Stich., *Gen. Insect.*, 1907, p. 26, (“Type”: Verity's figure in *Rhop. Pal.*, pl. VIII., fig. 20).—“Altissimo Mt., 1000m. in the Apuane Alps.”
- (b) race *emilianus*, Trti., *Atti. Soc. Ital. Scienze Nat.*, 1923, p. 31 of extract, pl. A.—“Mt. Cimone, 1600m., on boundary between Modenese and Pistoiese Apennines (Northern Tuscany).”
- (c) race *euapenninus*, Vrty., *B. Soc. Ent. It.*, XLV., p. 206 (1914).—“Sibillini Mts., 1300 to 2000m.”
- (d) race *decoratissima*, Vrty., *E.R.*, 1919, p. 88.—“Pratofiorito Mt., 1200m. above the Baths of Lucca, and Gran Sasso d'Italia in the Abruzzi.”
- (e) race *italicus*, Obthr., *Ét. Léop. Comp.*, III., p. 116.—“Majella Mt., 1500m., in the Abruzzi.”
- (f) race *pumilus*, Stich., *Berl. Ent. Zeit.*, 1906, p. 88 (locality of “types” unknown).—Aspromonte, 1200 to 1800m., in Calabria.

Tribe: *Zerynthiidi*.

Zerynthia hypermnestra, Scop. [“Carniola.”]

- (a) race *cassandra*, Hb., *E.S.*, f. 910-913 (1823-1833) [no text to typical figure]. (= *latiariis*, Stichel in Wytzman's *Gen. Ins.*, p. 11 (1910), “Mt. Cavo, 800m., near Rome.”)—C.It., up to 1000m., in river beds. Stauder has found the species on the Aspromonte in Calabria, but we do not know whether it belongs to this race or to *latevittata*, Vrty., as in Sicily.

Note.—Stichel (*l.c.*) calls *cassandra*, Hb., a “nomen irritum,” and replaces it by that of *creusa*, Meig., *Syst. Bearb. Eur. Schmett.*, I., p. 161 (1829). I suppose he does this because there is no text to Hübner's figure. On this ground, however, most names of this author would have to be discarded, and I do not think entomologists are quite prepared to adopt this useless revolution in Nomenclature. Hübner's figures represent most perfectly the race of Central Italy, as I have pointed out in *E.R.*, 1919, p. 88, where I also described and named *latevittata*, the much darker form, usually called *cassandra*, quite wrongly. Specimens from Florence and Marina di Pisa in my collection, Mt. Autore and Albani Mts., in Turati's, are all quite identical. The name of *latiariis* is thus nothing but a synonym. In Liguria there exists a peculiar race described by Frühstorfer under the name of *reverdini*, in the *Intern. Entom. Zeit. Guben.*, 1908, p. 58, from specimens collected at “Rapallo” by Reverdin; he says that it is considerably larger than race *creusa*, Meigen, of Southern France, and also than *latiariis*, and that the yellow ground-colour is unusually light in tone and extensive, the black pattern being very reduced in extent.

Reverdin has kindly sent me his three specimens and left me one for my collection. They are similar to the *cassandra* individuals from Florence of the largest size and with black pattern most reduced in extent; the black band of hindwings strikes me especially as being narrower and not as dark as in most *cassandra* from Central Italy. (R. Verity.)

- (b) race *nemorensis*, Vrtý., *E.R.*, 1919, p. 88.—C.It., in woods ("Forte dei Marmi, in the Prov. of Lucca, on coast").

Tribe: *Papilionidi*.

Papilio machaon, L. ["Sweden."]

- (a) race *emisphyrus*, Vrtý., *E.R.*, May, 1919, p. 88 ("Florence").—I. gen. *emisphyrus*, Vrtý.; II. gen. *sphyroides*, Vrtý., *Rhop. Pal.*, p. 12, pl. II., f. 6 (reprint of part I in 1908), ("Forte dei Marmi, on Tuscan coast"); III. gen. *sphyroides*, Vrtý.—C.It., up to 1300m.
- (b) race *meridionalis*, Rocci., *Soc. Lig. Sc. Nat.*, April, 1919, p. 11, pl. I., f. 3 ("Genoa in Liguria"); II. gen. *sphyroides*, Vrtý.; III. gen. *sphyroides*, Vrtý.—Southern It.

Note.—Although we have not seen extensive series from Southern Italy, we think we can agree with Stauder (*Mitt. Münchener Ent. Ges.*, 1922, p. 17) that the first generation is different from the one of Central Italy. In Northern Italy, at low altitudes, form *emisphyrus* exists alone; in the Alps, at high altitudes, it is replaced by race *alpica*, Vrtý. In Tuscany (and in Liguria according to Rocci) the darker form, *meridionalis*, is always met with mixed with the lighter form, *emisphyrus*, whereas in the province of Caserta and the Neapolitan district, we have only found the former. A series of grades is thus detectable leading from race *bigenerata*, Vrtý., *E.R.*, 1919, p. 88, with its second generation *aestivoides*, Vrtý., of Central Europe, to the following race characteristic of Sicily, and beyond it to the extreme melanic *urticensis*, Rocci, peculiar to the small islands of Ustica.

- (c) race *sphyrus*, Hb., *E.S.*, f. 775-776 (1823) [no text to typical figure].—I. gen. *sphyrus*, Hb.; II. (and III.?) gen. *aestivus*, Zeller, *Isis*, 1847, p. 216 ["Syracuse, in Sicily"]; IV. (or III.?) gen. *revertens*, mihi.—On the Aspromonte Mass in Southern Calabria, up to 950m.; according to Stauder, *Zeit. wiss. Insektenbiol.*, 1915, p. 239.

Note.—At Delianova, 600m., this author met at the end of September and in October, with specimens very strongly resembling the first generation. He supposes them to be the third generation, but both by the date and by their features it seems more likely they should constitute a fourth partial generation. It has been suggested that Hübner's figure of *sphyrus* represents an aberration, with much more blue scaling on band of hindwings than is ever normally found in nature. This is quite a mistake, as several specimens of the first generation from Palermo, in Sicily, and two from England in my possession, agree perfectly in every detail with that figure. It is quite remarkable that I should not have been able to detect any difference between the first generation from Sicily, called *vernus* by Zeller (*l.c.*), and the English race, called *britannicus* by Spengel, so that both these names would seem to fall before *sphyrus*, Hüb. (R. Verity.)

Papilio alexanor, Esp. ["Nice, in Provence."]

- (a) race *alexanor*, Esp.—Aspromonte, 1200m., in Calabria, according to Turati. Verity has made sure of the race by seeing the specimen.

Iphiclides podalirius, L. (Type: description of Raio, *Hist. Ins.*, p. 111, n. 3: "near the port of Leghorn in Tuscany." Habitat in "southern Europe and Africa," according to Linneus).

- (a) race *podalirius*, L.—I. gen. *podalirius*, L.; II. gen. *zanclaeus*, Z., *Isis*, 1847, p. 213 ["Messina, in Sicily"]; III. gen. *zanclaeus*, Z.—P.It., up to 1300m.
- (b) race *interjecta*, Vrty., *Rhop. Pal.*, p. 291, pl. I, f. 3 (January, 1911) ["Akbes, in Syria"].—I. gen. *interjecta*, Vrty.; II. gen. *zanclaeus*, Z.; III. gen. *zanclaeus*, Z.—Calabrian coast range, 800m.

Division: *Nymphalida*.

Family: *Satyridae*.

Subfamily: *Epinephiliinae*.

Tribe: *Coenonymphidi*.

Coenonympha tiphon, Rott. ["Landsberg on the Warte, in Germany"].

- (a) race *italica*, Vrty., *Soc. Ent. It.*, 1913, p. 222, pl. I, f. 24-27.—C.It., at very high altitudes ("Sibillini Mts., 1600m.").

Coenonympha pamphilus, L. ["Sweden."]

- (a) race *emiaustralis*, Vrty.—I. gen. *emiaustralis*, Vrty., with the precocious group *murina*, Vrty., *E.R.*, 1919, p. 121; II. gen. *aestivalis*; Rocci, *Soc. Lig. Sc. Nat.*, 1913, p. 5 ("Northern and Central Italy (Turin)").—C.It., from 1000 to 1300m.
- (b) race *australis*, Vrty.—I. gen. *australis*, Vrty., *Soc. Ent. It.*, 1914, p. 22, f. 38-39; II. gen. *aestivalis*, Rocci.—P.It., in damp surroundings up to 1000.
- (c) race *emilyllus*, Vrty.—I. gen. *australis*, Vrty.; II. gen.: early emergence *emilyllus*, Vrty., *E.R.*, 1919, p. 122, "Florence," and late emergence *aestivalis*, Rocci.—P.It., in dry surroundings up to 1000m.
- (d) race *latenigrata*, Vrty.—I. gen. *australis*, Vrty.; II. gen. *latenigrata*, Vrty., *E.R.*, 1919, p. 122.—C.It., in hot and damp surroundings on coast ("Casciana near Pisa," Pertusola near Spezia, Lago di Porta in the Prov. of Lucca).
- (e) race *lyllus*, Esp.—I. gen. *sicula*, Zeller, *Isis*, 1847, p. 146 ["Messina and Syracuse, in Sicily"]; II. gen. *lyllus*, Esp., *Schmett.*, I, 2, pl. 122, f. 1 (1806) ["Portugal"].—Stauder records *lyllus*, Esp., from the Aspromonte in Calabria (Polsi and Gioia Tauro), and, although it will be well to have a confirmation that it really is race *lyllus*, as in Sicily, it seems highly probable it should be so, considering the races from the far end of Calabria often are similar to the Sicilian ones. Descriptions of the races and forms of *pamphilus* quoted above have been given by Verity in this journal for 1916, p. 171, and for 1919, p. 121.

Coenonympha arcania, L. ["Sweden."]

- (a) race *tenuelimbo*, Vrty.—I. gen. *tenuelimbo*, Vrty., *Soc. Ent. It.*, 1914, p. 223, t. I, f. 28-30; II. gen. *gracilis*, Vrty., *E.R.*, 1919, p. 123, "Florence."—C.It., from sea coast (Quercianella, near Leghorn) up to 1300m.

Note.—In my original description of this race I stated that it was widespread in Southern Europe, and I mentioned the Valais and Barcelona as localities whence I had specimens, besides the "types" I figured from the Sibillini Mts. and Florence, in Central Italy. Subsequently I have found that, in fact, the race of Peninsular Italy is not, on the whole, the most extreme by the narrowness of the marginal band above; males in which it is as narrow as the one I have figured are quite scarce; Swiss specimens exhibit it more frequently in this sex. I must mention that on the 15th of July, 1913, I collected two laggard females of the first generation at La Traversa, 1100m., on the Futa Pass road (prov. of Florence), both of which exhibited the characteristic of form *huebneri*, Obth., in having the hindwings broadly fulvous at base above. It will be interesting to find out whether this character, which we have never seen in other localities, is constant or prevalent in that one, or in others similar to it, and whether it is thus racial. Oberthür, who gave the name in *Et. Lép. Comp.*, IV., p. 25 (1910) to Hübner's figure 240 (with no text), had only one male from Roccaraso or Paleno, in the Abruzzi, and one from Mentone in Southern France. My fig. 30, of *tunnelimbo* represents one of my two females of *huebneri*. (R. Verity.)

(b) race *opposita*, Vrty., *Soc. Ent. Ital.*, 1914, p. 224, pl. I., p. 31-33 = *tyrrhena*, Stauder, *Zeit. wissensch. Insektenbiol.*, 1915, p. 1, pl. II., p. 17; II. gen. unknown.—Calabria, up to 1200m. ("Piani de Carmelia, 1200m., on Aspromonte"). Stauder's *tyrrhena* is described from Mt. Martinello, 1000m., in Calabria, but he also includes specimens from the Sorrento peninsula (Mt. Faito, 1100 to 1200m., and Mt. Pendolo 500m.). As he only had one Calabrian specimen, which he considers his "type," it may be found out that the Sorrento race is not, on the whole, as he thought, the same as the Calabrian one; especially the Mt. Pendolo one, described as smaller, may be a race *tunnelimbo trans. ad opposita*, Vrty.; the name of *tyrrhena* may turn out useful for the Mt. Faito race, if it is only a further grade of transition.

Coenonympha corinna, Hb. ["No text to figure."]

(a) race *albana*, Stgr.—I. gen. *albana*, Stgr., *Cat.*, 1901, p. 66; II. gen. *altera*, Vrty., *Soc. Ent. It.*, 1917, p. 191.—Isle of Elba up to 500m.

Note.—I must take this occasion to point out that Bonelli's *norax* is in no way simply a synonym of *corinna*, as it is considered by all authors. Bonelli himself very rightly states, in his Appendix of 1825 to the paper of March, 1824, that his insect is different from Hübner's figure, and his own excellent figures clearly represent the very distinct second generation of Sardinia, corresponding perfectly to *altera*, Vrty., of race *albana*, Stgr.; II. gen. *norax*, Bon., must, accordingly, come into use. (R. Verity.)

Coenonympha dorus, Esp. ["Languedoc in Southern France."]

(a) race *dorus*, Esp.—C.It., very locally, up to 1200m. (Assisi in Umbria, according to Wheeler; Bolognola on the Sibillini Mts., in Vrty. coll., found by Querci; Abruzzi, according to Calberla); it has never been found in Tuscany.

Coenonympha iphis, Schiff. ["Vienna."]

(a) race *iphis*, Schiff.—Mt. Autore, 1400m., in the Abruzzi. Verity

possesses specimens collected by Rostagno in this locality. Calberla records it from "the Gran Sasso, on swampy mountain meadows, in July."

Tribe: *Epinephili*.

Pyronia ida, Esp. ["Pyrenees."]

(a) race *ida*, Esp.—Isle of Elba up to 500m.

(b) race *neapolitana*, Obthr., *Ét. Lép. Comp.*, III. (1909), p. 392 and V. (1911), f. 677 and 682 ("Pompei, near Naples,") = *arminii*, Stauder, *Zeit. wiss. Insekt.*, 1916, p. 62 ("Bed of Buonamico, on Aspromonte, at various altitudes").—P.It., up to 900m.

Pyronia tithonus, L. ["Germany."]

(a) race *tithonus*, L.—C.It., hot and damp localities on coast (Isle of Elba up to 600m.; Forte dei Marmi, in the Prov. of Lucca.)

(b) race *transiens*, Vrty., *E.R.*, 1919, p. 123.—C.It., in damp surroundings, up to 700m.. ("Pian di Mugnone, in deep gullies, near Florence.")

(c) race *etrusca*, Vrty., *E.R.*, 1919, p. 123.—C.It., in cold and dry surroundings, up to 1200m. ("Mt. Conca, 400m., near Florence.")

Hyponephele lycan, Rott. ["Landsberg-on-the-Warthe, in Germany."]

(a) race *analampra*, Trti., *Nat. Sic.*, 1909, p. 70, t. II., f. 18-19. ("Mt. Majella and Gran Sasso, in the Abruzzi.")—C.It., on high mountains, 1200-1400m.

(b) race *anacausta*, Trti., *Nat. Sic.*, 1909, p. 71, t. I., f. 11-13. ["Madonie Mts., in Sicily, and Algeria."]—Mt. Cairo, 1500m., in the Prov. of Caserta.

Hyponephele lupinus, Costa; ("Bosco di Guagnano, 44m., in the Forest of Terra d'Otranto in the Prov. of Lecce.")

(a) race *intermedia*, Stgr., *Stett. ent. Zeit.*, 1886, p. 251 ["Caucasus"].—Northern part of C.It. (Mt. Fanna, 600m., near Florence).

(b) race *lupinus*, Costa.—Forests of Terra d'Otranto (Lecce).

Epinephele jurtina, L. ["Sweden."]

(a) race *phormia*, Frühst., *Int. Ent. Zeit. Guben.*, 14 Aug., 1909, p. 117 ["Meran in S. Tyrol"].—C.It., at high altitudes, 1000-1300m.

(b) race *praehispulla*, Vrty., *E.R.*, 1921, p. 210 ("Florence").—C.It., up to 900m., and presumably Southern Italy.

(c) race *emihispulla*, Vrty., *E.R.*, 1919, p. 123.—"Poggio, in the Isle of Elba, 450m."

Subfamily: *Erebiinae*.

Tribe: *Oeneidi*.

Genus: *Erebia*.

Note.—We have adopted the classification of this genus worked out by the late Dr. Chapman (*Tr. Ent. Soc. London*, 1898, pp. 207-233, pl. V.-XVI.) according to the male appendages, although a grouping of species based on a single set of characters does not satisfy one that it really expresses natural relationship as fully as possible, and its author was the first to make this remark.

Group I.
Subgroup: *a*.

Erebia ligea, L. ["Sweden."]

(A) Subspecies *ligea*, L.

(a) race *siscia*, Frühst., *Soc. Ent.*, 1909, p. 125.—C.It., from 800 to 1300m. (Tuscan Apennines, Sibillini Mts., and "Gran Sasso," in the Abruzzi.)

(B) Subspecies *philomela*, Hüb. ["Prealps of Tyrol and Riesengebirge"] = *eurvale*, Esp. ["Riesengebirge, in Silesia."]

(a) race *apenninicola*, Vrty., *Bull. Soc. Ent. France*, Oct., 1911, p. 312, pl. I., f. 3-4.—Tuscan Apennines, from 1300 to 1800m. ("Il Teso, in the Pistoiese.")

(b) race *brutiorum*, Trti., *Ann. Mus. Zool. Univ. Napoli.*, Sept. 1911, n. 18.—"Gran Sasso, in the Abruzzi," according to Turati.

Note.—I deal with *ligea* and *philomela* as belonging to a single species, because it seems to me their complicated and perplexing relationship is one of the cases which should be kept clearly apart from the higher grade of distinctness one calls "specific," consisting in two groups whose individuals are, without exception, perfectly distinct from each other. The *Erebiae* in question seem instead to be due to a phenomenon similar to that of *Nytha fagi*, with its two *fagi* (= *alcyone*) and *major* (= *hermione*), groups of races, and perhaps, to a certain extent, also similar to *Melitaea athalia*, with the *athalia* and *pseudoathalia* groups. It seems as if one should conceive these two groups as consisting in two diverging series of races, which spring from an intermediate one and gradually get more and more distinct from each other, till the extreme races afford a degree equal to the specific one, so that they can inhabit the same grounds without intermixing. This, I think, is the true solution of the *vexata questio* about *adyte*, Hüb., which some ascribe to *ligea* and others to *philomela*, whereas it is perfectly intermediate. The phenomenon mentioned above I propose calling of "twin subspecies." It is a degree less than the one afforded by such cases as *Eveves argiades* and *E. alceas*, or *Polyommatus icarus* and *Agriades thersites*, which are "twin species," and in the second "twin genera." (R. Verity.)

Subgroup *b*.

Erebia ephron, Knoch. ["Harz Mts., in Germany."]

(a) race *amplevittata*, Vrty., *E.R.*, 1921, p. 211.—Tuscan Apennines and Apuane Alps ("Mt. Sumbra, 1600m., in the Apuane Alps," and Alpe Tre Potenze, 1650m.).

(a) race *cassiope*, F., *Mant.*, 42 ["Austria"].—C.It., further south than Tuscany, from 1600 to 2000m.

Group II.

Erebia ceto, Hb. ["Glacier region in Switzerland."]

(a) race *abetonica*, Vrty., *E.R.*, 1919, p. 124.—Tuscan Apennines ("Mt. Majori, 1500m., and Abetone Pass").

(b) race *obscura*, Rätzer, *Mitth. Schw.*, 1890, p. 222 ["Switzerland"].—C.It., further south than Tuscany, from 1400 to 1700m.

Group III.

Erebia aethiops, Esp. ["Frankonia, in Germany."]

- (a) race *apuana*, Vrty., *E.R.*, 1923, p. 135.—“Apuane Alps (Acqua Bianca, 1300m., on Mt. Pisanino),” in the N.-W. of Tuscany, only just within the boundaries of this region.

Note.—Rocci (*Memorie Soc. Ent. Ital.*, March, 1923, p. 7), describes a very large race from the Ligurian Apennines (“Val Brevenna in the Alta Valle di Scrivia, 600 to 700m.”), under the name of *magna*.

Group IV.

Subgroup *a*.

Erebia gorge, Esp. [“Region of Geneva.”]

- (a) race *erynis*, Esp. *trans. ad carboncina*, Vrty., *E.R.*, 1921, p. 212.—Apuane Alps (“Mt. Pisanino, 1200m.”).

- (b) race *carboncina*, Vrty., *Soc. Ent. It.*, 1916, p. 54.—C.It., further south than Tuscany (“Fonte Pescolla, 2000m., in the Sibillini Mts.”).

Erebia glacialis, Esp. [“Southern peak of a glacier towards Chamonix.”]

- (a) race *pluto*, Esp., *Eur. Schmett.*, Suppl. II., p. 19, pl. 121. f. 1 (1805?) [“Col de Chalenton, on path from Mt. Buet to Faucigny”] or *duponcheli*, Obthr.—Gran Sasso in the Abruzzi.

Note.—Calberla in *Iris*, 1887, p. 135, states he found this species on the Gran Sasso in the Abruzzi, from 1600 to 2200m., with its forms *alecto*, Hb., and *pluto*, Esp. Staudinger, in his *Catalog*, gives “the mountains of Central Italy” as a locality for *pluto*. My collection contains one male collected by Dannehl, on the Gran Sasso, on July 24th, 1907. It is exactly similar to Esper’s figure by its rather small size, elongated wings, tinge not saturated, but brownish, with a shiny surface; not the slightest trace of fulvous on either surface. I also have a male from Mt. Lago, in Western Liguria, collected by Col. Parvis; this is larger, has broader wings, and is of a very deep black on either side; it, no doubt, is race *duponcheli*, Obth. (*Bull. Soc. Ent. France*, 1897, p. 290), described from the Basses Alpes, and it agrees with specimens from Larche I possess; it is very likely the Abruzzi race is the latter, but one cannot ascertain this without females which exhibit the distinctive characters. Calberla has evidently found specimens which are not *pluto*, but have eye-spots on forewings, as he calls them *alecto*. This is the name which is generally used for this form on the strength of Hübner’s fig. 528-9, but Turati has discussed this subject thoroughly (*Atti. Soc. It. Sc. Nat.*, LIII. (1914), and concluded that Hübner’s first figures of *alecto*, 515-6, represent a male of the species usually called *nerine*, Fr., so that it should replace the latter. Esper’s name of *persephone* [“Mt. Vergy, near Faucigny”] seems to be the one which should be used, for the form of *glacialis*, wrongly called *alecto*. (R. Verity.)

Subgroup *b*.

Erebia tyndarus, Esp. [“On the way of the Grindelwald, near Scheideck, in the Canton of Berne.”]

- (a) race *tusca*, Vrty., *Soc. Ent. It.*, 1914, p. 148 and p. 218, t. I., f. 17-20.—Tuscan Apennines, from 1300 to 2000m. (“Abetone Pass, 1300m.”).

- (b) race *majellana*, Frühst., *Soc. Ent.*, 1909, p. 134 (name given to

Oberthür's description of the race from "Majella Mt., in the Abruzzi," recorded by him under that of *cleo*, Hb.) (= *infragentea*, Vrtý., *E.R.*, 1919, p. 125 ("Bolognola, 1200m., in Sibillini Mts.")).—C.It., further south than Tuscany, from 1400 to 2200m.

Group V.

Subgroup a.

- Erebia neoridas*, B. ["Dauphiné, Provence and Lozère."]
 (a) race *sibyllina*, Vrtý., *Soc. Ent. It.*, 1914, p. 236.—"Sibillini Mts., 1300 to 1400m."
 (b) race *etrusca*, Vrtý., *The Entomologist*, 1904, p. 55, t. IV., f. 6-8. Apuane Alps ("Mt. Matanna, 1400m."), and Alta Valle Fioio, in the Abruzzi, whence Verity possesses specimens collected by Rostagno.

Subgroup c.

- Erebia goante*, Esp. ["Thalalpen above Lucerne, in Switzerland."]
 (a) race *apenninigena*, Vrtý., *E.R.*, 1918, p. 124.—Ligurian ("Colle di Arpetto") and boundary of Tuscan Apennines (Balzo alla Rosa, 1700m., where specimens were collected by Costantini).
Erebia pirene, Hb. ["No text to figure" (= *pyrene*, Esp.—"Tyrol and Swiss Alps" = *stygne*, O.—"Tyrol and Swiss Alps.")]
 (a) race *etruriae*, Vrtý., *E.R.*, 1919, p. 124 ("Abetone Pass") (= *constantinii*, Trti., *Atti Soc. It. Sc. Nat.*, 1919, p. 166: "Mt. Cimone from 900 to 1800m.").—Tuscan Apennines and Apuane Alps, from 900 to 1800m.
 (b) race *rühli*, Frühst., *Soc. Ent.*, 1909, p. 124 = *pyrenaica*, Rühl., *Gross-schmett.*, p. 489 (1895) ["French Western Pyrenees"] (nomen præocc.).—Abruzzi, from 1600 to 1800m. (Castel del Monte in Verity coll.).
 (c) race *tetrica*, Vrtý., *E.R.*, 1923, p. 136.—"Sibillini Mts., at 1400m., in the Marche."

Group VII.

- Erebia medusa*, Schiff. ["Vienna."]
 (a) race *hyperapennina*, Trti., *Atti Soc. It. Sc. Nat.*, 1919, p. 165 ("Mt. Cimone, 1500 to 1800m., on northern boundary of Tuscany").—Recorded from these mountains also by Calberla and collected at the Abetone Pass by Verity, but hitherto not observed further south.

Subfamily: *Melanargiinae*.

- Melanargia arge*, Sulz. ("Kingdom of the Two Sicilies.")
 (a) race *turatii*, Rost., *Soc. Zool. It.*, 1909, p. 233.—"Rome, 100m."
 (b) race *cocuzzana*, Stauder, *Zeitschr. wissenschaft. Insektenb.*, 1914, p. 375, fig. 12-15.—"Mt. Cocuzzo" and S. Fili, 500m., in Calabria.

Note.—Stauder evidently did not know of the existence of race *turatii*, when he described his *cocuzzana*. The latter comes very near

the former, but, as the Calabrian race is not quite so extreme in character as the nymotypical *turatii* of Rome, Stauder's name need not be sunk in synonymy.

- (c) race *arge*, Sulz.—Neapolitan district (Sorrento, on sea shore; Formia, from sea shore to 100 m.; Spigno Saturnia, 1000m. on Aurunci Mts.; Mt. Vulture, 900m., in Basilicata).

Melanargia russiae (Esp.) Cyr. ["Sebastianofka and Pensa in southern Russia."] (=specifically *japygia*, Cyr.)

- (a) race *japygia*, Cyr., *Ent. Neap.*, I. tav. III., f. 5 (1787).—Prov. of Lecce and Benevento, up to 300m.

- (b) race *medioitalica*, Vrty., *Soc. Ent. It.*, 1913, p. 216, pl. I., f. 12-13.—"Sibillini Mts., at 1400m., in the Marche."

Note.—Kirby very rightly uses Esper's name as the specific one. There is no reason to neglect it.

Melanargia galathea, L. ["Germany and more Southern Europe." Type Petiver's figure in *Mus.*, 33, n. 304, plt. I., fig. 3.]

- (a) race *monticola*, Vrty., *E.R.*, 1919, p. 125.—C.It. in cold localities ("Firenzuola, m. 400").

- (b) race *fiorentina*, Vrty., *E.R.*, 1919, p. 125.—Florence ("Pian di Mugnone, 100 to 300m").

- (c) race *sciritis*, Frühst., *Soc. Ent.*, 1916, p. 33.—"Sabini Mts., near Rome."

- (d) race *microprocida*, Vrty., *E.R.*, 1919, p. 125.—"Benevento," 160m., and S. Pietro Avellana in (Southern Italy).

- (e) race *galinthias*, Frühst., *Arch. für Naturgesch.*, 1916, p. 21.—"Naples" and Neapolitan Apennines, up to 500m.

- (f) race *calabra-procida*, Vrty.—Herbst., *E.R.*, 1921, p. 212.—"S. Fili, 500m., on Coast Range of Calabria."

- (g) race *calabra*, Vrty., *Soc. Ent. It.*, 1913, p. 215, t. I., f. 9-11.—"Aspromonte, from 700 to 1200 m., in Southern Calabria."

Subfamily: *Satyrinae*.

Note.—It is much to be regretted that the generic names, which are now commonly in use in this subfamily, should have been introduced quite wrongly. Thus the "type-species" of the genus *Satyrus*, Latr., being *maera*, L., this name should be used, as by Kirby and Bingham, for this species and for *megea* and other near allies, which, according to modern views, must be separated generically from *aegeria*, the "type-species" of *Pararge*, Hübner. I have no possibility of verifying whether Bingham is right in using the name of *Nytha*, Billberg, (the "type-species" he states is *hermione*, L.) for that section of the genus usually called *Satyrus*, which most authors now agree must be separated from the *Hipparchia*, as characterised by *semele*, L. I use it here on his authority. This correction of the generic names makes it necessary to change that of the tribe *Satyrini* into *Nythini*, to obviate hopeless confusion. (R. Verity.)

Tribe: *Parargini*.

Satyrus megea, L. ["Austria and Denmark."]

- (a) race *praeaustralis*, Vrty.—I. gen. *praeaustralis*, Vrty., *E.R.*, 1922, p. 214; II. gen. *paeninsulitalica*, Vrty., *E.R.*, 1923, p. 24; III. gen. *paeninsulitalica*, Vrty.—P.It., up to 1300m. ("Pian di Mugnone, m. 200, near Florence").

- (b) Secondary aberrative race *tigeliiformis*, Vrty.—I. gen. presumably *praeaustralis*, Vrty.; II. gen. *tigeliiformis*, Vrty., *Soc. Ent. Ital.*, 1911, p. 269; III. gen. *tigeliiformis*, Vrty.—C.It., up to 700m., in extremely parched localities ("Piteglio, m. 700, in Tuscan Apennines"; Quercianella, on coast, south of Leghorn).

Note.—Stauder remarks that the specimens he collected on Mt. Martinello in Calabria and on Mt. Faito on the Sorrento peninsula come very near the Sicilian and the North African examples. He evidently says this on account of the superficial resemblance of the upperside, as these races had not been defined before my paper in the *Ent. Rec., l.c.*, but this similarity is very unlikely. My specimens from the Coast Range of Calabria quite belong to race *praeaustralis*. Instead, it is very probable that in the southern parts of Calabria, as in many other species, there exists the Sicilian race:—

- (c) race *australis*, Zeller.—I. gen. *australis*, Zeller, *Isis*, 1847, p. 140 ["Messina"]; II. gen. *tigellyssa*, Vrty., *E.R.*, 1923, p. 27 ["Ficuzza"]; III. gen. *tigellyssa*, Vrty.

Satyris maera, L. ["Sweden."]

- (a) race *appennina*, Vrty.—I. gen. *appennina*, Vrty.; II. gen. *appennina*, Vrty., *Soc. Ent. It.*; 1911, p. 269.—C.It., up to 1300m. ("Piteglio, m. 700, in Pistoiese Apennines").

- (b) race *silymbria*, Frübst., *Intern. Ent. Zeit. Guben*, September, 1909, p. 134.—Mt. Faito, on the Sorrento Peninsula, according to Stauder, who says that a pair he collected of the I. gen. is identical with the "types" of *silymbria*, collected by himself at Spalato in Dalmatia.

- (c) race *herdonia*, Frübst., *Int. Ent. Zeit. Guben*, September, 1909, p. 133 ["Arcine in Savoy"].—S. Fili, m. 1000, on the Calabrian Coast Range. The specimens of the I. gen. collected by Querci are quite similar to those of the Maritime Alps and very different from *appennina*.

- (d) race *polsensis*, Stauder, *Zeit. wissenschaft. Insektenbiol.*, 1916, p. 61.—In the river-bed of the Buonamico, at 1100m., on Aspromonte in Southern Calabria.

Note.—This race of southern Calabria seems to be, according to Stauder's description, intermediate between the preceding of northern Calabria and race *sicula*, Stögr., of Sicily, as might have been expected. *Pararge aegeria*, L. ["More Southern (australioris) Europe and Mauritania"]. This habitat is what establishes the nymotypical subspecies, as lately accepted generally, because, otherwise, Linnaeus' first quotation (Réaumur's figures, pl. 27, fig. 16-17) would refer to a northern race.]

(A) Subspecies *aegeria*, L.:—

- (a) race *aegeria*, L., *Syst. Nat.*, ed. X., p. 473 (1758).—Piani di Carmelia, m. 1200, on Aspromonte Mass in southern Calabria, collected by Querci on July 21st, 1914.

(B) Subspecies *vulgaris*, Zeller, *Isis*, 1847, p. 143:—

- (a) race *italica*, Vrty.—I. gen. *italica*, Vrty., *Soc. Ent. It.*, 1915, p. 55, and *E.R.*, 1916, p. 167 ("Florence"); II. gen. *italica*, Vrty.; III. gen. *italica*, Vrty.—P.It., up to 1300 m.

- (b) race *camoenaeformis*, Vrty.—I. gen. *italica*, Vrty.; II. gen. *camoenaeformis*, Vrty., *E.R.*, 1919, p. 127 ("Tuscany"); III.

gen. *camoenaeformis*, Vrtý.—P.It., in particularly hot and rather damp surroundings (Isle of Elba at Pozzio, 400m.; Springs of Fiuggi, 700m., near Rome).

Note.—I have pointed out in the *Ent. Rec.*, 1919, p. 127, that the bright fulvous characteristic form of *italica* is found at all seasons and in all localities mixed with forms I have named *elegantiaeformis*, *camoenaeformis* and *ejestasiiformis*, that it is more frequent in the early spring and in late autumn, and that *camoenaeformis*, the very dark form, occurs more often in hot seasons and localities, but I have concluded that none of these forms prevails enough to apply these names to generations or races. I have since found that in the localities mentioned above *camoenaeformis* is quite constant and racial. From Liguria and Tuscany to northern Calabria we have otherwise met with the same forms. I have also discussed the name *intermedia* of various authors and concluded it does not belong to Weismann, as stated by Seitz, or exist in Liguria, nor does it apply to any form of Peninsular Italy, except southern Calabria, where, no doubt, a really transitional form to subspecies *aegeria* must exist, together with the latter, as in Sicily. I have not yet been able to find out the first description of *intermedia*, which Rühl mentions in his *Pal. Groschmett*, p. 581, without quoting its author; the locality of Naples he gives evidently is drawn from Zeller, and applies to *vulgaris*, which Rühl mixes up with *intermedia*, so that the Rumanian localities presumably refer to the latter. Calberla, followed by Rühl, says that Zeller in *Isis*, 1847, p. 143, has named *vulgaris* the race of Naples, transitional to *aegeria*. This is quite a mistake. Zeller uses that term to designate all the races from Germany to Naples (the meaning of it would be a sufficient proof in itself) and to contrast them, as a whole, to the *aegeria* of Sicily, which he calls *meone*, Esp. This is the very distinction I have made in late years and I think Zeller's name should be revived; Staudinger's later name *egeoides* of 1871 can remain for one of the German *vulgaris* races in particular, which Zeller calls "our *aegeria*" to distinguish them from the *vulgaris* of Naples, described by him as exhibiting characteristics transitional to *meone*. I must insist on the point that the very bright fulvous of *italica* is the only point of resemblance. Real transitions from *vulgaris* to *aegeria* are alone found in Sicily, and presumably in southern Calabria. (R. Verity.)

Tribe: *Nythidi*.

Enodia dryas, Scop. ["Carniolia."]

(a) race *julianus*, Stauder, *Soc. Adriatica Scienze Nat.*, 1911, p. 117, pl. III, f. 1-2 (Gorizia, from Coglio to Udine).—C.It., up to 300m. (Baths of Lucca; Rome, according to Rostagno).

Nytha cordula, F. ["Italy" (Dr. Allioni).]

(a) race *calabra*, Costa, *Fauna Regno Napoli*, t. 3, f. 1-2 ("Kingdom of Naples") (= *acteina*, Obthr., *Ét. Léop. Comp.*, III., p. 280. "Majella, Roccaraso and Palena in the Abruzzi").—P.It., further south than Tuscany, from 1200 to 1800m.

Nytha statilinus, Hüfn. ["Berlin."]

(a) race *apennina*, Z., *Isis*, 1847, p. 134.—C.It. in some mountain localities ("at considerable altitudes above Foligno, in

Umbria"; Piteglio, 700m. in the Tuscan Apennines; Piano Astore, 1200m., in Sibillini Mts.

- (b) race *intermedia*, Vrty., *Soc. Ent. It.*, 1911, p. 270, and 1913, p. 215.—C.It., up to 900m. ("Vallombrosa, 900m., near Florence"). This is the most broadspread race in this region.
- (c) race *micromaritima*, Vrty., *E.R.*, 1919, p. 128.—C.It., up to 500m., in damp surroundings and especially on coast ("Forte dei Marmi, on sea shore, in the Prov. of Lucca;" Isle of Elba; Mollarino valley, in the Mainarde Mts. (Caserta)).
- (d) race *crassemaculosa*, Vrty., *Soc. Ent. It.*, 1916, p. 189 (December 1916), and *E.R.*, 1919, p. 129.—"Island of Tino, on the Gulf of Spezia, in hot, moist and shady locality."
- (e) race *australis*, Z., *Isis*, 1847, p. 134 ("type: Esper's figure, pl. CV., f. 4; text in Supplement I., I, p. 67: sent by the King of Sicily")=*rostagnoi*, Vrty., *E.R.*, 1919, p. 128=*maritima*, Rost., *Soc. Zool. It.*, 1911, p. 71 (nomen praeocc): "Formia (Caserta) on sea shore."—Querci collected Rostagno's "types" in the latter locality. We know of no other, except Genzano, near Rome, Palermo in Sicily, but presumably widespread in Southern Italy.

Nytha fagi, Scop., 1763. ["Carniolia"] (= *hermione*, L., 1764, "Germany"; = *alcyone*, Schiff., 1776, "Vienna").

(A) Subspecies *fagi*, Scop.:—

- (a) race *laterittata*, Vrty., *Soc. Ent. France*, 1911, p. 312, pl. I., f. 7-9.—C.It., from 900m. to 1200m. ("Alpe della Luna, 1000m.," and Mt. Pratofiorito, 1000m., in the Prov. of Lucca; Sasso di Castro and Vallombrosa in the Prov. of Florence; Sibillini Mts.)
- (b) race *genava*, Früh. ["Valais."]—Aspromonte, 1200m., in Calabria.

(B) Subspecies *major*, Esp.:—

- (a) race *alcyoneformis*, Vrty., *Soc. Ent. France*, 1911, p. 312, pl. I., f. 5-6.—C.It., from 500m. to 1000m. ("Alpe della Luna, 1000m., in the Prov. of Lucca," and Mainarde Mts., from 500m. to 1000m., in the Prov. of Caserta.)
- (b) race *major*, Esp., *Eur. Schmett.*, I., p. 116, pl. VIII. (no locality given).—C.It., up to 1000m.

Note.—None of the original descriptions of *fagi*, *hermione* or *alcyone* furnish any clue as to which of the two subspecies they were drawn from; they all three apply to both. Esper was thus at liberty to restrict them to either, and he did so by separating the larger one under the name of *major*. As he was the first to distinguish them, this name must be used and that of *hermione*, which had got into current use for it, without any reason to support it, must be dropped. In the *Linnean Soc. Journ. Zool.*, 1913, p. 183, I have pointed out that the Linnean specimen belongs to the smaller subspecies. Concerning their relationship see my *Note* on page 27 on the similar case of *Erebia ligea* and *philomela*. My series from the Aspromonte, in Calabria, exactly resembles my specimens from Martigny in the Valais, which I take to be race *genava*, Frühst. (R. Verity.)

Nytha circe, F. [Type: figure of Roesel *Insecten Belustigung*, IV., pl. 27., f. 3-4, "Germany."]

- (a) race *itala*, Vrtvy., *E.R.*, 1919, p. 129 ("Florence.")—P.It., up to 1300m.

Tribe: *Hipparchiidi*.

Hipparchia neomiris, God. ["Corsica."]

- (a) race *neomiris*, God.—Isle of Elba, from 400m. to 700m.

Hipparchia semele, L. ["Sweden."]

- (a) race *teres*, Frühst., *Intern. Entom. Zeit.*, 1908, p. 10. ["Digne in the Basses Alpes."]—C.It., in cold and damp surroundings, up to 1000m. (Mt. Prato Fiorito, 1000m., near Lucca; Mt. Conca, 400m., and other localities near Florence).
- (b) race *aristaeus*, Bon., *Mem. Acc. Torino*, 1826 (paper read in March, 1824), p. 177, t. 2, f. 1. ["Sardinia."]—Isle of Elba, up to 700m., and Isle of Giglio (Verity coll.).
- (c) race *apenninigena*, Vrtvy., *E.R.*, 1923, p. 156.—C.It., at very high altitudes, in alpine surroundings ("Sibillini Mts., 1200m., in the Marche").
- (d) race *cadmus*, Frühst., *Intern. Entom. Zeit.*, 1908, p. 10 ["Klausen, in S. Tyrol"].—Mt. Sumbra, 1200m., in Apuane Alps (N.-W. of Tuscany).
- (e) race *paeninsulitaliae*, Vrtvy., *E.R.*, 1924, p. 24.—P.It., in hot and dry surroundings, up to 1200m. ("Mt. Fanna, 600m., near Florence"; Aspromonte, 1200m., in Calabria).

Hipparchia briseis, L. ["Germany."]

- (a) race *deminuta*, Frühst., *trans. ad meridionalis*, Stgr., *Stett. e. Z.*, 1886, p. 242.—C.It., in hot and dry surroundings (Mt. Fanna, 600m. above Fiesole; Oricola, 800m., in the Abruzzi).
- (b) race *deminuta*, Frühst., *Intern. Entom. Zeit.*, 1908, p. 194.—C.It., in cold and dry surroundings ("Consuma Pass, 1000m., in the Prov. of Florence [and Malser Heide, in S. Tyrol]"; Mainarde Mts., 1500m., in the Prov. of Caserta).
- (c) race *deminuta*, Frühs., *trans. ad interjecta*, Vrtvy.—C.It., in low, cold and damp surroundings ("Mt. Conca., 400m., near Florence").
- (d) race *interjecta*, Vrtvy., *E.R.*, 1919, p. 129 ["Charente, in France"].—C.It., in alpine surroundings (Sibillini Mts., 1200m., in the Prov. of Macerata).

Family: *Libytheidae*.

Libythea celtis, Laich. ["High road at Unteratzwang, between Brixen and Botzen, in S. Tyrol."]

- (a) race *celtis*, Laich.—C.It., (Sibillini Mts., 1200m., in the Marche; Atina, 500m., in the Prov. of Caserta).

Family: *Apaturidae*.

Subfamily: *Apaturinae*

Tribe: *Apaturidi*.

Apatura ilia, Schiff. ["Vienna."]

- (a) race *eos*, Rossi, *Mant. Insect. Etruria*, p. 9 (1794). No description; following figures simply quoted. [Types: Figures of

Ernst et Engramelle, *Papillons d'Europe*, pl. 31, f. 63, a, b, u; pl. 70, f. 36, a, and of Schaef., *lc. Insect. Ratisbonam*, pl. 152, f. 3. "Regensburg, in Germany."—I. gen. *eos*, Rossi; II. gen. *eos*, Rossi.—C.It., up to 200m., (Northern Tuscany (Florence, Lucca, Pietrasanta); Acquatraversa near Rome, observed by Querci.) Local and erratic in appearance from year to year. Usually along streams shaded by poplars and willows.

Tribe: *Charaxidi*:

Charaxes jasius, L. ["Barbaria (= Algiers), in Northern Africa."]

- (a) race *septentrionalis*, Vrty.—I. gen. *brevicauda*, Vrty., *F.R.*, 1919, p. 179; II. gen. *septentrionalis*, Vrty., *Linu. Soc. Journ. Zool.*, 1913, p. 180.—P.It., up to 500m. In Tuscany stray individuals are met with anywhere (we know of three observed near Florence), but its haunts, where it breeds abundantly, are the brushwoods of the Maremma, along the west coast, from Leghorn southwards. Common also round Lucca and in the Isle of Elba. The second generation emerges from August 10th to 20th.

Family: *Nymphalidae*.
Subfamily: *Limenitinae*.
Tribe: *Limenitidi*.

Limenitis camilla, L., 1764. ["Germany."] (= *sibilla*, L., 1767 ["Germany"], et auctorium).

- (a) race *angustefasciata*, Streckf., *Berl. Ent. Zeit.*, 36, S.B., p. IX. ["Carniolia"] (= *steniotaenia*, Honr.).—C.It., up to 500m. (between Pisa and Leghorn; Rome; Atina (Caserta)). Extremely local.

Limenitis rivularis, Scop., 1763. ["Carniolia"] (= *camilla*, auctorium nec., L., = *drusilla*, Bgstr., 1779).

- (a) race *rivularis*, Scop.—I. gen. *primigenia*, Vrty.; II. gen. *rivularis*, Scop.; III. gen. *prodiga*, Frühst., *Ent. Zeit. Guben*, 1909, p. 94 ["Savoy, Salève, Pralognan"].—C.It., up to 1300m.

Note.—The first generation differs markedly from the successive ones by its smaller size, more slender build, more elongated and pointed wings, and by the white spaces being distinctly less extensive. On account of this last character I have of late used the name of *reducta*, Stdgr., to designate it, but I think it very unlikely that this name can suit it well, having been created for an oriental race, so I now propose that of **primigenia**, mihi, taking as "types" a series from Florence in my collection. (R. Verity.)

- (b) race *herculeana*, Stich., *Seitz. Pal. Gr.-Sch.*, I., p. 183, t. 57 ["Gravona, in Dalmatia," and Digne in Southern France].—I. gen. *primigenia*, Vrty.; II. gen. *herculeana*, Stich.; III. gen. *prodiga*, Frühst.—Prov. of Caserta (Formia on the sea shore, and Atina, 500m., in Mainarde Mts.).

Subfamily: *Vanessinae*.Tribe: *Melitaeidi*.

Melitaea aurinia, Rott. [Type: Description of Geoffroy, *Abr. Insectes*, II., p. 45. "Paris."]

- (a) race *aurunca*, Trti., *Ent. Zeit.*, 1910, p. 223.—Fraïne, 700m., and snow pits of Mt. Petrella, 1800m., in the Aurunci Mts. (Caserta).

Note.—This little colony of the species, which survives in a spot hundreds of miles away from its kind, and is not found along the main chain of the Apennines, is most remarkable. The nearest locality known is the extreme west of Liguria. Specimens I possess, collected by Turati in June, at Ceriana, 370m. above S. Remo, are quite similar to some *provincialis*, B., from the coast of the Alpes Marit. depart., and *aurunca* differs very little from these two. (R. Verity.)

Melitaea triria, Schiff. ["Vienna."]

- (a) race not identified because the I. gen. is unknown; II. gen. *nana*, Stdgr., *Cat. Lep. Eur.*, II. ed. (1871), p. 18. [Original description: "minor"; habitat: "Southern European Turkey, etc.;" quotation: Esper, pl. 88, f. 5-6 (Sarepta)].—Oricola, 800m. in the Abruzzi, in Rostagno coll.; Verity possesses it from Genzano, 600m., near Rome.
- (b) race not identified because the I. gen. is unknown; II. gen. *nana*, Stgr., *trans. ad catapelia*, Stgr., *Stett. e. Z.*, 1886, p. 231.—Paliano, 500m., in the Prov. of Rome.
- (c) race *catapelioides*, Stauder.—I. gen. *catapelioides*, Stauder., *Zeit. Wissensch. Insekten.*, 1918, p. 57; II. gen. is unknown.—Above "Paola, from 400m. to 600m.," and S. Fili, 900m., in Calabria. According to Turati *triria* exists also at S. Lucca, above Reggio.

Melitaea didyma, Esp. [*Eur. Schmett.*, I., p. 365, pl. XLI., f. 3 (1777): "Frankonia"].

Note.—The races and generations of Peninsular Italy, as drawn out below, plus *meridionalis*, Stdgr., of Sicily, are obviously a series of grades along a single line of variation; three of them, however, are characterised by the considerable extent of grey suffusion in most of the females, and each of these corresponds, otherwise, to one of the grades just mentioned. These relationships can be visualised as follows (from left to right size increases, fulvous becomes more red, spots become larger):

I. gen. I. gen. I. gen. I. gen. II. gen. II. gen. II. gen. II. gen.
romana, *protea*, *neeraeфор.*, *patycosana*, *caldaria*, *bosphor.* *leopardi*, *romula*,
meridio., *palustris*, *apenninig.*,

- (a) race *romana*, Calb.—I. gen. *romana*, Calb., *Iris*, 1887, p. 132 ("Monterotondo, 165m., in the Prov. of Rome"); II. gen. *caldaria*, Vrty., *Boll. Lab. Zool. Gen. Portici*, 1920, p. 59 ("Pian di Mugnone, 200m., near Florence").—C.It., in very dry and hot surrounding.
- (b) race *protea*, Vrty.—I. gen.: early (15, V. to 7, VI.) emergence *protea*, Vrty., *B. Soc. Ent. Ital.*, 1916, p. 183 ("Pian di Mugnone, 200m., near Florence"), and late (20, VI. to 20, VII.) emergence *romana*, Calb.; II. gen.: early (VIII.) emergence

caldaria, Vrty., and late (10 to 20, IX.) emergence *romula*, Vrty., *E.R.*, 1922, p. 12 ("Genzano, 600m., near Rome").

Note.—In the Pian di Mugnone (Florence) this bipartite emergence of both generations has been so clearly and constantly observed every year by Querci as to give the impression of four generations. It is only by breeding one will be able to ascertain whether this is the case or whether the groups emerge alternately. I have observed the same phenomenon of a bipartite I. gen. in the Alps, above Lake Maggiore (Pian Quaggiè, 900m.): the I. emergence occurred till June 9th, and exhibited the dark *alpina*, Stdgr., features; on the 18th there began a II. with the features of *subalpina*, Vrty.; probably Frühstorfer's *georgi* from the Tessin is the II. generation of this race and not a third one, as he supposed, and it corresponds broadly in aspect to Esper's nymotypical *didyma* of II. gen. of Central Europe, and to *caldaria* and *romula* of the south. At Atina, 500m., in the Mainarde Mts. (prov. of Caserta), a *protea* pointing to *romana*, emerges from June 8th to July 14th, and also its II. gen. has a simple emergence of *caldaria*. In the same way at Poggio, 400m., in the Isle of Elba, there are two simple generations, but here the II. exhibits different features, especially in the female; it is of the same pale yellowish fulvous, with no black suffusion at the base, as in *caldaria*, but the black spotting is not as variable, reduced in extent and partly obliterated as in the latter; on the contrary, there are very complete and regular series of rather large roundish spots of even size, which recall a leopard-skin; the marginal band is narrow, but continuous, whilst in *caldaria* it is reduced to a series of dots, as in *deserticola*, Obth., of Africa; size larger than most *caldaria*. This form I propose naming **leopardata**. It is perfectly constant and racial at Elba. In Florence it occurs frequently amongst the nymotypical *caldaria*. Instead, in the extremely parched locality of Quercianella, near Leghorn, I have only found the most extreme *caldaria*. In the male sex the difference between *caldaria* and *leopardata* is much less striking. In Florence the September emergence consists chiefly of form *romula*, which in size, colouring and extent of pattern is intermediate between the spring and the summer forms.—(R. Verity.)

(c) race *palustris*, Vrty.—I. gen. *palustris*, Vrty., *E.R.*, 1919, p. 179; II. gen. unknown.—C.It., in marshes, along the coast ("Marina di Pisa").

(d) race *neeraeformis*, Vrty.—I. gen. *neeraeformis*, Vrty., *Soc. Ent. Ital.*, 1918, p. 212; II. gen. unknown.—"Delianuova, m. 800, on the Aspromonte (end of July)" and S. Fili, m. 800, on Calabrian Coast Range.

(e) race *patycosana*, Trti.—I. gen. *patycosana*, Trti., *Ann. Mus. Zool. Napoli*, 1911, p. 18, and *Nat. Sicil.*, 1919, p. 7, pl. II., figs. 13-14 (December, 1920) ("Paola, on sea-coast of Northern Calabria"); II. gen. *romula*, Vrty.—Southern It., in warm and damp surroundings.

Note.—Form *patycosana* is the largest of the species in Europe; it is also characterised by its very broad wings in both sexes (when they

The table on page 36 should be corrected as follows:—

II. gen.	II. gen.	II. gen.	II. gen.	I. gen.	I. gen.	I. gen.	I. gen.	I. gen.
<i>caldaria</i> .	<i>bosphor.</i>	<i>leopard.</i>	<i>romula.</i>	<i>romana.</i>	<i>protea.</i>	<i>neeraeform.</i>	<i>subpatyc.</i>	
				<i>meridion.</i>		<i>palustris.</i>	<i>apenninig.</i>	<i>patycos.</i>

are set, the insect fits into a square rather than a rectangle) and by its large black spots. The female sex has a usually light whitish ground colour suffused with grey in the nymotypical form. The couple figured by Stauder in *Zeit. wissensch. Insektenb.*, X. (1914), pl. II., is not of the most extreme form either in size or pattern and approaches more *palustris*. A race similar to Turati's Calabrian one has been discovered by Querci this year in the Camaione Valley, a narrow, damp gorge in the prov. of Lucca (Northern Tuscany). It corresponds exactly to the "types" I have seen in Turati's collection in size, shape and pattern, but the ground colour is of a clear yellowish fulvous and the spots stand out sharply on it, but are not as large. The form of female with a grey suffusion over the ground-colour is very scarce there, whereas 700 m. higher up on the mountains one finds nearly exclusively the extremely melanic *apenninigena*, which is also smaller. The Camaione race I propose naming **subpatycosana**. On the sea-coast of the same province I have found a less highly characterised *subpatycosana*, which points to *protea* by its smaller size and less prominent markings. The end of June and beginning of July seems to be the time of emergence of *patycosana*, whereas *protea* is much earlier and *palustris* too. There seems to be sufficient evidence to conclude that the damp surroundings, which produce *patycosana* or *subpatycosana* in the I. gen., always produce *romula* in the II. and not *caldaria*: my September specimens from the Camaione have a particularly large spotting and in the female the ground-colour is of a particularly light whitish tone; at Forte dei Marmi they point to *caldaria*, just as the I. gen. points to *protea*. I have collected *romula* also at Levanto, in Liguria, at the end of August, on swampy grounds. The I. gen. of my typical series of *romula* of the middle of August from Genzano (Rome) is only known from two females, which seem dark *patycosana*, transitional to *apenninigena*. (R. Verity.)

(f) race *subpatycosana*, Vrty.—I. gen. *subpatycosana*, Vrty.; II. gen. *romula*, Vrty.—C.It., locally damp surroundings (Camaione Valley, 800m., in province of Lucca and Forte dei Marmi, on coast).

(g) race *apenninigena*, Vrty.—I. gen. *apenninigena*, Vrty., *E.R.*, 1919, p. 179 ("Mt. Pratofiorito, m. 1000 and more, above Lucca"); II. gen. *caldaria*, Vrty.—C.It., at high altitudes. A single female of this species found in the Sibillini Mts. at 1200m. is a *caldaria*.

Note.—Dr. Rocci has sent me his specimens of this species from Liguria to examine. Although they are too few to give a definite judgment, these races seem similar to those of the Peninsula. At Genoa at the beginning of July there is a *subpatycosana* pointing to *protea*, with *romula* pointing to *caldaria* as II. gen., just as on Tuscan coast, at Forte dei Marmi. A similar *romula* is found also at Cella, in Western Liguria. In the Val Bisagno, at 600m., a *protea* perfectly similar to the Florentine one is produced. In the second half of August at Casella Scrivia, m. 500, on pudding-stone, instead of the usual limestone of this region, a race identical with my "co-types" of *bosphorana*, Culot, *Soc. Lép. Genève*, I., 2, p. 166 (December, 1906) ["south shore of Bosphorus"], was discovered by Rocci and named *voccii* by Turati, *Nat. Sicil.*, 1919 (December, 1920); it is on an average still smaller than *caldaria* and it differs from it by having very

complete and uniform series of black spots, although they are extremely minute, and by having a continuous marginal band; this form is not unfrequent individually amongst the *caldaria*, but Culot's and Rocci's series are very uniform and no tendency to reach the more extreme *caldaria* is perceptible. Frühstorfer, *Archiv. für Naturgesch.*, 1917, n. 6, p. 13 (October, 1919), has named *eutitania* a series of July from Pegli of giant size, but ochre-yellow and with very limited black spotting on the hindwing, similar to Seitz' figures of *pekinensis* and *turanica*. This may be a I. gen. second emergence of *patycosana*; anyhow, it seems to be a local form of the latter. Curiously enough race *marsilia*, Früh., described from Marseilles, has not been found in Liguria, whereas Col. Parvis has found in Piedmont (Monferrato) a race identical with the cotypes in Turati's coll. It stands by its features before *romana*, on a different line of variation from *romula*.—(R. Verity.)

Melitaea cinxia, L. ["Botanical Garden of Uppsala in Sweden."]

- (a) race *australis*, Vrty., *E.R.*, 1916, p. 128.—P.It., up to 1200m. (The II. gen. has never been found in this region.)

Melitaea phoebe, Knoch. ["Vienna."]

- (a) race *tusca*, Vrty.—I. gen. *tusca*, Vrty., *E.R.*, 1919, p. 182; II. gen. *pauper*, Vrty., *E.R.*, 1919, p. 182.—P.It., in very dry surroundings during the development of the II. gen., up to 600m. ("Pian di Mugnone," 100 to 300m. near Florence).
- (b) race *emipauper*, Vrty.—I. gen. unknown; II. gen. *emipauper*, Vrty., *E.R.*, 1919, p. 182 (= *rostagnoi*, Trti., *Nat. Sic.*, 1919, p. 2, pl. II., f. 10-12, published August, 1920).—P.It., in surroundings which keep damp all the summer during the development of the II. gen., up to 1300m. ("Camaione valley, 300m., near Lucca").
- (c) race *phoebina*, Trti.—I. gen. *phoebina*, Trti., *Nat. Sic.*, 1919, p. 20, pl. II., f. 4-5, published in August, 1920; II. gen. unknown.—"On the Aspromonte, above 1400m., in Calabria, in May," and S. Fili, m. 900, on Calabrian Coast Range.

Melitaea athalia, Rott. [Type: Description of Geoffroy, *Hist. Abr. Insectes*, II., p. 45: "Paris."]

Note.—We agree with Reverdin that it is very doubtful whether the group of southern races he has separated under the name of *pseudathalia*, on account of their male appendages, which resemble very much those of *M. dejone*, H.-G., really stands to *athalia* as a distinct species. Various facts he has observed seem to point much more to two divergent series, constituting what I have called "twin-subspecies," because in the zone where their habitats meet (S. of France, St. Gall, S. Tyrol, Gorizia, Feltre, Trieste), in some cases intermediate individuals have been found, whereas in others they have been found together on the same grounds, and keeping perfectly distinct. Specimens, from the Verity collection, of all the Italian races from the Alps to Sicily have been submitted to Reverdin and he has pronounced them all to be *pseudathalia*, except the peculiar little *aureliaeformis*, Vrty., *Soc. Ent. Ital.* (December), 1915, p. 186, and *Ent. Rec.*, 1919, p. 193 (figured by Reverdin), from the Venaria Park of Turin, which flies with *pseudathalia* and has appendages of *athalia*, but modified as in the Asiatic *kenteana* and pointing distantly to *parthenie*, whilst to the naked eye its aspect is identical (except perhaps for the

blacker hair of the palpi) with the *aurelia*, Nick., of Mt. Musine (Turin), recognised genitally by Reverdin.

Subspecies *psendathalia*, Reverdin, *Bull. Soc. Ent. France*, 1920, p. 319, and *Soc. Lép. Genève*, 1922, p. 24, pl. 1-2: "Southern and part of Eastern France, Italy, most of Switzerland, Spain."

- (a) race *tenuicula*, Vrtý., *E.R.*, 1919, p. 193.—C.It., at high altitudes, in alpine surroundings, up to 1300m. ("Piano Astore, 1200m., in Sibillini Mts.").
- (b) race *tenuis*, Vrtý., *E.R.*, 1919, p. 193.—C.It., up to 1300m. ("Pian di Mugnone, m. 200, near Florence"). This is the most widespread race over the whole hinterland; it maintains a very uniform aspect even in localities where other species produce races different from each other.
- (c) race *submaxima*, Vrtý.—I. gen. *submaxima*, Vrtý.; II. gen. *tenuis*, Vrtý.—C.It., in damp localities along the coast ("Forte dei Marmi in prov. of Lucca").

Note.—Broadly speaking the following race *maxima* may be said to extend all along the coast from Genoa to Calabria, but to be more accurate one must note that the race of Tuscany, and perhaps that of Liguria, is not as large, not of such a warm saturated fulvous and not so heavily marked with black as the most extreme *maxima*, which predominate in Calabria and in the Isle of Elba, and it should be distinguished by the name of **submaxima**, mihi. At Forte dei Marmi I have constantly observed every year a second generation from about August 20th to September 10th, which exhibits the same features as race *tenuis*, showing *maxima* and *tenuis*, different as they are, are only produced by the effect of surroundings on individual development.—(R. Verity.)

- (d) race *maxima*, Trti., *Ann. Museo Zool. Napoli*, 1911, p. 19.—P.It. up to 500m. ("Paola," on sea shore, in Calabria; Poggio 500m. in the Isle of Elba).
- (e) race *obscura-maxima*, Vrtý.-Trti., *E.R.*, 1921, p. 213.—"S. Fili, 500m., on Coast Range of Calabria."
- (f) race *obscura*, Vrtý., *E.R.*, 1919, p. 194.—"Altipiano di Carmelia on Aspromonte, 1200m., in Calabria."

Melitaea varia, Meyer-Dür. ["Bundtner Hochalpen in Switzerland."]

- (a) race *varissima*, Vrtý., *Soc. Ent. It.*, 1913, p. 210.—C.It. at high altitudes from 1200 to 1800m. ("Sibillini Mts., in the Marche"; Gran Sasso in the Abruzzi, according to Standfuss and Calberla).

Note.—Verity has three males collected by Col. Parvis in Western Liguria in July, 1903; they are labelled "Bordighera," but they so exactly resemble the *varia* of the Vallasco, in Maritime Alps, that they must come from a higher altitude in the mountains above that town.

Tribe: *Argynnidi*.

Brenthis pales, Schiff. ["Vienna."]

- (a) race *medioitalica*, Trti., *Ann. Museo Zool. Napoli*, 1911, p. 21.—"Gran Sasso" and Majella in the Abruzzi at 1500m.

Note.—Specimens in the Verity coll., collected by Col. Parvis on Mt. Lega and Mt. Capelet in Western Liguria, belong to race *brogotarus*, Früh., *Int. Ent. Zeit. Guben*, 1909, p. 182, described from the Col di Tenda in Maritime Alps.—(R. Verity.)

Brenthis dia, L. ["Austria."]

- (a) race *laetior*, Vrty.—I. gen. *laetior*, Vrty., *E.R.*, 1919, p. 194; II. gen. *flavens*, Vrty., *E.R.*, 1919, p. 194; III. gen. *flavens*, Vrty.—C.It., up to 1000m.

Brenthis hecate, Schiff. ["Vienna."]

- (a) race *florida*, Vrty., *E.R.*, 1919, p. 195.—"Florence, from 150 to 600m." This is the only locality we know for this species in the region we are dealing with.

Brenthis daphne, Schiff. ["Vienna."]

- (a) race *tenuitermaculosa*, Vrty., *E.R.*, 1922, p. 14 ("Florence").—C.It., from coast (Forte dei Marmi) up to 1000m. Very local and chiefly in the gullies of streams.

- (b) race *nikator*, Frühst., *Int. e. Zeit. Guben*, 1909, p. 113 ["Klausen in S. Tyrol"].—Calabria up to 1000m.

Brenthis euphrosyne, L. ["Sweden."]

- (a) race *apennina*, Stgr., *Cat.*, 1901, p. 35 ("Apennines").—P.It., from 500 to 1300m.

Issoria lathonia, L. ["Sweden."]

- (a) race *florens*, Vrty.—I. gen. *lathonia*, L.; II. gen. *florens*, Vrty., *E.R.*, 1916, p. 130; III. gen. *florens*, Vrty.—P.It. up to 1000m. ("Vallombrosa and Florence").

- (b) race *emiflorens*, Vrty.—I. gen. *lathonia*, L.; II. gen. *emiflorens*, Vrty., *E.R.*, 1919, p. 195; III. gen. *emiflorens*, Vrty.—P.It., up to 1300m. ("Baths of Lucca").

Argynnis aglaia, L. ["Sweden."]

- (a) race *appenninicola*, Vrty., *Soc. Ent. It.*, 1914, p. 213, t. I., f. 4-5.—P.It., from 700 to 1300m. ("Abetone Pass, 1300m., in Northern Tuscany").

Argynnis niobe, L. ["Europe"; no quotation.]

- (a) race *appenninica*, Vrty.—*Soc. Ent. It.*, 1914, p. 213.—C.It., from 1000 to 1400m. ("Abetone pass, 1300m., in Northern Tuscany").

- (b) race *rubida*, Vrty., *trans. ad appenninica*, Vrty.—Calabrian Coast Range, 800m.

- (c) race *rubida*, Vrty., *Soc. Ent. It.*, 1913, p. 214, t. I., f. 8.—"Aspromonte, 1200m., in Calabria."

Argynnis cydippe, L. (1761) (= *adippe*, L. (1767)). ["Sweden."]

- (a) race *clavens*, Vrty., *E.R.*, 1919, p. 196.—P.It., up to 1400m. ("Florence").

Note.—In the *Linnean Soc.'s Journ.*, Zool., 1913, p. 182, I have pointed out the fact that there exists no clue in Linneus's descriptions or quotations as to what species he had before him when he described his *cydippe*, and that the specimen left by him with this name in his own handwriting is a *niobe* corresponding exactly to his description. I had suggested to correct the name on this account, but some English entomologists have opposed it, maintaining that specimens are not reliable and that only data drawn from literature should be considered, so that in this case one can let things stand as Rottensburg and other early writers made them out. All have agreed, however, that the older name of *cydippe* must be used instead of *adippe*. (R. Verity.)

Argyronome (Dryas) pandora, Schiff. ["Vienna."]

- (a) race *pandora*, Schiff.—Isle of Elba, up to 600m.; Prov. of Caserta (Formia on sea shore, Aurunci Mts., 600m., and Atina, 500m.).

Argyronome (Dryas) paphia, L. ["Sweden."]

- (a) race *magnata*, Vrtý., *E.R.*, 1919, p. 196 ["Les Boutardières (Maine et Loire) in France"].—P.It. at high altitudes, in alpine surroundings (Sibillini Mts. in the Marche).
 (b) race *magnifica*, Vrtý., *E.R.*, 1919, p. 196.—P.It., up to 1300m. ("Florence").
 (c) race *anargyra*, Stgr., *Cat.*, 1871, p. 22 ("S. Europe; W. Asia") and *Horae Soc. Ent. Ross.*, 1871, p. 63 [Greece, Sardinia, Cors., Spain] (see *E.R.*, 1919, p. 197).—Isle of Elba, up to 500m.

Note.—The name of *Dryas*, drawn from Hübner's *Tentamen* and adopted by Scudder and other authors for the two last species as separated from the *Argynnis* proper, cannot stand, because it was given by Scopoli to a *Satyridi* and the Rules of Nomenclature allow no genus to bear a name already in use in any way. Hübner's other name of *Argyronome* from *Verz. bek. Schmett.* (1816) would seem to be the right one.

Tribe: *Vanessidi*.

Pyrameis cardui, L. ["Sweden."]

- (a) race *carduelis*, Cram., *Pap. Exot.*, t. XXVI., f. E, F. ["Cape of Good Hope"].—I. gen. *carduelis*, Cram.; II. gen. *carduelis* Cram.—P.It., in damp surroundings, up to 1300m.
 (b) race *univarsa*, Vrtý., *E.R.*, 1919, p. 197.—I. gen. *univarsa*, Vrtý.; II. gen. *univarsa*, Vrtý.—P.It., up to 1300m. ("Florence").
 (c) race *inops*, Vrtý., *E.R.*, 1919, p. 198 ["Sicily and Algeria"].—I. gen. *inops*, Vrtý.; II. gen. *inops*, Vrtý.—P.It., in dry surroundings, up to 1300m.

Pyrameis atalanta, L. ("Sweden.")

- (a) race *atalanta*, L.—P.It., up to 1300m.
 (b) race *minutior*, mihi.—P.It., in arid localities ("Quercianella, near Leghorn").

Note.—Stichel (*Berl. Ent. Zeit.*, 1900, p. 124 and in Seit's *Gross-Schmett.*, p. 199) describes as *italica* the race he supposes to exist in Southern Italy as far north as the Albani Mts. and the Abruzzi, with a transitional one further north. All this is most surprising, for no such thing exists. All we can say is that from Tuscany to Sicily, in very arid localities, very small individuals, with the *fracta*, Tutt, band-character, predominate, and that individuals with a faded whitish area on the underside of the hindwings do occur much more often than in northern countries. Usually, however, there is in Italy only a very slight tendency to vary more in the direction of these extreme forms, and we have never seen a single specimen with the blue spots on hindwing, described by Stichel. I have observed facts which seem to suggest an occasional partial second generation.—(R. Verity.)

Vanessa io, L. ["Sweden."]

- (a) race *io*, L.—P.It., up to 1300m. We detect no difference between the Italian races and a series from Norrwicken in

Central Sweden, in Verity coll. Commonly seen in the mountains nearby, never in the plains, but near Florence broods of larvæ are frequent in May, although the butterfly has only been observed in four or five instances during tens of year's collecting by Stefanelli and ourselves.

Eu Vanessa antiopa, L. ["Sweden."]

- (a) race *major*, Esp., *Schmett. Eur.*, I., p. 324, t. XXIX., f. 5 ["Frankonia"] = *creta*, Vrtý., *E.R.*, 1916, p. 101 ("Tuscany"). P.It., up to 1300m.

Aglais urticae, L. ["Sweden."]

- (a) race *turcica*, Stgr., *Cat.*, 1871, p. 16. ["Southern Balkans, As. Min."].—P.It., up to 1500m. Widespread and abundant in the mountains from 800m. upwards. The butterfly has never been observed anywhere in the plain, but on two occasions a brood of larvæ has been found in Florence in May. In Italy the species seems to have a single generation.

Eugonia polychloros, L. ["Sweden."]

- (a) race *pulchrior*, Vrtý., *E.R.*, 1916, p. 101 ("Florence").—P.It., up to 1400m., producing also more or less frequently form *polychloros*, L., or form *rubens*, Vrtý., *E.R.*, 1919, p. 199 ["Lanusei, in Sardinia"], according to surroundings. This species only has one generation, according to modern writers, and it may be so also in this region, but some March individuals seem surprisingly fresh to have emerged in June.

Polygonia c-album, L. ["Sweden."]

- (a) race *c-album*, L.—I. gen. *hutchinsoni*, Robson, *Young Nat.*, 1881, p. 110 ["England"]; II. gen. *c-album*, L.—P.It., up to 1300m.

Polygonia egea, Cr. ["Constantinople and Smyrna."]

- (a) race *egea*, Cr.—I. gen. *egea*, Cr.; II. gen. *i-album*, Esp., *Schmett. Eur.*, Suppl. Vol. I., p. 14, t. XCV., f. 4 ["Montpellier, in S. France"].—P.It., up to 1300m.

Note.—In *Ent. Rec.*, 1919, p. 201, I have stated that individuals very like Cramer's figure do occur in Italy, contrary to Stichel's opinion in Seitz that they do not exist anywhere. The usual form is the one figured by Esper as *vau-album* and, if the former is frequent in the East, the Western race should bear the latter name ["Provence, in S. France"]. Some April individuals are so fresh-looking that it does not seem possible they can have hibernated.

ADDITIONS AND CORRECTIONS.

Page 3: *Erynnis alceae*, Esp.—Alter this paragraph as follows:

- (a) race *australis*, Z.—I. gen. *praeaustralis*, Vrtý., *E.R.*, 1924, p. 106 ["Monreale, 800m., near Palermo"]; II. gen. *australis*, Z.; III. gen. *australis*, Z.—Southern Calabria.
- (b) race *magnaaustralis*, Vrtý.—I. gen. *alceae*, Esp.; II. gen. *magnaaustralis*, Vrtý., *E.R.*, 1924, p. 106 ("Tuscany"); III. gen. *griseofulva*, Vrtý., *E.R.*, 1924, p. 106 ("Pian di Mugnone, near Florence").—Central and probably the whole of P.It., up to 1300 m.

Page 3: *Erynnis althaeae*, Hb.—Alter: II. gen. *australiformis*, Vrty., into II. gen. *fulvipinnulis*, Vrty., *E.R.*, 1924, p. 106 (“Tuscany”).

Page 4: *Hesperia armoricanus*, Obth.—Alter: II. gen. *fulvoinspersa*, Vrty., into: III. gen. and add II. gen. *tersa*, Vrty., *E.R.*, 1924, p. 107 (“Camaione Valley, 400m., near Lucca”).

In very hot localities one meets, not unfrequently, with form *fabressei*, Obth., *Ét. Lep. Comp.*, IV. p. 412, fig. 518-520 (1910) [“Sierra Alta, in Castile”], but we have never found it to prevail. In the second half of October in Florence, there occurs in favourable years an emergence of individuals similar to the spring generation, but whether they reproduce and thus constitute a IV partial generation, or not, remains to be established.

Page 4: *Hesperia onopordi*, Rbr.—Alter II. gen. *fulvotincta*, Vrty., into III. gen. and add II. gen. *tersior*, Vrty., *E.R.*, 1924, p. 106 (“Camaione Valley, 400m., near Lucca”).

Page 5: *Urbicola comma*, L.—Alter this paragraph as follows:

(a) race *aurata*, Vrty., *E.R.*, 1924, p. 107.—“Abetone Pass, at 1300m., on northern boundary of Tuscany, on very arid stony ground.”

(b) race *apennina*, Rost.,

(c) race *orae*, Vrty., *E.R.*, 1924, p. 107.—On coast of C.It. (“Pertusola, on Gulf of Spezia, and Quercianella, near Leghorn,” Levanto) at a few hundred yards from shore.

(d) race *alpina*, Bath,

Page 5: *Heodes virgaureae*, L.—Cancel: Boscolungo from localities of race *apennina*, Calb., and add:

(b) race *quercii*, Trti., *Atti. Soc. It. Sc. Nat.*, 1923, p. 42.—“Sibillini Mts.”

(c) race *emilianus*, Trti., *l.c.* [“Emilian Apennines”].—Boscolungo, 1300m., on northern boundary of Tuscany.

Page 6: *Loweia dorilis*, Hüfn.—Alter: I. gen. *italorum*, Vrty., into: I. gen. *italaveris*, Vrty., *E.R.*, 1924, p. 108 (“Pian di Mugnone, near Florence”).

Page 6: *Lycaena arion*, L.—Add:

(b) race *australpina*, Vrty., *E.R.*, 1924, p. 109.—C.It., at high altitudes, in alpine surroundings (“Bolognola, 1200m. in Sibillini Mts.” and presumably Palena and Roccaraso in the Abruzzi).

(c) race *taras*, Frhst., *Soc. Entom.*, 1915, p. 68.—“Aurunci Mts. (Valle del Petrella, 1400 m.) in the prov. of Caserta.”

Page 6: *Lycaena euphemus*, Hüb. and *Note to Genus Lycaena* on page 13.—The confirmation of the existence of this species in the Sibillini Mts. in this *Note* has turned out to be a mistake. Querci collected (July 10th to 24th) at 1700m., under the Pizzo Tre Vescovi some females and referred them on the field to *euphemus*, but males were subsequently found and they all turned out to be *L. alcon*, Schiff., although this race is so different in the female from any other (Verity possesses an unusual blue female from Düsseldorf which is transitional to them) that it needs some attention to recognise the species,



- Apamea ophiogramma*.—N.F., H.F.C.; Ringwood, N.; Shawford, f. c., R.; Romsey, Pe.; Winton, c., Ht.
- Miana strigilis*.—C. ev.
- Miana fasciuncula*.—Gen. dist., f. c.
- Miana literosa*.—Ch. Fd., r., R.; Romsey, Pe.; Winton, occ., Ht., F.; Portsdown, c., B., H., T.; I.W., c., *I.W.G.*
- Miana bicoloria*.—Gen. dist., c., sometimes abt.; More on the coast than inland, Ht.; I.W., Freshw., c., M.; c. and variable, *I.W.G.*
- Xylophasia rurea*.—Gen. dist., more or less c.
- Xylophasia lithoxylea*.—Gen. dist., more or less c.
- Xylophasia sublustris*.—N.F., Pe., *E.R.*, XVII. 171; Ch. Fd., r., A.; Winton, occ., M.; Ptsmth., c., sometimes abt., B.; Portsdown, f. c., H.; Alton, occ., S.; Monxton, f.c., H.; I.W., St. Lawrence, B.; Sandown, Freshw., Shanklin; c. some seasons, *I.W.G.*
- Xylophasia monoglypha*.—Abt. ev.
- Xylophasia hepatica*.—N.F., sometimes abt., T.; r., B.; Ch. Fd., v. c., R.; Soton, c., F., A.; Winton, occ., M., Ht.; Ptsmth., f. c., B.; Alton, S.; Gen. dist. in Nth., H.; I.W., well dist., f. c., *I.W.G.*
- Xylophasia scolopacina*.—Ringwood, N.; Ch. Fd., 1 sp., A.; sc., R.; Pamber, c., H.
- Dipterygia scabriuscula*.—N. F., occ., T., J.; Ringwood, N.; Bnmth., Ct.; Bassett, c., A.; Ch. Fd., f. c., R.; Winton, f. c., Ht.; Marchwood, Hk.; Ptsmth., f. c., B.; Havant, 1 sp., B.; Pamber, Bere, c., H.; Sth. of Newbury, Sl.; I.W., Freshw., *Ent.*, 1904, p. 298.
- Cloantha polyodon*.—1 sp., 1855, *M.B.I.*, I. 282; Occurs, V.
- Aporophyla lutulenta*.—Bnmth., r., R.; Bassett, r., A.; Ch. Fd., sc., R., A.; Winton, 2 sp., Ht.; Harewood, Monxton, Silchester, c., H.; I.W., Freshw., c., M., T., etc.; St. Helens, f. c., B.; Sandown, Bembridge, Vent., Yarmouth, *I.W.G.*
- Aporophyla nigra*.—N.F., Ht., M.; Ringwood, N.; Boscombe, sc., R.; Christch., Dt.; Bassett, f. c., A.; Soton, occ., M.; Fareham, 1 sp., H.; I.W., St. Helens, f. c., B.; Sandown, Carisbrooke, Vent., Yarmouth, Shanklin, in some numbers, *I.W.G.*
- Aporophyla australis*.—I.W., Ht., etc.; Freshw., f. c., Pe., T.; Sandown, *E.R.*, VIII. 220; A fairly plentiful species on the downs, etc., *I.W.G.*
- Epunda lichenea*.—Christch., occ., M.; Sth. of Newbury, Sl.; I.W., Hewett, *M.B.I.*, I. 285; St. Helens, larvae occ., *I.W.G.*
- Polia flavicincta*.—Winton, r., *W.L.*, 1891; Occurs, V.; I.W., Shanklin, 1 sp., *I.W.G.*
- Polia chi*.—Occurs, V.; Christch., H.F.C.; Southsea, Hk.
- Brachionycha sphinx*.—N.F., n. c., M., B.; Ringwood, N.; Soton, r., F., A.; Ch. Fd., f. c., R., A.; Romsey, Pe.; Winton, r., *W.L.*, 1891; Portsdown, n. c., B.; Pamber, occ., H.; I.W., Whippingham, *I.W.G.*
- Miseliu oxyacanthae*.—Gen. dist., c.; var. *capucina*, occ.
- Agriopsis aprilina*.—Gen. dist., c.
- Euplexia lucipara*.—c. nearly ev.
- Phlogophora meticulosa*.—Abt. ev.
- Mormo maura*.—c. nearly ev.
- Naenia typica*.—c. nearly ev.
- Helotropia leucostigma*.—Occurs, V.; Christch., Dt.; Havant, 1 sp., E.; I.W., Sandown, 1 sp., *I.W.G.*

Hydroecia nictitans.—Gen. dist. and c. in damp places; var. *paludis*, usually more c. than type.

Hydroecia micacea.—N.F., n. c., B.; Ringwood, N.; Soton, r., F.; Bassett, c., A.; Ch. Fd., n. c., R.; Romsey, Pe.; Winton, occ., Ht.; Fareham, c., T.; Ptsmth., n. c., B.; Havant, c., E.; Alton, c., S.; Monxton, f. c., H.; Sth. of Newbury, Sl.; I.W., f. c., *I.W.G.*

Hydroecia petasitis.—Occurs throughout, V.; Eastleigh, 1 larva, 1921, F.; Romsey, 1 sp. by Dr. Buckell, Pe.

Ochria ochracea.—N.F., c., Ht.; Ringwood, N.; Soton, f. c., F., M.; Ch. Fd., c., R., A.; Hursley, occ., M.; Eastleigh, occ., K.; Romsey, Pe.; Ptsmth., n. c., B.; Heckfield, 1 sp., T.; Havant, n. c., E.; Alton, S.; Monxton, 1 sp., H.; Sth. of Newbury, Sl.; I.W., sometimes c., *I.W.G.*

Nonagria sparganii.—Milford, 1 sp., Pe.; I.W., Freshw., r., Pe., M.; Nr. Brading, a fair number, *I.W.H.N.S.*

Nonagria typhae.—Loc. c. nearly ev.

Nonagria geminipuncta.—Christch., c., T., R.; Soton, Romsey, Nursling, Shawford, loc. c., F.; Eastleigh, Winton, c., K.; Havant, loc. c., E.; I.W., Freshw., c., M.; Sandown, Brading, *I.W.G.*

Coenobia rufa.—N.F., f. c., M.; Ch. Fd., A.; Ptsmth., n. c., B.; Shortheath, nr. Kingsley, abt., 1921, S.; I.W., Sandown, v. loc., *I.W.G.*; Freshw., Pe.

Senta maritima.—Boscombe, R.; Ringwood, N.; Ptsmth. salterns, 1 sp., B.; Havant, n. c., T., E.; I.W., Freshw., Pe., T.; Sandown, in fair numbers, considerable variation, *I.W.G.*

Tapinostola fulva.—N.F., occ., M.; Ringwood, N.; Soton, n. c., F.; Ch. Fd., c., R., A.; Romsey, Pe.; Ptsmth., n. c., B.; Havant, loc. c., E.; Alton, c., 1920, S.; Andover, Silchester, H.; Sth. of Newbury, Sl.; I.W., Sandown, *I.W.G.*

Tapinostola hellmanni.—I.W., Sandown district, 2 sp., *I.W.G.*

Calamia lutosa.—Christch., Dt.; I.W., Freshw., 1 sp., *E.R.*, V. 268; The Culvers, 1 sp., Freshw., Shanklin, 1 sp., *I.W.G.*

Calamia phragmitidis.—Christch., Dt.; I.W., Sandown, *E.R.*, VIII. 174; Sandown, Shanklin, Luccombe, ab. *rufescens* also occurs, *I.W.N.H.S.*

Leucania pallens.—Abt. ev.

Leucania l-album.—I.W., Sandown, 1 sp., *E.R.*, 1901, p. 332.

Leucania favicolor.—Ptsmth., Hayling, 8 or 9 sp., B., Ps.; I.W., Sandown, 1 sp., 1895, Freshw., 1 sp., *I.W.G.*

Leucania impura.—c. ev.

Leucania straminea.—Ringwood, N.; Soton, r., F.; Romsey, Pe.; Winton, r., Ht.; Ptsmth., n. c., B.; Havant, loc. abt., E.; Alton, S.; I.W., Freshw., c., T.; Sandown, occ., *I.W.G.*

Leucania impudens.—N.F., occ., T., M.; loc. c., B.; Ringwood, N.; Soton, occ., F., A.; Ch. Fd., f. c., R.; Ptsmth., f. c., B.

Leucania obsoleta.—I.W., a few in marshes nr. Sandown, *I.W.G.*

Leucania littoralis.—Boscombe, f. c., R.; Bnmth., c., V., Dt.; Ptsmth., c., B.; Hayling, abt., T., E.; I.W., c., V.; St. Helens, abt., T., B.

Leucania comma.—Gen. dist., usually c.

Leucania putrescens.—Boscombe, v. r., R.; *E.R.*, XIII. 369.

Leucania unipuncta.—N.F., 1 sp. at sugar, Church Place Enc., Oct. 8, 1896, by Rev. G. Hughes of Woolston, *Ent.*, 1896; *M.B.I.*,

I. 311; 1 sp., *Ent.*, XL., 1913; I.W., Sandown, 1 sp., *E.R.*, 1907, p. 303.

Leucania vitellina.—Occ. sp., chiefly on or near coast: Christch., occ., R., Dt.; Ringwood, N.; Brockt., 1 sp., *E.R.*, IV. 337; Havant, 1 sp., 1922, E.; I.W., Freshw., occ., Ht. *E.R.*; Sandown, 1 sp., *E.R.*, X. 232; Sandown, Freshw., Bembridge, occ., *I.W.G.*

Leucania albipuncta.—Boscombe, r., R.; Ptsmth., Hayling, v. r., B.; I.W., Freshw., some numbers, V.; Sandown, occ., *E.R.*, IV. 278, etc.; Freshw., f. c., *E.R.*, V., *I.W.G.*

Leucania lithargyria.—Gen. dist., more or less c.

Leucania conigera.—Gen. dist., c.

Leucania turca.—N.F., used to be abt., V.; c. at intervals, Ht.; loc., J., M., T., Hk.; Bassett, 1 sp., A.; Ptsmth., loc. r., B.; Havant, 1 sp., E.

Grammesia trigrammica.—Gen. dist., c.; var. *bilinea*, occ. with the type.

Stilbia anomala.—N.F., loc. f. c., B., A.; Bassett, r., A.; Baddesley, r., F.; Ch. Fd., loc. c., R.; I.W., St. George's Down, *I.W.N.H.S.*

Caradrina morpheus.—Gen. dist., f. c.

Caradrina alsines.—N.F., *E.R.*, IX. 92; Ringwood, N.; Bassett, A.; Ch. Fd., c. some yrs., R.; Winton, f. c., Ht.; Ptsmth. salterns, f. c., B.; Havant, f. c., E.; Gen. dist. in Nth., H.; Sth. of Newbury, Sl.; I.W., A.; Sandown, Luccombe, nr. Shanklin, n. c., *I.W.G.*

Caradrina taraxaci.—Gen. dist., more or less c.

Caradrina ambigua.—N.F., 2 sp., *E.R.*, XI. 26; Ringwood, N.; Boscombe, n. c., R.; Christch., Dt.; Bassett, r., A.; Southsea, Hk.; Hayling, n. c., B.; I.W., Freshw.; some numbers, T., Pe., *E.R.*, V. 268; Sandown, f. c., *E.R.*, VIII. 200, etc.

Caradrina quadripunctata.—Gen. dist., f. c.

Caradrina exigua.—Boscombe, v. r., R.; Christch., Dt.; Ch. Fd., 1 sp., A.; Romsey, 3 sp., Pe.; Ptsmth., 2 or 3 at light, B.; Ptsmth., 1 sp., 1914, Ps.; Swanwick, 1 sp., A.; Havant, 2 sp., 1920, 1922, E.; I.W., Freshw., *E.R.*; A full account of its occurrence in I.W. is given in *I.W.G.*, p. 407.

Petilampa arcuosa.—Ringwood, N.; Christch., Dt.; Soton, c., F.; Ch. Fd., f. c., R., A.; Winton, r., Ht.; Ptsmth., f. c., B.; Purbrook, c., T., Ps.; Fareham, 1 sp., H.; Alton, 1 sp., S.; Sth. of Newbury, Sl.; I.W., Freshw., c., T.; Bembridge, Sandown, 1 sp., *I.W.G.*

Acosmetia caliginosa.—N.F., v. loc., n. c., M., Ht., A.; Stubby Copse, 1 sp., *E.R.*, II. 183; A few localities nr. Brockt., V.; I.W., loc. r., A.; *Ent.*, 1920, p. 20; About 20 taken, 1909, *I.W.N.H.S.*

Rusina tenebrosa.—Gen. dist. in woody places, c.

Amphipyra pyramidea.—Gen. dist. in all large woods, c.

Amphipyra tragopogonis.—c. nearly ev.

Paolis griseo-variegata (piniperda).—Gen. dist. among firs, often c.

Pachnobia leucographa.—N.F., r., M.; 1 sp., B.; Liss, f. c., Ps.; Burghclere, 1 sp., Sl.; I.W., r. and loc., *I.W.G.*

Pachnobia rubricosa.—N.F., f. c., T., M., B.; Ringwood, N.; Soton, f. c., F., A.; Ch. Fd., f. c., R., A.; Winton, n. c., Ht.; Fareham, n. c., T., H.; Portsdown, c., B.; Harewood, Pamber, H.; Sth. of Newbury, Sl.; I.W., Sandown, Cowes, Shanklin, *I.W.G.*

Taeniocampa gothica.—c. ev.

Taeniocampa miniosa.—N.F., f. c., M., B.; Ringwood, N.; Holmsley

f. c., R.; Soton, n. c., F., A.; Ch. Fd., f. c., R., Ht.; Ptsmth., c., B.; Fareham, n. c., T. H.; Pamber, H.; Sth. of Newbury, Sl.; I.W., n.c., Parkhurst, Bembridge, East Cowes, *I.W.G.*

Taeniocampa pulverulenta.—c. ev.

Taeniocampa stabilis.—Abt. ev.

Taeniocampa populeti.—N.F., Ringwood, N.; Ch. Fd., r., R.; Romsey, Pe.; Portsdown, sc., B.; Havant, c., E.; I.W., Shanklin, n. c., *I.W.G.*

Taeniocampa incerta.—c. nearly ev., very variable.

Taeniocampa munda.—c. nearly ev., very variable.

Taeniocampa gracilis.—Gen. dist., not usually c.; Larvae of var. *rufa* c. in N.F., on bog myrtle.

Dicycla oo.—N.F., *H.F.C.*, etc.; v. loc., Ht.; some yrs. abt., rare in N. F. since 1871, V.; Pamber, 2 sp., 1916, H.

Calymnia pyralina.—Christch., Dt.; Alton, 1 sp., S.; Hants, *M.B.I.*, II., p. 8.; I.W., Bembridge, r., *I.W.G.*

Calymnia affinis.—N.F., Ringwood, N.; Bnmth., f. c., Ct.; Bassett, 1 sp., A.; Ch. Fd., r., Pe., R.; Eastleigh, occ., K.; Romsey, Pe.; Ptsmth., r., B.; Benmead, f. c., Ps.; Fareham, H.; Havant, c., E.; Alton, c., S.; Monxton, H.; Sth. of Newbury, Sl.; I.W., Sandown, St. Lawrence, Freshw., Bembridge, East Cowes, *I.W.G.*

Calymnia diffinis.—Ringwood, N.; Bnmth., f. c., Ct.; Eastleigh, v. r., K.; Portsdown, r., B.; I.W., Parkhurst, Freshw., Bembridge, East Cowes, *I.W.G.*

Calymnia trapezina.—Abt. ev. in woods.

Dyschorista suspecta.—N.F., among birch, Ht.; c. in 1896, Hayling, *M.B.I.*, II., p. 7; Ch. Fd., one or two only, R.; Portsdown, r., B.; I.W., Sandown, 1 sp., *I.W.G.*

Dyschorista fissipuncta.—Christch., c., R.; Shawford, c., R.; Winton, c., M., Ht.; Ptsmth., c., B.; Havant, c., E.; I.W., Cowes, *I.W.G.*

Plastenis retusa.—N.F., f. c., B.; Soton, f. c., F.; Ch. Fd., sc., R.; Fareham, f. c., B.; Horndean, f. c., B.; Westbourne, Sheepwash, c., Ps.; Basingstoke, f. c., M.; Nth. Hants, Ht.; Sth. of Newbury, Sl.; I.W., old records only.

Plastenis subtusa.—Christch., *H.F.C.*; Ch. Fd., sc., R.; Romsey, Pe.; Winton, r., Ht.; Havant, 1 sp., E.; I.W., Freshw., *E.R.*, IV. 253.

Cirrhoedia verampelina.—N.F., loc. c., J.; Ringwood, N.; Lymington, several, *Ent.*, LIII. 9; Bishopstoke, 1 sp., K.; Romsey, Pe.; Fareham, 1 sp., T.; Meon Valley, *H.F.C.*; Amport, occ., M.; Harewood, 1 sp., Pamber, occ., H.; Nth. Hants, Ht.

Omphaloscelis luosa.—Gen. dist., more or less c.

Amathes lota.—Gen. dist., c.

Amathes macilenta.—Gen. dist. c.

Amathes circellaris.—Gen. dist., more or less c.

Amathes helvola (rufina).—N.F., f. c., J., M., B.; Ringwood, N.; Soton, c., F., A.; Ch. Fd., f. c., R., A.; Romsey, Pe.; Winton, c., Ht.; Botley, f. c., T.; Horndean, sc., B.; Southsea, Hk.; Harewood, Pamber, Hyden Wood, abt., H.; Sth. of Newbury, Sl.; I.W., Sandown, a few, Yarmouth, f. c., *I.W.G.*

Amathes lychnidis (pistacina).—Gen. dist., abt.

Amathes litura.—N.F., c., M., B.; Ringwood, N.; Christch., Dt.;

Soton, sc., F.; Bassett, f. c., A.; Ch. Fd., f. c., R., A.; Romsey, Pe.; Winton, Ht.; Horndean, f. c., B.; Hyden Wood, c., T.; Alton, 1 sp., S.; Gen. dist. in Nth., H., Sl.; I.W., Freshw., *I.W.G.*

Cirrhia citrigo.—Ringwood, N.; Bassett, r., A.; Ch. Fd., 1 sp. only, "miles from lime," R.; Fareham, n. c., T.; Horndean, r., B.; Alton, f. c., S.; Monxton, Longparish, H.; I.W., Niton, 1 sp., *I.W.G.*

Ochria anrago.—Soton, 1 sp., *E.R.*, XIV. 346; Hursley, Ch. Fd., Farley Mt., n. c., R.; Crab Wood, r., Ht.; Fareham, 1 sp., T.; Horndean, r., B.; Hyden Wood, Rowlands Castle, n. c., Ps.; Alton, f. c., S.; Harewood, sometimes c., Silchester, 1 sp., H.; I.W., old records only.

Xanthia lutea (flavago).—Gen. dist., c.

Xanthia fulvago.—Gen. dist., c.; I.W., infrequent, *I.W.G.*

Mellinia gilvago.—Ringwood, N.; Bassett, 1 sp., A.; Ch. Fd., v. r., R.; Havant, f. c., E.; Monxton, f. c., H.; I.W., *H.F.C.*; Sandown, 2 sp., *I.W.G.*

Xantholeuca croceago.—N.F., n. c., M., Ht.; Ringwood, N.; nr. Lymington, J.; Fareham, occ., T., H.; Harewood, occ., H.; Sth. of Newbury, r., Sl.; I.W., Parkhurst, *I.W.G.*

Orrhodia erythrocephala.—Boscombe, 1 sp., 1902, R.; N.F., Ht., *M.B.I.*, II. 24.

Orrhodia vaccinii.—C. ev.

Orrhodia ligula (spadicea).—Gen. dist., usually c.

Dasyampa rubiginea.—N.F., r., B., M., Hk., J.; Christch, Dt., R.; Romsey, 3 sp., Pe.; Nth. Hants, 1 sp., Ht.; I.W., *M.B.I.*, II. 27; Rare, *I.W.G.*

Eupsilia satellitia.—C. ev.

Lithophane semibrunnea.—Christch., r., R.; Soton, r.; F.; Ch. Fd., r., R., A.; Romsey, c. some yrs., Pe.; Crab Wood, r., Ht.; Botley, occ., T.; Horndean, n. c., B.; Havant, 2 sp., E.; Alton, 1 sp., S.; Monxton, 2 sp., Harewood, 1 sp., H.; Sth. of Newbury, Sl.; I.W., old records only.

Lithophane socia.—N.F., f. c., M., T., Hk., J.; Ringwood, N.; Christch., n. c., R.; Soton, f. c., F., A.; Ch. Fd., n. c., R., A.; Romsey, c., Pe.; Eastleigh, occ., K.; Crab Wood, Ht.; I.W., old records only.

Graptolitha ornithopus.—Gen. dist. in Sth., c.; Apparently sc. in Nth. and in I.W.

Xylocampa arzola.—C. ev.

Calocampa evoleta.—N.F., f. c., Ht., M., T.; Ringwood, N.; Boscombe, r., R.; Soton, r., F., A.; Ch. Fd., sc., R.; Winton, c., Ht.; Horndean, n. c., B.; Fareham, 1 sp., H.; Swanwick, occ., A.; Headley Park, 1 larva, S.; Sth. of Newbury, Sl.; I.W., Freshw., occ., *E.R.*, IV. 237, etc.; Shanklin, Sandown, Freshw., in fair numbers, *I.W.G.*

Calocampa retusta.—N.F., n. c., M.; Ch. Fd., sc., R.; Horndean, n. c., B.; Fareham, 1 sp., T.; Sth. of Newbury, Sl.; I.W., Freshw., occ., Pe., R.; Sandown, Vent., Whippingham, c., *I.W.G.*

Cucullia verbasci.—Gen. dist., n. c.; No record for N.F.

Cucullia scrophulariae.—Romsey, sc., larvae singly on water betony, R., Pe.; a doubtful record.

Cucullia lychnitis.—Bnmth., v. plentiful, *E.R.*, XI. 194; Soton, sc., F.; Shawford, Winton, r. and loc., Ht., R., M.; Winton, loc. c., A.;

Waterlooville, Hk.; Ditcham, c., B.; Clanfield, sometimes c., Ps.; Alton, S.; Sth. of Newbury, Sl.

Cucullia asteris.—Ch. Fd., uncertain, A., f. c., R.; Romsey, Pe.; Hayling, n. c., E.; I.W., Freshw., Pe.

Cucullia umbratica.—Gen. dist., n. c.; N.F., Milford, f. c., 1912, Ct.; No other record for N.F.

Cucullia chamomillae.—Christch., sc., R., Dt.; Ch. Fd., r., R.; Winton, 1 sp., *W.L.* 1875; Swanwick, A.; Ptsmth., n. c., B.; Fareham, 1 sp., T.; Pamber, 1 sp., H.; Sth. of Newbury, Sl.; I.W., loc. r., A.

Cucullia gnaphalii.—Hants, Ht., Barrett.

Cucullia absinthii.—I.W., Ht., *M.B.I.*, II. 43; Old records of larvae; Not seen for many years.

Anarta myrtilli.—Gen. dist. on heaths and commons, more or less c.

Heliaca tenebrata.—Gen. dist. in grassy places, more or less c.; I.W., St. Boniface Down, Bembridge, *I.W.G.*

Pyrrhia umbra.—Higheliffe, c., A.; Winton, f.c., M., Ht.; Michelmersh, f. c., M.; Ptsmth., larvae abt., Ps.; Hayling, c., B.; Nore Hill, S.; Pamber, 2 sp., 1916, H.; Sth. of Newbury, Sl.; I.W., Sandown, c., *E.R.*, V. 274; Vent.; Niton, Freshw., Gurnard, Shanklin, *I.W.G.*

Heliothis dipsacea.—N.F., loc. c., M., T., K., etc.; Damerham, 1 sp., Ct.; Crab Wood, occ., Ht.; Fawley Down, 1 sp., F.; Hayling, r., R.; Monxton, 1 sp., H.; I.W., Whippingham, 1 sp., *I.W.G.*; St. Lawrence, r., D.

Heliothis peltigera.—Fareham, 1 sp., T.; Ptsmth., Hayling, Sheepwash, r., larvae f. c., 1920, sc. in 1921, B., Ps.; I.W., Vent., 4 sp., C.; Freshw., occ., *E.R.*, V. 268, 275, Pe., etc.; *Ent.*, 1906, p. 233. Sandown, occ., *I.W.G.*

Heliothis armigera.—I.W., Vent., 1 sp., C.; Freshw., 1 sp., T.; Freshw., occ., *E.R.*, III., 238, V. 268, 275, *M.B.I.*, II. 52; Sandown, r., *I.W.G.*

Acontia luctuosa.—Fdge., 2 sp., Ct.; Boscombe, R.; Winton, occ., F.; Romsey, Pe.; Ch. Fd., sc., R.; Crab Wood, Hursley, f. c., Ht.; Fareham, occ., T., H.; Portsdown, occ., T., Ps.; Monxton, Longparish, H.; I.W., Vent., Hk., V.; Freshw., 1 sp., A.; Pelham Woods, Sandown, Brading, Bembridge, *I.W.G.*

Thalpochares ostrina.—I.W., 2 sp., 1858, 1 sp., 1859; on the Culvers, *M.B.I.*, II. 55.

Thalpochares parva.—I.W., *M.B.I.*, II. 56; Freshw., V.

Thalpochares paula.—I.W., Freshw., 1872, *M.B.I.*, II. 56, V.

Hapalotis fasciana.—N.F., n. c., T.; abt., V.; c., Ht., J.; Soton, c., F., A.; Ch. Fd., n. c., R., A.; Horndean, sc., B.; Basingstoke, n. c., M.; Alice Holt, loc. c., 1920, S.; Pamber, c., 1920, H.; I.W., Freshw., Bembridge, *I.W.G.*; Lipbook, f. c.

Hydrelia uncula.—N.F., n. c., A.; Ly., Beaulieu, nr. Brockt., c., V.; Soton, c., F., K.; Shortheath, S.; Woolmer, loc. abt., E.; Bramsbury Common, 2 sp., H.

Rivula sericealis.—N.F., f. c., V.; Soton, Eastleigh, c., F.; Ch. Fd., n. c., R.; Fareham, n. c., T., H.; Ptsmth., Purbrook, f. c., B.; Havant, n. c., E.; Alton, abt., S.; Woolmer, c., E.; Harewood, Pamber, H.; I.W., Sandown, Yarmouth, Shanklin, *I.W.G.*

Prothyronia viridaria.—C. on heaths ev.

Scoliopteryx libatrix.—C. ev.

Plusia moneta.—Gen. dist. in gardens, larvae f. c.

Plusia chrysitis.—Gen. dist., f. c.

Plusia chryson.—Between Winton and Kingsworthy, H.F.C.; Monxton, 1 sp. 1908, H.; Has been taken in some plenty on Bramsbury Common, H.

Plusia festucae.—N.F., f. c., sometimes comes to sugar, J.; Ringwood, N.; Soton, r., Johnson; Romsey, f. c., Pe., Dr. Buckell; Winton, occ., Ht.; Shawford, Romsey, r., R.; Portsdown, n. c., B.; Fareham, 1 sp., T.; I.W., Freshw., 1 sp., *E.R.*, V. 229; Brading, 1 sp., Culver, 2 sp., *I.W.G.*

Plusia iota.—N.F., n. c., B.; Ch. Fd., r., R.; Romsey, Pe.; Winton, occ., R.; Portsdown, sc., Ps.; Alton, S.; Gen. dist. in Nth., H., Sl.; I.W., uncommon, *I.W.G.*

Plusia pulchra.—N.F., Ringwood, N.; Damerham, 1 sp., Ct.; Ch. Fd., A.; Alton, S.; Pamber, c., Monxton, c., Longparish, H.; Sth. of Newbury, Sl.; I.W., old records only.

Plusia ni.—Romsey, 2 sp., Pe.

Plusia gamma.—Abt. ev.

Abrostola triplasia.—Romsey, Pe.; Winton, occ., Ht.; Fareham, 1 sp., T.; Ptsmth., n. c., B.; Gen. dist. in Nth., H., Sl.; I.W., old records only.

Abrostola tripartita.—Ringwood, N.; Fdge., Ct.; Soton, r., F., A.; Ch. Fd., sc., R., A.; Romsey, Pe.; Winton, f. c., Ht.; Southsea, Hk.; Portsdown, n. c., B.; Gen. dist. in Nth., H., Sl.; I.W., Shanklin, Sandown, *I.W.G.*

Euclidia mi.—Gen. dist., c.

Euclidia glyphica.—Gen. dist., c.; I.W., loc., Gurnard Bay only, *I.W.G.*

Catephia alchymista.—I.W., *M.B.I.*, II. 78; Bembridge, 1 sp., 1858, *I.W.G.*

Catocala fraxini.—Alton, 1 sp., S.; I.W., *M.B.I.*, II. 79; Occ. single sp., *I.W.G.*

Catocala nupta.—Gen. dist., c.

Catocala sponsa.—N.F., c. T., B.; Hurst Hill, c., M.; Ringwood, N.; Burley, Hk., R.; Ch. Fd., r., R.; Crab Wood, Ampfield, r., Ht.; Sheepwash, Horndean, n. c., B.; I.W., Sandown, *I.W.G.*

Catocala promissa.—N.F., c. some yrs., T., B.; Hurst Hill, often abt., M.; Ringwood, N.; Burley, Hk., R.; Ch. Fd., r., R.; Crab Wood, Ampfield, r., Ht.; Sheepwash, n. c., B.; Harewood, Pamber, c. some yrs., H.; I.W., Hampstead, r., *I.W.G.*

Toxocampa pastinum.—N.F., Ringwood, N.; Fdge., Ct.; Soton, loc. f. c., F.; Winton, loc. c., Ht.; Fareham, 1 sp., H.; Swanwick, r., A.; Purbrook, n. c., T., B.; Sth. of Newbury, Sl.; I.W., Freshw., c., Pe., T.; Ryde, n. c., B.; Yarmouth, Parkhurst, Haven Street, *I.W.G.*

Laspeyria flexula.—N.F., n. c., M., V.; Ringwood, N.; Soton, r., F.; Ch. Fd., r., R.; Romsey, Pe.; Ptsmth., Ditcham, n. c., B.; Sheepwash, Ps.; Wickham, 1 sp., T.; Abbotstone Down, 1 sp., S.; Silchester, 1 sp., H.; I.W., Sandown, Bembridge, *I.W.G.*; Lipbook, 1 sp.

Zanclognatha tarsipennalis.—N.F., sc., B.; Christeh., R.; Soton, r., F.; Lordswood, n. c., M.; Ch. Fd., n. c., R.; Sheepwash, sc., Ps.; Alton, S.; c. in all woods in Nth., H.; I.W., Sandown, Shanklin, *I.W.G.*

Zanclognatha grisealis.—N.F., sc., B.; Ch. Fd., n. c., R.; Soton, f. c., F.; I. W., Shanklin, f. c., *I.W.G.*

- Zanclognatha emortualis*.—Occurs, H.F.C.
- Madopa salicalis*.—Occurs, H.F.C.; Petersfield, Barrett.
- Hermia cribrumalis (cribralis)*.—Bogs nr. Ly., V.; *M.B.I.*, II. 90; Baddesley Common, f. c., F.
- Pechipogon barbalis*.—Gen. dist. in woods, c.
- Bomolocha fontis*.—N.F., loc., B.; occ., M.; Soton, 1 sp., F.; Wickham, 1 sp., T.; Woolmer, loc. c., E.; Pamber, c., Bere, c., H.
- Hypena proboscidalis*.—C. ev.
- Hypena rostralis*.—N.F., f. c., M.; n. c., V.; Soton, f. c., F.; Ch. Fd., n. c., R.; Fareham, c., T.; Ptsmth., n. c., B.; Havant, c., E.; Alton, occ., S.; Harewood, c., H.; Aldershot, c., Sn.; I.W., Brading, Culver, Newport, *I.W.G.*
- Hyphenodes taenialis (albistrigalis)*.—Ly., f. c., *E.R.*, V. 227; Soton, r., F.; Ch. Fd., n. c., R.; I.W., Sandown, H.F.C.; Parkhurst, Bembridge, *I.W.G.*
- Hyphenodes costaestrigalis*.—N.F., abt., V., a few, *E.R.*, IX., 92.; Soton, c., F.; Ch. Fd., f. c., R.; Alton, c., S.; I.W., Sandown, v. occ., Bembridge, *I.W.G.*
- Thomoliges turfosalis*.—N.F., c., *E.R.*, IX. 92, T.; Soton, abt., F.; Shortheath, c., S.
- Brephos parthenias*.—C. ev. among birch; I.W., East Cowes, *I.W.G.*
- Brephos notha*.—Titchfield, Pamber, H.F.C.; I.W., East Cowes, *I.W.G.*
- Pseudoterpna pruinata*.—Gen. dist. on heaths and commons, more or less c.
- Geometra papilionaria*.—Gen. dist., not often c.
- Geometra vernaria*.—Gen. dist., c. on chalk.
- Euchloris pustulata*.—In all oak woods, usually sc.
- Nemoria viridata*.—N.F., loc. c., A., T., M., Ht.; Ringwood, N.; Beaulieu, Brockt., V.; Soton, loc. c., F.; Ch. Fd., c., R.; Sth. of Newbury, Sl.; I.W., Vent., *I.W.G.*
- Iodis lactearia*.—Gen. dist., c.
- Hemithea strigata*.—C. ev.
- Hyria muricata*.—N.F.; c., Ht.; loc. n. c., A.; Burley, f. c., R.; Ringwood, N.; Beaulieu, f. c., R., F.; Fdge., Ct.
- Acidalia virgularia*.—Gen. dist. in gardens, usually c.
- Acidalia straminata*.—N.F., occ., M.; loc. c., T., A.; Ly., V.; Ringwood, N., H.F.C.; Beaulieu, r., F., R.; Bnmth., H.F.C.; Fdge., Ct.; Headley Park, S.; Pamber, occ., H.
- Acidalia interjectaria*.—Bassett, A.; Ch. Fd., f. c., R.; Southsea, Hk.; Ptsmth., r., B.; Alton, 1 sp., S.; I.W., loc., A.; Freshw., freely, M.; Sandown, c., *I.W.G.*
- Acidalia humiliata*.—I.W., Cliffs, B., T., etc., 1 sp., C.; Only known British locality at Freshw., *I.W.G.*
- Acidalia holosericeata*.—Occurs, H.F.C.
- Acidalia subsericeata*.—N.F., Ringwood, N.; Ch. Fd., f. c., Ht.; St. Catherine's Hill, loc. c., F.; Portsdown, loc. c., Ps., T.; Pamber, c., H.; Sth. of Newbury, Sl.; I.W., n.c., A.; Nr. Sandown, Carisbrooke, *I.W.G.*
- Acidalia inornata*.—N.F., occ., M., A.; Ringwood, N.; Soton, r., F.; Ch. Fd., f. c., R.; Horndean, sc., B., c., Ps.; Alton, 1 sp., S.; I.W., Sandown, *E.R.*, VIII. 174; Blackpan Common, 1 sp., *I.W.G.*
- Acidalia aversata*.—C. ev., var. *spoliata* occurs freely.

- Acidalia degeneraria*.—I.W., Sandown, 1 sp., *E.R.*, XIV. 274.
- Acidalia bisetata*.—Gen. dist., c.
- Acidalia dimidiata*.—N.F., Hk.; Ringwood, N.; Soton, f. c., F., A.; Ch. Fd., c., R., A.; Winton, c., Ht.; Portsdown, Purbrook, c., Ps., B.; Havant, c., E.; Alton, S.; Sth. of Newbury, Sl.; I.W., Sandown, c., *I.W.G.*
- Acidalia trigeminata*.—Gen. dist., n. c.; I.W., old records only.
- Acidalia ornata*.—Chalk districts, f. c.; I.W., f. c., V.
- Acidalia remutaria*.—c. ev. in woods; I.W., Sandown, *I.W.G.*
- Acidalia immutata*.—N.F., loc., A.; Ringwood, N.; Baddesley, c., F.; Winton, *W.L.*, 1891; Alton, Kingsley, c., 1920, S.; I.W., between Sandown and Shanklin, 1 sp., *I.W.G.*
- Acidalia marginepunctata*.—N.F., Ringwood, N.; Sway, Ct.; Soton, n. c., A.; Romsey, Pe.; Winton, *W.L.*, 1891; Portsdown, Hayling, c., Ps.; Havant, E.; Fareham, n. c., T.; I.W., A., V., *E.R.*, III. 204; St. Lawrence, f. c., B.; Shanklin, Sandown, Niton, Yarmouth, Vent., c., *I.W.G.*
- Acidalia emutaria*.—N.F., c., J., T., B.; Ringwood, N.; Bogs, Ly., Brockt., V.; Romsey, Pe.; Cosham, c., T., Ps.; Gt. Salterns, sc., Hayling, c., Ps., E.; I.W., f. c., Ht., *E.R.*, I. 131; Yarmouth, V., A.; Freshw., c., M.; St. Helens, *I.W.G.*
- Acidalia imitaria*.—N.F., Ringwood, N.; Fdge., Ct.; Soton, n. c., F., A.; Ch. Fd., n. c., R., A.; Romsey, Pe.; Winton, f. c., Ht.; Portsdown, f. c., Ps., B.; Havant, f. c., E.; Alton, 1 sp., S.; Gen. dist. in Nth., H., Sl.; I.W., Sandown, f. c., *I.W.G.*
- Acidalia ochrata*.—Boscombe, 1 sp. by Rev. E. H. Todd, 1900, R.; I.W., *M.B.I.*, II., 132; *E.R.*, XII. 341.
- Ania emarginata*.—N.F., Pe., *E.R.*, IX. 1892; Ringwood, N.; Ch. Fd., f. c., R., A.; Romsey, Pe.; Crab Wood, *W.L.*, 1875; Ptsmth., Gt. Salterns, f. c., Ps., B.; Headley Park, S.; Pamber, c., H.; Sth. of Newbury, Sl.; I.W., Sandown, r., Horringsford, 1 sp., *I.W.G.*
- Timandra amata*.—Gen. dist., usually c.
- Ephyra porata*.—N.F., n. c., B.; Ringwood, N.; Fdge., f. c., Ct.; Bassett, A.; Soton, sc., F.; Ch. Fd., f. c., R.; Romsey, Pe.; Crab Wood, n. c., Ht.; Rowlands Castle, sc., Ps.; Gen. dist. in Nth., H., Sl.; I.W., Sandown, occ., Bembridge, *I.W.G.*
- Ephyra punctaria*.—N.F., f. c., M.; Ringwood, N.; Sway, Ct.; Soton, f. c., F., A.; Eastleigh, n. c., K.; Ch. Fd., f. c., R., A.; Romsey, Pe.; Crab Wood, Ampfield, f. c., Ht.; Fareham, Harewood, c., Pamber, Doles Wood, Hyden Wood, H.; Sth. of Newbury, Sl.; I.W., Centurion's Copse, Sandown, *I.W.G.*
- Ephyra linearia*.—N.F., c., M., T., F., etc.; Fdge., Ct.; Ch. Fd., sc., R., K.; Romsey, Pe.; Winton, c., Ht.; Rowland's Castle, Hyden Wood, Finchdean, c., Ps., B.; Selborne, c., S.; Doles Wood, H.; Sth. of Newbury, Sl.; I.W., Calbourne, *I.W.G.*
- Ephyra annulata*.—c. ev. where maple abounds.
- Ephyra orbicularia*.—N.F., f. c., M., A.; Ly., f. c., Ht.; Soton, r., F.; Crab Wood, occ., Ht.; I.W., old records only.
- Ephyra pendularia*.—N.F., c., M., Ht., A.; Ringwood, N.; Soton, c., F., M., A.; Ch. Fd., n. c., R., K.; Romsey, Pe.; Winton, *W.L.*, 1891; Westbourne, c., Hyden Wood, sc., Ps., B.; Fareham, H.; Pamber, v. c., Harewood, H.
- Sterrha saccharia*.—Occ. immigrant sp. on the coast; No very recent record.

Ortholitha plumbaria.—c. nearly ev. among gorse and broom.

Ortholitha cervinata.—N.F., Ringwood, N.; Fdge., Ct.; Ch. Fd., c., A.; n. c., R.; Romsey, Pe.; Portsdown, Bedhampton, c., Ps.; Fareham, n. c., T.; Alton, f. c., S.; Andover, c., Pamber, H.; Sth. of Newbury, Sl.; I.W., Sandown, Cowes, Shanklin, *I.W.G.*

Ortholitha limitata.—c. nearly ev.

Ortholitha bipunctaria.—c. ev. on chalk.

Mesotype virgata.—N.F., Ringwood, N.; Shawford, n. c., R.; Romsey, Pe.; Winton, loc. c., F., M., T.; St. Catherine's, Twyford Downs, loc. c., Ht.; Hayling, c., Ps.; I.W., St. Lawrence, n. c., B.; Freshw., A.; Bembridge, Freshw., *I.W.G.*

Minoa murinata.—N.F., n. c., M.; Ringwood, N.; Brockt., Rhamnor, R.; Fdge., Ct.; Bassett, n. c., A.; Winton, f. c., Ht.; Fareham, n. c., T.; Rowlands Castle, f. c., Ps., B.; Alice Holt, r., S.; Pamber, c., T., H.; Doles Wood, H.; Nr. Basingstoke, A.; I.W., old records only.

Odezia atrata.—N.F., loc., sometimes abt., M., T., Ht., A.; Ringwood, N.; Brockt., Ct.; Ampfield, occ., *W.L.*, 1891; I.W., Parkhurst, *I.W.G.*

Anaitis plagiata.—Gen. dist., usually c.

Chesias spartiata.—N.F., Ringwood, N.; Soton, c., F., A.; Eastleigh, c., K.; Ch. Fd., f. c., R., A.; Romsey, Pe.; Sheepwash, Horn-dean, c., Ps., B.; Tadley, f. c., H.; I.W., Shanklin, Cowes, *I.W.G.*

Chesias rufata.—Soton, 1 sp., M., f. c. but very local, F.; Sheepwash, 2 sp., B.; Oakhanger, S.

Lobophora polycommata.—Occurs, V., *M.B.I.*, II. 152; Ringwood, N.; Little Park, Hk.

Lobophora carpinata.—N.F., f. c., A., M., B.; Ringwood, N.; Soton, f. c., F., A.; Ch. Fd., f. c., R., A.; Crab Wood, 2 sp., Ht.; Ptsmth., f. c., Ps.; Alton, n. c., S.; Harewood, Pamber, H.; Sth. of Newbury, Sl.

Lobophora viretata.—N.F., r., A.; Ringwood, N.; Boscombe, R., Dt.; Soton, sc., M., F., A.; Ch. Fd., r., R.; Winton, n. c., T.; Portsdown, sc., Ps.; Fareham, n. c., T., H.; Alton, f. c., S.; Pamber, Oakley, H.; Sth. of Newbury, Sl.; I.W., Ht.; Vent., C.; Shanklin, Freshw., 1 sp., Carisbrooke, *I.W.G.*

Lobophora halterata.—N.F., Pe.; Brockt., *F.R.*, II., 135; Ringwood, N.; Soton, loc. A.; loc., f. c., F.; Crab Wood, 1 sp., Sweeting; Hyden Wood, sc., Ps., B.; Alton, c., 1920, S.; I.W., old and doubtful records only.

Lobophora sexualisata.—N.F., f. c., Ht., A.; Ringwood, N.; Matley Bog, c., M.; N.F., n. c., B.; Soton, sc., M.; f. c., F., A.; Ch. Fd., f. c., A.; 1 sp., R.; Ovington, c., Shortheath, S.; Pamber, 1 sp., H.; Sth. of Newbury, Sl.; I.W., Sandown, *I.W.G.*

Cheimatobia brunata.—v. c. ev.

Cheimatobia boreata.—Ch. Fd., v. c. among birch, R., T.; Headley Park, bred, S.

Triphosa dubitata.—N.F., c., M., B.; Eastleigh, occ., K.; Ch. Fd., A.; Hursley, Farley, c., R.; Romsey, Pe.; Winton, c., Ht.; Portsdown, H.; Finchdean, c., Ps., B.; Alton, c., S.; Andover, f. c., H.; Sth. of Newbury, Sl.; I.W., Sandown, 1 sp., Culver, 1 sp., *I.W.G.*

Encosmia certata.—N.F., Ringwood, N.; Christch., Dt.; Winton, "Meads," *W.L.*, 1875; Havant, E.; Alton, a colony in my garden, S.; I.W., old records only.

Eucosmia undulata.—N.F., f. c., M., Ht.; Ringwood, N.; Wood Fidle, f. c., R.; Christch., Dt.; Soton, f. c., M., F., A.; Eastleigh, n. c., K.; Ch. Fd., n. c., R.; Winton, n. c., Ht.; Westbourne, Sheepwash, sc., Ps., B.; Havant, E.; Pamber, 1 sp., H.; Sth. of Newbury, Sl.; I.W., Sandown, 1 sp., Bembridge, *I.W.G.*

Scotosia retulata.—N.F., M.; Eastleigh, c., F.; Winton, loc. c., Ht.; Portsdown, Finchdean, f. c., Ps., B.; Havant, E.; Alton, Ovington, f. c., S.; Andover, f. c., H.; Sth. of Newbury, Sl.

Scotosia rhamnata.—Eastleigh, f. c., F.; Hursley, Ch. Fd., r., R., A.; Winton, c., Ht., M.; Portsdown, abt., Ps., H.; Finchdean, c., Ps.; Alton, c., S.; Andover, f. c., H.

Eustroma silaceata.—N.F., sc., B.; Ringwood, N.; Soton, f. c., F., A.; Ch. Fd., c., R., A.; Ampfield, r., Ht.; Fareham, n. c., T., H.; Hyden Wood, c., Ps., B.; Hampage Wood, n. c., S.; Pamber, Doles Wood, H.; Sth. of Newbury, Sl.; I.W., Shanklin, Yarmouth, Cowes, *I.W.G.*

Lygris prunata.—N.F., Ringwood, N.; Fdge., v. c., 1909, Ct.; Romsey, Pe.; Alton, n. c., S.; I.W., r., Newport, Niton, 2 sp., *I.W.G.*

Lygris testata.—c. nearly ev.; r. in N.F.

Lygris populata.—Occurs, V.

Lygris associata.—N.F., Ringwood, N.; Soton dist., c., F., K., M., A.; Ch. Fd., n. c., R.; Romsey, Pe.; Winton, r., *W.L.*, 1891; Fareham, n. c., T.; Andover, H.; Sth. of Newbury, Sl.; I.W., Sandown, Bembridge, Shanklin, *I.W.G.*

Cidaria pyraliata.—Gen. dist., more or less c.

Cidaria fulvata.—Gen. dist., usually c.

Cidaria corylata.—N.F., Ringwood, N.; Soton dist., c., F., K., M., A.; Ch. Fd., n. c., R.; Romsey, Pe.; Crab Wood, c., Ht.; Hyden Wood, c., Ps., B.; Alton, n. c., S.; Woods in Nth., f. c., H., Sl.; I.W., old records only.

Cidaria truncata.—c. ev. and very variable.

Cidaria citrata (immanata).—N.F., f. c., Ringwood, N.; Fdge., Ct.; Ch. Fd., n. c., R.; Romsey, Pe.; Winton, c., Ht.; Portsdown, Sheepwash, n. c., Ps., B.; Alice Holt, S.; Gen. dist. in Nth., H., Sl.; I.W., Parkhurst, Cowes, Shanklin, *I.W.G.*

Cidaria siderata.—N. F., c., T., M., Ht.; Ringwood, N.; Ch. Fd., r., R.; Romsey, Pe.; Havant, E.; Pamber, Longparish, H.; Sth. of Newbury, Sl.; I.W., old records only.

Cidaria miata.—N.F., occ., M.; Ringwood, N.; Soton, r., F.; Eastleigh, occ., K.; Romsey, Pe.; Hursley, r., R.; Winton, occ., Ht.; Fareham, sc., Ps.; Petersfield, c., Ps.; Alton, f. c., S.; Andover, Pamber, H.; Sth. of Newbury, Sl.; I.W., old records only.

Thera variata.—N.F., v. loc., A., Woodforde; Wootton, 1915, Ct.; Ch. Fd., loc. c. among spruce, R.; Soton, loc. c., F.; Tisted, Headley Park, S.; See *Ent.*, XLV. 241.

Thera obeliscata.—c. ev. among pines.

Thera cognata (simulata).—Occurs, V.

Thera firmata.—f. c. ev. among Scots' pine; I.W., old records only.

Thera juniperata.—Occurs, V.; Dean Downs, Pe.; Abbotstone Down, abt., S.

Lampropteryx suffumata.—N.F., Brockt., R.; Denny, F.; Ch. Fd., sc., R.; Fareham, n. c., T.; Hayling, n. c., B., E.; Alton, S.; Harewood, Bere, H.; Sth. of Newbury, Sl.

- Coremia quadrifasciaria*.—Occurs, Ht.; *M.B.I.*, II. 180; Sth. of Newbury, Sl.; I.W., Landslip, *I.W.N.H.S.*
- Coremia unidentaria*.—c. ev.
- Coremia ferrugata*.—c. ev.
- Coremia designata*.—Gen. dist., usually c.; I.W., Shanklin, Sandown, *I.W.G.*
- Amoeba olivata*.—I.W., St. Lawrence, f. c., B.; Pelham Woods, Vent., 1 sp., *I.W.G.*
- Amoeba viridaria*.—c. ev., often abt.
- Malenydris multistrigaria*.—N.F., c., B.; Ringwood, N.; Soton, abt., F.; Bassett, A.; Hythe, T.; Ch. Fd., n. c., R., A.; Winton, c., Ht.; Horndean, n. c., Ps., B.; Harewood, Pamber, H.; Sth. of Newbury, Sl.; I.W., Sandown, 1 sp., *I.W.G.*
- Malenydris didymata*.—c. ev.
- Oporabia dilutata*.—Gen. dist. in woods, c.
- Xanthorhoë montanata*.—Abt. ev., F.
- Xanthorhoë fluctuata*.—Abt. ev., F.
- Xanthorhoë galiata*.—Winton, f. c., Ht.; Portsdown, Hayling, c., Ps., T., B.; Sth. of Newbury, Sl.; I.W., Sandown, c., Vent., *I.W.G.*; Freshw., Pe.
- Xanthorhoë rivata*.—N.F., Ringwood, N.; Soton district, gen. c., M.; Romsey, Pe.; Winton, c., Ht.; Portsdown, c., Ps., B.; Longparish, c., H.; Sth. of Newbury, Sl.; I.W., A.; Sandown, Freshw., Luccombe, *I.W.G.*
- Xanthorhoë sociata*.—Abt. ev.
- Xanthorhoë tristata*.—Sway, Ct.; Bassett, c., M.; Eastleigh, f. c., K.
- Xanthorhoë mangulata*.—N.F., Ly., n. c., Ht.; Ringwood, N.; Bnmth., n. c., M.; Christch., Dt.; Ch. Fd., n. c., R., A.; Romsey, Pe.; Silkstead, *W.L.*, 1875; Purbrook, sc., Ps., B.; Alton, n. c., S.; Nth. of Basingstoke, Tadley, Silchester, Pamber, etc., H.; Sth. of Newbury, Sl.; I.W., Sandown, loc. c., *I.W.G.*
- Euphyia picata*.—N.F., Ringwood, N.; Christch., Dt., R.; Ch. Fd., r., R.; Horndean, 1 sp., B.; Nth. of Basingstoke, f. c., H.; Sth. of Newbury, Sl.; I.W., Sandown, Shanklin, Brading, *I.W.G.*
- Eulype hastata*.—Formerly v. r. in Hants, according to old records; N.F., Ringwood, N.; Soton, c., F., A.; Hursley, Lordswood, f. c., M.; Eastleigh, c., K.; Ch. Fd., f. c., R., A.; Dean Downs, Pe.; Winton, f. c., Ht.; Hyden Wood, Westbourne, B., Ps.; Fareham, c., T.; Alton, loc. c., S.; Harewood, v. c., Pamber, c., H.; Andover, Sl.
- Mesolenca albicillata*.—Gen. dist. in woods, n. c.; I.W., Sandown, *I.W.G.*
- Mesolenca bicolorata*.—N.F., Ringwood, N.; Fdge., f. c., Ct.; Soton district, n. c., M., A., F., K.; Romsey, Pe.; Ampfield, 1 sp., Ht.; Portsdown, n. c., B.; Havant, f. c., E.; Alton, r., S.; Pamber, Monxton, occ., H.; I.W., Sandown, Brading, *I.W.G.*
- Melanthia procellata*.—c. ev. among clematis.
- Perizoma affinitata*.—N.F., Ringwood, N.; Christch., Dt.; Ch. Fd., sc., R., A.; Chalton Downs, f. c., Ps., B.; Alton, S.; I.W., c., *I.W.G.*
- Perizoma alchemillata*.—N.F., Ringwood, N.; Christch., r., R., Dt.; Holmsley, R.; Baddesley, r., F., Shawford, f. c., R.; Ch. Fd., n. c., A., R.; Chalton Down, 1 sp., B.; Little Park, Hk.; Pamber, H.; Sth. of Newbury, Sl.; I.W., Sandown, larvae sometimes abt., *I.W.G.*
- Perizoma flavofasciata (decolorata)*.—N.F., Ringwood, N., Christch.,

Dt.; Soton, loc. c., F.; Ch. Fd., loc. c., R., A.; Winton, r., Sweeting; Havant, E.; Alton, S.; Harewood, H.; I.W., Shanklin, Sandown, I.W.G.

Perizoma albulata.—N.F., Ringwood, N.; Soton, Eastleigh, loc. c., F.; Ch. Fd., sc., R.; Winton, f. c., Ht.; Ovington, S.; Woolmer, loc. c., E.; Sth. of Newbury, Sl.; I.W., c., Shanklin Down, Bonchurch, I.W.G.

Perizoma bifasciata.—N.F., n. c., M.; Ch. Fd., sc., R.; Winton, 1 doubtful sp., *W.L.*, 1875; Hayling, Dr. Hay; I.W., Sandown, larvae usually abt., I.W.G.

Perizoma taeniata.—Portchester, *Ent.*, 1912, p. 32.

Campyogramma bilineata.—Abt. ev.

Hydriomena furcata (sordidata).—c. ev. among willows; I.W., Shanklin, Cowes, Sandown, I.W.G.

Hydriomena impluviata (trifasciata).—N.F., c., M., Ht., A.; Fdgc., f. c., Ct.; Soton, f. c., A., F.; Ch. Fd., f. c., R.; Pamber, c., T., H.; I.W., Sandown, I.W.G.

Hydriomena rubrata.—N.F., r., B.; Ringwood, N.; Bassett, r., A.; Soton, r., F.; Purbrook, Southwick, sc., Ps., B.

Anticlea cucullata.—Wootton, 1 sp., R.; Romsey, 1 sp., Pe.; Winton, v. r., *W.L.*, 1891; Emsworth, Mr. Christy takes it, E.

Anticlea badiata.—c. nearly ev.

Anticlea berberata.—Romsey, Pe.; Winton, not uncommon in our lanes, Ht., *W.L.*, 1891.

Anticlea rubidata.—Gen. dist., V.; N.F., Ringwood, N.; Sway, Ct.; Soton, n. c., F.; Ch. Fd., r., A.; Romsey, Pe.; Winton, c., Ht.; Portchester, n. c., T.; Portsdown, Sheepwash, f. c., Ps., B.; Andover, H.; I.W., c., I.W.G.

Anticlea nigrofasciaria.—Gen. dist., rarely c.; I.W., Brading, 1 sp., I.W.G.

Euchoeca obliterated.—N.F., n. c., M., Ht., N., etc.; Soton, c., F.; Ch. Fd., n. c., R.; Fareham, n. c., T.; Sheepwash, sc., Ps.; Headley Park, S.; Pamber, v. c., H.; Sth. of Newbury, Sl.

Asthena candidata.—Gen. dist., c.

Asthena luteata.—Gen. dist. among maple, sometimes c.; Soton, c. among alder, F.

Asthena testaceata (sylvata).—Crab Wood, *W.L.*, 1875; Occurs, V.; Portchester, *Ent.*, 1912, p. 32.

Eupithecia oblongata.—c. ev., especially in gardens.

Eupithecia pulchellata.—N.F., c., T., Ht.; Soton, f. c., F., A.; Ch. Fd., v. c., R.; Sheepwash, Rowlands Castle, etc., f. c., Ps., B.; Havant, c., E.; I.W., Bordwood, St. Boniface Down, Shanklin, I.W.N.H.S.

Eupithecia linariata.—c., V.; Ch. Fd., n. c., R., A.; Bursledon, A.; Winton, c., F.; Silkstead, *W.L.*, 1875; Clanfield, f. c., Ps.; Horndean, n. c., B.

Eupithecia irraginata.—N.F., loc. n. c., M., A.; Brockt., Rhamnor, occ., R.; Denny, Holmsley, F.; N.F. only, V.; Crab Wood, Ht.

Eupithecia pusillata.—N.F., c., T., Ht.; Brockt., c., R.; Ch. Fd., c. some yrs., R.; Westbourne, c., Ps.; Havant, f. c., B.; Tisted, c., S.; I.W., old records only.

Eupithecia indigata.—Occurs, V.; Ch. Fd., n. c., R., A.; Sarisbury, 1 sp., T.; I.W., old records only.

Eupithecia insigniata (consignata).—Hayling, *M.B.I.*, II. 227.

Eupithecia venosata.—N.F., sc., B.; Soton, f. c., F.; Ch. Fd., f. c., R., A.; Winton, c., Ht., K., F.; Fareham, c., T.; Portsdown, Broad-halfpenny Down, c., Ps., B.; Sth. of Newbury, Sl.; I.W., Sandown, etc., *I.W.G.*

Eupithecia pimpinellata.—Occurs, V.; St. Catherine's Down, r., R.; Shawford, r., R.; Farley Mt., *W.L.*, 1875; I.W., Culver, Brading Down, etc., *I.W.G.*

Eupithecia expallidata.—Westbourne, R.; Ch. Fd., c., R., A.; I.W., old and doubtful records only.

Eupithecia assimilata.—Occurs, V.; Boscombe, R.; Soton, sc., F.; Ch. Fd., n. c., R., A.; I.W., Sandown, c., Yarmouth, *I.W.G.*

Eupithecia absinthiata.—N.F., c., B.; Wootton, Ct.; Christch., Dt.; Soton, c., M., F., A.; Ch. Fd., Farley Mt., c., R., A.; Winton, f. c., Ht.; Fareham, c., T.; Southsea, Hk.; Ptsmth., f. c., B.; I.W., Sandown, c., Yarmouth, *I.W.G.*

Eupithecia goossensata (minutata).—N.F., f. c., B., Ht.; Ch. Fd., sc., R., A.; Hyden Wood, n. c., B.; I.W., old and doubtful records only.

Eupithecia denotata (campanulata).—Portsdown, 1 sp., Ps.; Alton, one locality, c., S.; I.W., loc. (Meyrick's Handbook), *I.W.G.*

Eupithecia albipunctata.—Bassett, c., M., A.; Soton, F.; Ch. Fd., c., R., A.; Winton, f. c., *W.L.*, 1891; Westbourne, Finchdean, c., B., Ps.; Alton, S.; I.W., Sandown, loc., Shanklin *I.W.G.*

Eupithecia vulgata.—c. ev.

Eupithecia trisignaria.—Ch. Fd., r., A.; I.W., Swainston, Rowridge, *I.W.N.H.S.*

Eupithecia lariciata.—Abt., V.; Holmsley, R.; Bnmth., n. c., M.; Boscombe, r., R.; Soton, f. c., F.; Ch. Fd., r., R.; Crab Wood, f. c., *W.L.*, 1891; Westbourne, sc., Ps., B.; Horndean, c., Ps.; Little Park, Hk.

Eupithecia eastigata.—Fdge., Ct.; Boscombe, R., Dt.; Soton, f. c., F.; Ch. Fd., f. c., R., A.; Winton, f. c., Ht.; n. c., M.; Hyden Wood, f. c., Ps., B.; Sth. of Newbury, Sl.; I.W., Sandown, Yarmouth, *I.W.G.*

Eupithecia subnotata.—Boscombe, R.; Soton, A.; Ch. Fd., sc., R., A.; Winton, *W.L.*, 1875; Portsdown, Hayling, Gt. Salterns, f. c., Ps., B.; I.W., Sandown, c., Shanklin, *I.W.G.*

Eupithecia satyrata.—Farley Mt., Hursley, f. c., R.; Winton, sc., F., A.; Portsdown, sc., Ps., B.

Eupithecia succenturiata.—Bnmth., sc., R., Dt.; Ch., Fd., sc., R., A.; Ditcham, r., B.; Sth. of Newbury, Sl.; I.W., Sandown, loc., Bordwood, *I.W.G.*

Eupithecia subfulvata.—Christch., Dt.; Bassett, A.; Ch. Fd., sc., R., A.; Hursley, c., M.; Winton, occ., Ht.; Fareham, c., T.; Portsdown, Hayling, Horndean, f. c., Ps.; Havant, c., E.; Sth. of Newbury, Sl.; I.W., Sandown, Shanklin, *I.W.G.*

Eupithecia scabiosata.—Soton, r., F.; Shawford, Hursley, r., R.; Winton, A.; St. Catherine's Down, c., F.

Eupithecia haworthiata (isogrammaria).—Shawford, f. c., R.; Winton, c., M., Ht.; Fareham, c., T.; Portsdown, abt., B., Ps.; Alton, c., S.; I.W., A.; Sandown, Brading, *I.W.G.*

Eupithecia valerianata.—N.F., f. c., Ht.; Boscombe, R.

Eupithecia plumbeolata.—Ch. Fd., c. some yrs., R., A.; Aldershot, 1 sp., Sn.; Basingstoke, A.; I.W., Bordwood, *I.W.G.*

- Eupithecia tenuiata*.—N.F., n. c., B.; Ch. Fd., f. c., R.
Eupithecia inturbata (*subciliata*).—Alton, larvae abt., 1920, S.
Eupithecia innotata.—I.W., Sandown, 1 bred, *E.R.*, 1904, p. 336.
Eupithecia fraxinata.—Occurs, V., Ht.; Winton, r., F.
Eupithecia nanata.—c. ev. on heather, F.
Eupithecia abbreviata.—N.F., c., T., M., Ht.; Soton, c., F., A.; Ch. Fd., f. c., R.; Crab Wood, *W.L.*, 1875; Horndean, Rowlands Castle, Sheepwash, Catisfield, etc., c., Ps., B.; Sth. of Newbury, Sl.; I.W., Sandown, *I.W.G.*
Eupithecia dodoneata.—N.F., n. c., M., B., A.; loc., Ht.; Brockt., R.; Denny, c., F.; Bnmth., R., Dt.; Soton, n. c., F.; Ch. Fd., n. c., R., A.; Crab Wood, Ht.; Wickham, sc., Rowlands Castle, f. c., Ps., B.; I.W., Cowes, Shanklin, *I.W.G.*
Eupithecia exiguata.—Bassett, A.; Ch. Fd., sc., R.; Crab Wood, occ., Ht.; I.W., Sandown, *I.W.G.*
Eupithecia sobrinata.—Farley, f. c., R.; Winton, A.; Chalton, Finchdean, abt., Ps., B.; Abbotstone Down, S.; I.W., Shanklin, several, *I.W.N.H.S.*
Gymnoscelis pumilata.—N.F., c., T., M.; Beaulieu, c., F.; Soton, c., F.; Ch. Fd., c., R.; Winton, n. c., Ht.; Southsea, Hk.; Portsdown, Westbourne, etc., abt., Ps., B.; Headley Park, c., S.; I.W., Sandown, Shanklin, *I.W.G.*
Eucymatoge togata.—N.F., f. c., Ht., *M.B.I.*, II. 251; Ly., *E.R.*, IX. 211.
Chloroclystis coronata.—N.F., c., M.; Soton, sc., F.; Ch. Fd., n. c., R., A.; Winton, f. c., Ht.; Portsdown, Finchdean, c., Ps., B.; Alton, f. c., S.; Sth. of Newbury, Sl.; I.W., Sandown, *I.W.G.*
Chloroclystis rectangulata.—N.F., n. c., M.; Fdge., n. c., Ct.; Soton, f. c., F., A.; Ch. Fd., f. c., R., A.; Winton, c., Ht.; Ptsmth., Hayling, f. c., Ps., B.; Havant, E.; Alton, S.; Sth. of Newbury, Sl.; I.W., Shanklin, *I.W.N.H.S.*
Collia sparsata.—N.F., *M.B.I.*, II. 254; Ly., *E.R.*, II. 183; Ch. Fd., f. c., R.; Romsey, Pe.; Pamber, H.
Pelurga comitata.—Occurs, V.; Bnmth., 1 sp., 1920, S.; Romsey, Pe.; I.W., Sandown, c., Shanklin, *I.W.G.*
Phibalapteryx vitalbata.—c. ev. among clematis, F.
Phibalapteryx tersata.—c. ev. among clematis, F.
Coenocalpe vittata.—N.F., Ringwood, c., T., N.; Brockt., Hk.; Christch., S., Dt.; Soton, 1 sp., F.; Ch. Fd., sc., R.; Romsey, Pe.; Winton, water meadows, n. c., *W.L.*, 1891; Cosham, f. c., Purbrook, sc., Ps. B.; Woolmer, c., E.; Shortheath swamp, S.; Andover, Thruxton, V.; I.W., Freshw., Bembridge, Brading, *I.W.G.*
Percnoptilota fluviana.—N.F., Ringwood, N.; Brockt., 1899, Ct.; Ly., 1 sp., V.; Christch., Dt.; Soton, 1 sp., Ch. Fd., 1 sp., A.; Cosham, 1 sp., T.; I.W., Sandown, 1 sp., Shanklin, 4 sp., other older records also, *I.W.G.*; Freshw., Pe.
Abraxas sylvata.—Winton, 1 sp., 1890, *W.L.*, 1891; Hambleton, H.F.C.; Alton, loc., S.; I.W., Vent., C.; Pelham Woods, f. c., Parkhurst, *I.W.G.*
Abraxas grossulariata.—c. ev.
Lomaspilis marginata.—Gen. dist., c.
Ligdia adustata.—c. ev. among spindle, F.

Aleucis pictaria.—N.F., c., M., T., Ht.; Ringwood, N.; Bassett, r., A.; Winton, Ht.; Finchdean, f. c., Ps., B.

Bapta bimaculata.—Gen. dist., loc., usually c.; I.W., rare, Bordwood, 1 sp., *I.W.G.*

Bapta temerata.—Gen. dist., f. c.; I.W., Shanklin, loc. c., *I.W.G.*

Cabera pusaria.—Abt. ev.

Cabera exanthemata.—c. ev.; I.W., Sandown, c., *I.W.G.*

Numeria pulveraria.—Well dist. but somewhat sc.

Ellopia prosapiaria.—Gen. dist. among fir, usually c.

Metrocampa margaritaria.—f. c. in all woods, F.

Ennomos autumnaria.—Ch. Fd., r., R.; Fareham, f. c., T., H.; Southsea, Hk.; Ptsmth., both sexes f. c. at light, Ps. B.; Hayling, Dr. Hay.

Ennomos quercinaria.—N.F., c., F., M., Hk.; Soton, n. c., F.; Eastleigh, f. c., K.; Ch. Fd., sc., R.; Winton, c., Ht.; Southwick, f. c., Ps., B.; Alton, S.; Andover, H.; Sth. of Newbury, Sl.; I.W., Shanklin, Sandown, Cowes, n. c., *I.W.G.*

Ennomos alniaria.—N.F., f. c., M.; Ringwood, N.; Bnmth., c., Ct., Hk.; Soton, f. c., F., M., A.; Ch. Fd., f. c., R., A.; Eastleigh, n. c., K.; Remsey, Pe.; Winton, f. c., Ht.; Bedhampton, Emsworth, sc., Ps., B.; Alton, n. c., S.; Andover, c., H.; I.W., f. c., Shanklin, Sandown, Cowes, *I.W.G.*

Ennomos fuscantaria.—N.F., Ringwood, N.; Soton, c., F., V.; Eastleigh, n. c., K.; Winton, Ht.; Southwick, Ptsmth., sc., Ps., B.; Fareham, n. c., T.; Andover, H.; I.W., Cowes, Shanklin, *I.W.G.*

Ennomos erosaria.—N.F., f. c., M., B.; v. r., T.; Ringwood, N.; Soton, sc., F., A.; Ch. Fd., sc., R., A.; Eastleigh, occ., K.; Romsey, Pe.; Winton, Ht.; Ptsmth., n. c., B.; Horndean, 1 sp., Ps.; Harewood, H.; I.W., old records only.

Selenia bilunaria.—Gen. dist., c.; var. *juliaria* N.F., M.

Selenia lunaria.—Brockt., 1 sp., T.; Soton, 1 sp., F.; Sth. of Newbury, Sl.

Selenia tetralunaria.—N.F., n. c., M., A.; c., Ht.; Ringwood, N.; Soton, r., F., A.; Ch. Fd., sc., R.; Eastleigh, n. c., K.; Romsey, Pe.; Crab Wood, 1 sp., Ht.; Westbourne, f. c., B., Ps.; Hampage Wood, 1 sp., S.; Pamber, 2 sp., H.; Sth. of Newbury, Sl.

Hygrochroa syringaria.—N.F., f. c., M., F.; Ringwood, N.; Hordle, Ct.; Soton, c., F., K.; Ch. Fd., f. c., R.; Romsey, Pe.; Ampfield, n. c., Ht.; Westbourne, sc. B., Ps.; Alice Holt, 1 sp., S.; Gen. dist. in Nth., H., Sl.; I.W., Newport, Sandown, Cowes, n. c., *I.W.G.*

Gonodontis bidentata.—Gen. dist. but n. c.; I.W., c., *I.W.G.*

Himera pennaria.—Gen. c. in woods, F.

Crocallis elingvaria.—Gen. dist., usually c.

Angerona prunaria.—Many localities, especially N.F., V.; N.F., r., A.; Ch. Fd., r., R.; Crab Wood, f. c., Ht.; Fareham, n. c., T., H.; Southwick, sc., Purbrook, f. c., Ps., B.; Havant, n. c., E.; Hayling, 1 sp., Dr. Hay; Selborne, Alice Holt, S.; Pamber, c., H.; I.W., Bembridge, Freshw., *I.W.G.*

Ourapteryx sambucaria.—c. ev.; an occ. second brood occurs, F.

Eurymene dolabraria.—N.F., occ., M., B.; Ringwood, N.; Fdge., sc., Ct.; Soton, sc., F., K.; Bassett, n. c., A.; Ch. Fd., f. c., R., A.; Hursley, occ., M.; Crab Wood, n. c., Ht.; Fareham, occ., T., H.; Horndean, Rowlands Castle, sc., B., Ps.; Alton, S.; Harewood,

Pamber, Doles Wood, H.; Andover, Sl.; I.W., Ninham, Sandown, Cowes, *I.W.G.*

Opisthograptis luteolata.—abt. ev.

Epione apiciaria.—N.F., sc., B.; Ringwood, N.; Soton, sc. and loc., F.; Bassett, f. c., A.; Ch. Fd., n. c., R., A.; Eastleigh, n. c., K.; Romsey, Pe.; Winton, 1 sp., Sweeting; Fareham, n. c., T.; Ptsmth. district, loc., n. c., Ps., B.; Pamber, c., Monxton, H.; Sth. of Newbury, Sl.; I.W., Yarmouth, *Ent.*, 1889, p. 236; Sandown, Shanklin, Niton, *I.W.G.*

Epione parvella.—Occurs, H.F.C.; one or 2 sp. nr. Emery Down, V.

Epione adrenaria.—Loc. abt. in woods throughout; N.F., n. c., A.; Ch. Fd., n. c., R., K., A.; I.W., Parkhurst, 1 sp., *I.W.G.*

Venilia maculata.—Abt. in all woods.

Semiothisa notata.—Occurs, V.; N.F., Ringwood, N.; Bnmth., sc., Ct.; Fareham, 2 sp., H.; I.W., Sandown, *I.W.G.*

Semiothisa alternata.—N.F., f. c., M.; r., H.; n. c., T.; Ringwood, N.; Bnmth., Damerham, 1 sp., Ct.; Soton, loc. c., F., A.; Ch. Fd., f. c., R., A.; Romsey, Pe.; Wickham, n. c., T.; Havant, r., B.; I.W., *M.B.I.*, II. 288; old records only for I.W.

Semiothisa liturata.—More or less c. ev. among Scots pine.

Hybernia rupicaprararia.—c. ev.

Hybernia leucophaearia.—c. in all woods, sometimes abt., very variable.

Hybernia aurantiaria.—c. ev. in woods, and at light; I.W., old records only.

Hybernia marginaria.—c. ev.

Hybernia defoliaria.—c. ev. in woods and gardens; very variable.

Anisopteryx aescularia.—Gen. dist., more or less c.; Soton district, sc., R., F., A.

Phigalia palaria.—Gen. dist., usually c.

Apocheima hispidaria.—Most uncertain in appearance and v. loc.; N.F., occ., M., Ht.; Ringwood, N.; Ch. Fd., sc., occ. abt., R.; Soton, usually r., sometimes c., F., K.; Rowlands Castle, Horndean, occ., c., Ps., B.; Havant, c., T.; Pamber, c., H.

Lycia hirtaria.—N.F., Ringwood, N.; Christch., Dt.; Bassett, 1 sp., A.; Finchdean, Southwick, sc., Ps.; Havant, c., B.; Pamber, has been taken, H.

Pachys strataria.—Gen. dist. in woods, rarely c.; males f. c. ev. at light.

Pachys betularia.—Gen. dist., c.; ab. *doubledayaria* about 20% and increasing; intermediate forms v. r.

Hemerophila abruptaria.—Gen. dist., somewhat sc.; I.W., c., *I.W.G.*

Boarmia cinctaria.—N.F., loc. c., T., B., M., etc.; Ringwood, N.; Brockt., c., R., etc.; Ly., V., etc.; Ampfield, occ., Ht.; Pamber, Alton, S.; f. c., H.

Boarmia gemmaria.—c. ev.

Boarmia abietaria.—N.F., loc. c., M., Ht., etc.; Eastleigh, f. c., K.; Chalton Downs, Finchdean, abt., Ps., B.; Rowlands Castle, Hk.; Woolmer, c., E.; I.W., old-records only.

Boarmia repandata.—Gen. dist., c.; ab. *conversaria* f. c.

Boarmia roboraria.—N.F., c., T., M., A.; Burley, Hk.; Ringwood,

N. ; Soton, c., M., F., K. ; Ch. Fd., f. c., R., A. ; Crab Wood, Ampfield, f. c., Ht. ; Horndean, Rowlands Castle, f. c., Ps., B. ; Woolmer, c., E. ; Pamber, c., H. ; I.W., Cowes. *I.W.G.*

Bourmia consortaria.—N.F., c., T., B. ; Ringwood, N. ; Soton district, c., F., K., M. ; Ch. Fd., f. c., R., A. ; Winton, Ht. ; Southwick, Westbourne, c., Ps., B. ; Alice Holt, c., S. ; Pamber, c., H. ; I.W., Cowes, *I.W.G.*

Cleora angularia.—N.F., v. r., V., H.F.C. ; Not seen since 1872, so far as can be ascertained.

Cleora lichenaria.—Gen. dist. in all larger woods, but rarely c. ; I.W., c., *I.W.G.*

Cleora jubata (glabraria).—N.F., f. c., T., M., Ht., etc. ; Ringwood, N. ; Holmsley, f. c., R. ; Denny, r., Soton, loc., f. c., F. ; Ch. Fd., sc., R., A. ; Woolmer, f. c., E.

Tephrosia bistortata.—c. ev. in woods. Double brooded.

Tephrosia crepuscularia.—c. ev. in woods ; rare in I.W.

Tephrosia luridata.—N.F., f. c., M., B. ; Ringwood, N. ; Soton, f. c., F. ; Ch. Fd., sc., R., f. c., A. ; Winton, r., Ht. ; Rowlands Castle, Horndean, Sheepwash, n.e., B., Ps. ; Shantled, Hk. ; Harewood, Pamber, H. ; I.W., nr. Shanklin, Parkhurst, *I.W.N.H.S.*

Tephrosia consonaria.—Loc. c. in nearly all larger woods, irregular in appearance ; I.W., Cowes, loc., Freshw., *I.W.G.*

Tephrosia punctularia.—Loc. abt. throughout.

Pachynema hippocastanaria.—C. on heaths nearly ev.

Gnophos obscurata.—N.F., c. (heath form), T., M. ; Ringwood, N. ; Brockt., Hk. ; Burley, f. c., R. ; Soton, r., F. ; Ch. Fd., sc., R. ; Winton, c., V. ; Portsdown, sc., Ps. ; I.W., c., *I.W.G.*, V., A. ; Freshw., T., Pe.

Ematurga atomaria.—Abt. nearly ev. on heaths, v. variable.

Bupalus piniaria.—Form *flavescens* of ♂ ; c. in all pine woods ; occ. white typical forms of ♂ occur.

Selidosema plumaria (ericetaria).—N.F., c., M., K., T., etc. ; less c. than formerly, A. ; Brockt., Hk. ; Ringwood, N. ; Hayling, n. c., Ps., B. ; Woolmer, c., E. ; I.W., *M.B.I.*, II. 326 ; nr. Ringwood, c., S. ; St. Helens, c., 1909, *I.W.N.H.S.*

Thaunonoma vanaria.—C. ev. in gardens.

Lozogramma petriaria.—Gen. dist., abt.

Chiasmia clathrata.—Gen. dist., more or less c. ; melanic forms and vars. occur rarely.

Scodiona fagaria.—N.F., c., T., M., etc. ; Ringwood, N. ; Christch., Dt. ; Baddesley, r., F. ; Ampfield, f. c., Ht. ; Alton, S. ; Woolmer, c., E.

Aspilates gilvaria.—Hambleton, H.F.C. ; Formerly in a lane at Southwick, Ps. ; I.W., Cowes, *I.W.G.*

Aspilates ochrearia.—N.F., Ringwood, N. ; Fdgc., Ct. ; Christch., Dt. ; Highcliffe, A. ; Ch. Fd., sc., R. ; Romsey, Pe. ; Fareham, c., T., H. ; Portsdown, Hayling, c., Ps., B., E. ; I.W., A. ; Freshw., c., M. ; Gurnard, F. ; St. Lawrence, c., B.

Perconia strigillaria.—Gen. dist. on heaths, usually c.

ZYGAENIDAE, ETC.

Zygaena viciae (meliloti).—N.F. only., v. loc., c. some yrs., M., D., F., etc. ; Burley, Hk. ; A few localities, in S.E. nr. New Copse and Brockt., V.

Zygaena trifolii.—Loc. c. throughout; prefers low-lying localities; ab. *confluens* c., ab. *lutescens* occ.; 1 chocolate-coloured sp. Hamble, 1917, Garner; six-spotted sp. occur.

Zygaena loniceræ.—This species is with difficulty separated from the preceding; Gen. dist. and c.; prefers downs, and seems to be v. invariable; I.W., no record.

Zygaena filipendulæ.—Gen. dist. on downs, etc., c.; ab. *flava* occ. at Winton, Ht., V.; ab. *hippocrepidis* at Portsdown, c., Ps., B.; at Netley, c., R.

Adscita statices.—N.F., Church Place, f. c., Harris, A.; Holmsley, Ct.; Soton, loc. abt., F.; Eastleigh, f. c., sc. lately, D., K.; Ch. Fd., c., R., A.; Ampfield, Ht.; Winton, f. c., M.; Ptsmth., v. loc., B.; Petersfield, loc. c., B.; Kingsclere, Sl.; I.W., Shanklin, Hk.

Adscita geryon.—Winton, loc. abt., F., Ht., M., T., etc.

Cochlidium limacodes.—N.F., occ., M., T.; Ringwood, N.; Rhamnor, occ., *E.R.*, VIII. 312; Wootton, Ct.; abt. in some parts of N.F., V.; Soton district, sc., F., K., A.; Ch. Fd., sc., R.; Fareham, H.; Botley, f. c., Garner; Ptsmth., occ., B.; Pamber, H.

Heterogena asella.—N.F., occ., M.; f. c., Ht., etc.; Ringwood, N.; Ch. Fd., sc., R.

Cossus cossus.—Gen. dist. but n. c.; at sugar, B., F., H.; I.W., plentiful, *I.W.G.*

Zeuzera pyrina.—Soton, occ., M., K., F.; Winton, Ht.; Fareham, occ., T; Ptsmth., n. c., B.; Southsea, Hk.; Andover, Pamber, H.; I.W., f. c., *I.W.G.*

Trochilium apiformis.—Christeb., H.F.C., Dt.; Ch. Fd., f. c., R.; Bedhampton, c., Ps.; Petersfield, c., B.

Trochilium erabroniformis.—Soton, Romsey, c., F.; Eastleigh, n. c., K.; Winton, occ., M.; St. Cross, f. c., Ht., F.; Alton, c., S.; Liss, Petersfield, abt., Ps., E.; Sth. of Newbury, Sl.; I.W., Shanklin, f. c., larvae in trunks of poplars, Sandown, Freshw., *I.W.G.*

Sciapteron tabaniformis.—1 sp. nr. Cosham, 1908, B.

Aegeria (Sesia) spheciformis.—Ly., 1 sp., V.; Soton, loc. f. c., six colonies, F.; Romsey, v. r., R.; Basingstoke, occ., M.; Pamber, f. c., H.; I.W., 1 sp., *I.W.G.*

Aegeria (Sesia) andrenaeformis.—Winton Downs, v. r., F.; Broughton Downs, v. r., F.; Farley Mt., n. c., F.; Ptsmth., loc. f. c., B.; Petersfield, Ps.; Rowlands Castle, v. r., E; Alton, S.

Aegeria (Sesia) tipuliformis.—N.F., Ringwood, N.; Bnmth., Dt., Ct.; Fdge., Ct.; Soton district, f. c. in gardens, F., K., etc.; Ch. Fd., sc., R.; Romsey, c., F.; Winton, c., Ht.; I.W., Shanklin, c., Newport, Sandown, *I.W.G.*

Aegeria (Sesia) vespiformis.—Loc. c. in oak woods; probably c. wherever oaks are regularly felled; I.W., 1 sp., *I.W.G.*

Aegeria (Sesia) myopaeformis.—Orchards and gardens, V., H.F.C.; Havant, B.; Andover, H.

Aegeria (Sesia) culiciformis.—Soton district, abt. where birch is regularly cut, F., K., etc.; Ptsmth., c., B., Ps.; Havant, c., E.; Pamber, occ., H.; Sth. of Newbury, Sl.

Aegeria (Sesia) formicaeformis.—Basingstoke, occ., M.

Aegeria (Sesia) ichneumoniformis.—N.F., H.F.C.; Shawford, sc., R.; I.W., coast, c., V.; Freshw., *E.R.*, IV. 278; Sandown, Freshw., Undercliff, r., *I.W.G.*

Aegeria (Sesia) muscaeformis.—1 sp. Twyford, cannot account for it, K.

Aegeria (Sesia) chrysidiformis.—Used to be taken at Hayling, I fear now gone, B.

Hepialus humuli.—c. ev.

Hepialus sylrina.—Gen. dist., n. c.

Hepialus fusconebulosa.—Ch. Fd., loc. f. c., R., T.; ab. *caruus* f. c., R.; Crab Wood, 1 sp., Ht.; Alton, occ., S., F.; Selborne, H.F.C.; Andover, H.; I.W., rare, Bembridge, 1855 and 1857, Shanklin, 1 sp., I.W.G.

Hepialus lupulina.—c. ev.

Hepialus hecta.—loc. c. ev. in damp woods.

PYRALIDINA.

Cledeobia angustalis.—N.F., c., T.; Denny Heath, Cr.; Bmth., Ch. Fd., Shawford, f. c., R.; Portsdown, occ., Ps.; I.W., Osborne, f. c., R.; Sandown, H.F.C.; Brading, c., Sandown, I.W.G.

Aglossa pinguinis.—N.F., Beaulieu Road, Cr.; Ch. Fd., n. c., R.; Southsea, Hk.; c. ev., H.; I.W., Shanklin, Sandown, I.W.G.

Aglossa cuprealis.—Occurs, H.F.C.

Pyralis costalis.—Soton, c., F.; Ch. Fd., n. c., R.; Fareham, c., T., H.; Southsea, Hk.; Havant, c., E.; Alton, S.; Pamber, Harewood, H.; I.W., c., I.W.G.

Pyralis glaucinalis.—N.F., V.; Ly., Cr.; Soton, c., F.; Ch. Fd., f. c., R.; Fareham, H.; Havant, c., E.; I.W., between Sandown and Shanklin, I.W.N.H.S.

Pyralis farinalis.—Soton, n. c., F.; Ch. Fd., sc., R.; Southsea, Hk.; Havant, c., E.; Alton, S.; Gen. dist., H.; I.W., Sandown, Bembridge, Shanklin, I.W.G.

Scoparia ambigua.—N.F., c, Cr.; Soton, c., F.; Ch. Fd., c., R.; Fareham, c., T.; Havant, c., E.; probably c. ev.; I.W., Shanklin, 1 sp., old records also, I.W.G.

Scoparia basistrigalis.—N.F., n.c., V.; Denny, sc., Cr.; Soton, r., F.; Ch. Fd., n.c., R.; I.W., nr. Shanklin, nr. Bembridge, I.W.H.N.S.

Scoparia cembrae.—Occurs, V.; Ch. Fd., r., R., Cr.; Havant, f. c., E.; I.W., Sandown, Yarmouth, I.W.G.

Scoparia zelleri.—Little Park, Hk.

Scoparia dubitalis.—Abt. ev., especially on chalk, V.; Soton, r., F.; Ch. Fd., c., R.; Winton, Cr.; Little Park, Hk.; I.W., Brading, etc., I.W.G., race *ingrattella*, abt. Sandown, Freshw., V.

Dipleurina crataegella.—Occurs, V.; N. F., H.F.C., Hk.; I.W., Old records only.

Witlesia pallida.—N.F., bogs, V.; Ly., H.F.C.; Bmth., v. c., E.R., VIII. 270; I.W., nr. Sandown, I.W.N.H.S.

Eudoria lineola.—Occurs, H.F.C.; I.W., Sandown, I.W.G.

Eudoria frequentella (mercurella).—N.F., c., Cr.; Ch. Fd., n. c., R.; Havant, f. c., E.; I.W., Sandown, I.W.G.

Eudoria resinæa.—N.F., V.; Ly., I.W., Vent., H.F.C., *Stainton's Manual*.

Eudoria truncicolella.—N.F., c., V., Cr.; Ly., H.F.C.; Soton, c., F.; Ch. Fd., v. c., R., T.

Eudoria angustea.—N.F., n. c., V.; Soton, f. c., F., Cr.; Ch. Fd., sc., R.; I.W., Sandown, n. r., Yarmouth, I.W.G.

Nomophila noctuella.—v. c. ev., V.; N.F., Hk., Cr.; Soton, c., F.; Ch. Fd., c. some yrs., R.; Fareham, c., T.; Alton, S.; Havant, c., E.; I.W., often abt., *I.W.G.*

Odontia dentalis.—sc., H.F.C.

Pyrausta aurata.—Soton, n. c., F.; Farley Mt., f. c., R.; Winton, f. c., F.; Portsdown, n. c., Hk., Ps.; I.W., Shanklin, V.; Brading, Vent., *I.W.G.*

Pyrausta purpuralis.—Gen. dist., c.; I.W., Shanklin, V.

Pyrausta ostrinalis.—Gen. dist., more or less c.

Herbula cespitalis.—Gen. dist., usually abt.

Ennychia cingulata.—N.F., H.F.C.; Shawford, n. c., R.; I.W., abt., Cr.; Afton Down, abt., V.; Freshw., c., T.

Ennychia nigrata.—N.F., H.F.C.; Shawford, Hursley, n. c., R.; Winton, loc. abt., F.; Alton, loc. c., S.

Ennychia octomaculata.—Eastleigh, 1 sp., K.; N.F., H.F.C.; Occurs, V.

Endotricha flammealis.—Gen. dist., chiefly in woods, usually c.; I.W., Sandown, Ryde, *I.W.G.*

Eurrhyncha urticata.—C. ev.

Scopula (Eurrhyncha) lutealis.—Soton, f. c., F.; Ch. Fd., n. c., R.; Portsdown, c., H., T.; Little Park, Hk.; Alton, S.; Andover, c., H.; I.W., Chillerton Down, *I.W.N.H.S.*

Scopula (Eurrhyncha) olivalis.—Soton, Romsey, Shawford, f. c., F.; Ch. Fd., n. c., R.; Fareham, c., T.; Alton, S.; Havant, c., E.; I.W., Sandown, abt., *I.W.G.*

Scopula (Eurrhyncha) prunalis.—N.F., abt., V.; Soton, f. c., F.; Ch. Fd., n. c., R.; Fareham, c., T.; Little Park, Hk.; Alton, S.; Havant, c., E.; I.W., Sandown, a pest, *I.W.G.*

Scopula (Eurrhyncha) ferrugalis.—N.F., c., V.; Soton, c., F.; Ch. Fd., n. c., R.; Fareham, n. c., T.; Havant, c., E.; I.W., c., V.; Sandown, sometimes abt., Yarmouth, *I.W.G.*

Botys nubilalis.—Occurs, H.F.C.; I.W., Sandown, V., Stainton; apparently now extinct, *I.W.G.*

Botys pandalis.—N.F., Cr.; abt., V.; Soton, r., F.; Ch. Fd., n. c., R.; Winton, n. c., F.; Hambledon, H.F.C.; I.W., old records only.

Botys flavalis.—Farley Mt., v. c., R.; Portsdown, Ps.; Downs in Nth., c., H.; Hartley, Droxford, H.F.C.; I.W., Cr.; Freshw., c., T., V.; High Down, Hk.; Brading Down, v. c., *I.W.G.*

Botys hyalinalis.—Soton, f. c., F.; Ch. Fd., sc., R.; Alton, 1 sp., S.

Botys ruralis.—Abt. ev.

Botys fuscalis.—Soton, n. c., F.; Ch. Fd., Hursley, v. c., R.; Ovington, S.; I.W., v. c., V.; Shanklin, c., Yarmouth, c., *I.W.G.*

Botys asinalis.—I.W., Vent., H.F.C.; Freshw., V.; Nr. Bembridge, *I.W.G.*

Ebulea (Botys) crocealis.—N.F., loc. c., T.; Ch. Fd., n. c., R.; Eastleigh, Fisher's Pond, loc. c., F.; Horndean, Hk.; Havant, loc. c., E.; Alton, Ovington, loc. c., S.; I.W., Sandown, *I.W.G.*

Ebulea (Botys) verbascalis.—N.F., r., V.; Christch., R.; Baddesley, n. c., F.; Bassett, A., Cr.; Ch. Fd., A.; I.W., old records only.

Ebulea (Botys) sambucalis.—Soton, c., F.; Ch. Fd., n. c., R.; Eastleigh, f. c., K., F.; Havant, c., E.; Alton, occ., S.; Gen. dist., H.; I.W., Cr.; Sandown, Shanklin, *I.W.G.*

Ebnlea (Botys) stachydalis.—Ch. Fd., r., R.; Soton, 2 sps., F.; I.W., Sandown, *I.W.G.*

Spilodes sticticalis.—Has been recorded, (Baker's list and H.F.C.); but is doubtful; I.W., Sandown, 2 sp., old records also, *I.W.G.*

Spilodes palealis.—Nr. Bnmth., R.; I.W., Sandown; v. loc., Shanklin, old records also, *I.W.G.*; Vent., 1 sp., A.

Spilodes verticalis.—N.F., n. c., V.; Ch. Fd., r., A.; Winton, n. c., F.; Farley, f. c., R.; Portsdown, c., T., Ps.; Havant, occ., E.; Harewood, c., H.; I.W., St. Helens, n. c., V.; Sandown, *E.R.*, IV. 278.

Psammodis pulveralis.—I.W., 1 sp., 1869, *I.W.G.*

Pionea forficalis.—Abt. ev.; I.W., Shanklin, Sandown, *I.W.G.*

Orobena extimalis.—Ch. Fd., r., R., A.; Longparish, 1 sp., H.; I.W., Sandown, H.F.C.; other old records for I.W.

Orobena straminealis.—N.F., H.F.C., Hk.; Ch. Fd., occ., R.; Fareham, 1 sp., H.; Havant, loc., E.; I.W., Sandown, not seen for many years; Bembridge, old record, *I.W.G.*

Perinephele lancealis.—N.F., Wood Fidley, etc., Cr.; Holmsley, R.; Soton, loc. f. c., F.; Ch. Fd., loc. c., R.; Pamber, Harewood, c., H.; I.W., Parkhurst, old records only, *I.W.G.*

Margarodes unionalis.—Havant, 1 sp., E.

Diasemia literata.—N.F., old records; Ly., H.F.C.; Christch., R.

Stenia punctalis.—I.W., Vent., H.F.C.; Freshw., V., *E.R.*, IV. 210, etc.; Sandown, *I.W.G.*

Cataclysta lemnata.—N.F., Hk.; Havant, abt., E.; I.W., Freshw., S.; Sandown, *I.W.G.*

Paraponyx stratiotata.—Ch. Fd., f. c., R.; Horndean, c., T.; Havant, c., E.; I.W., Sandown, *I.W.G.*

Hydrocampa nymphaeata.—Gen. dist. in bogs and marshes, c.

Hydrocampa stagniata.—N.F., Hk.; Matley Bog, v. loc., Cr.; Soton, v. c., F.; Romsey, F.; Ch. Fd., n. c., R.; Eastleigh, é., K.; Alice Holt, Kingsley, c., S.; I.W., Sandown, Brading, *I.W.G.*

PTEROPHORI.

Adactylus (Adistis) bennettii.—Christch., n. c. H.F.C.; Ch. Fd., 1 sp., R.; Hamble River, c., A.; Cosham, 1 sp., Ps.; Hayling, abt., E., V.; I.W. Freshw., c., T.; Yarmouth, é., S.

Adkinia zophodactyla.—Bnmth., R.; Ch. Fd., sc., R.; Hayling, often abt., I.W., Vent., Tutt, *Brit. Lep.*, V. 334.

Adkinia bipunctidactyla.—N.F., Brockt., Rufus Stone., Bnmth., Tutt, *Brit. Lep.*, V. 358. Ch. Fd., c., R.; Soton, loc. c., F.; Fareham, T.; I.W., Vent., Yarmouth, Freshw.

Stenoptilia pterodactyla (fuscus).—Soton, c., F.; Ch. Fd., é., R.; Eastleigh, c., K.; Winton, c., F.; Fareham, c., T.; Havant, c., E.; Little Park, Hk.; I.W., Brading, Ryde, Bordwood, *I.W.G.*, Freshw., Tutt, *Brit. Lep.*, V. 334.

Marasmarcha lunædactyla (phaeodactyla).—Hythe, A.; Winton, é., F.; I.W., coast, Vent., Tutt, *Brit. Lep.* V. 404.

Amblyptilia cosmōdactylā (acanthodactyla).—Alton, H.F.C.; N.F., Bnmth., Portsea, I.W., Vent., Tutt, *Brit. Lep.*, V. 297; Ryde, Sandown, *I.W.G.*

Eucnaemidophorus rhōdodactyla.—Occurs, H.F.C. (a doubtful record).

Gillmeria (Platyptilia) pallidactyla (bertrami).—Bnmth., R.; Soton, loc. c., F.; Eastleigh, loc. c., K.; Ch. Fd., sc., R.; Winton, f. c., K.; Portsdown, c., T.; Aldershot, 1 sp., Sn.; I.W., Vent., Tutt, *Br. Lep.*, V. 250.

Gillmeria (Platyptilia) ochrodactyla.—N.F., *E.R.*, XXIV. 171; Boscombe, R.; Occurs, H.F.C.; These records probably all refer to the preceding species; See Tutt, *Br. Lep.*, V. 235.

Platyptilia gonodactyla.—Soton, r., F.; Eastleigh, occ., K.; Ch. Fd., sc., R.; I.W., Coast, c., V.; Vent., n. c., Tutt, *Br. Lep.*, V. 218; Sandown, *I.W.G.*

Capperia (Oxyptilus) heterodactyla (tencrii).—N.F., Hk., Tutt; Boscombe, R.; Hayling, f. c., V.

Oxyptilus parvidactyla.—Winton, loc. c., F., K., Cr.; Fawley Down, c., F.; I.W., Coast, abt., V.; Vent., Tutt, *Br. Lep.*, V. 434; Sandown, *I.W.G.*

Wheeleria (Aciptilia) megadactyla (spilodactyla).—I.W., Cr.; Freshw., c., T., etc.; Chalk Downs, loc. abt., V.

Wheeleria (Aciptilia) niveidactyla (baliodactyla).—Bnmth., R.; I.W., c., *Ent.*, XVI. 270; Brading Down, *I.W.G.*

Merrifieldia (Aciptilia) tridactyla (tetradactyla).—Farley, n. c., R.; Winton, f. c., F.; I.W., H.F.C.

Buckleria (Aciptilia) paludum.—N.F., Ly., Tutt, *Br. Lep.*, V. 515; Nr. Whitley Wood, *Ent.*, 1911, p. 368; Bnmth., *E.R.*, VIII. 270; Woolmer, V.

Oidaematophorus lithodactyla.—Bnmth. coast, H.F.C.; Ch. Fd., sc., R.; River Itchen, c., F., K.; Fisher's Pond, c., K.; I.W., Sandown, *I.W.G.*, Yarmouth, *Ent.*, 1889, p. 236.

Emmelina (Pterophorus) monodactyla.—Abt. probably ev.

Leioptilus tephroadactyla.—Occurs, H.F.C.

Leioptilus carphodactyla.—I.W., Sandown, 2 sp., 1907, in fair numbers 1908, *I.W.G.*

Orendenia (Leioptilus) septodactyla (lienigianus).—Vent., H.F.C., *Stainton's Manual*.

Adaina (Leioptilus) microdactyla.—Occurs, H.F.C.; I.W., Coast, V.; Sandown, Bembridge, *I.W.G.*

Hellinsia (Leioptilus) osteodactyla.—Coast, H.F.C.; Portsdown, 1 sp., Ps.

Porritia (Aciptilia) galactodactyla.—n. c., H.F.C.; Soton, f. c., F.; Ch. Fd., T.; Mottisfont, A.; Eastleigh, Fisher's Pond, loc. c., F., K.; Winton, f. c., F.; Ptsmth., loc. c., F., B.; Alton, loc. c., F.; I.W., Seaview, A.

Alucita (Aciptilia) pentadactyla.—c. probably ev.

Orneodes (Alucita) hexadactyla.—v. c. ev.

CRAMBI.

Chilo phragmitellus.—Christch., H.F.C.; Havant, c., E., T.; I.W., Brading Marshes, *I.W.G.*

Schoenobius forficellus.—N.F., c. in bogs, V.; Denny Bog, Cr.; Christch., H.F.C.; Ch. Fd., f. c., R.; Fisher's Pond, c., K.; I.W., Brading, *I.W.G.*

Schoenobius gigantellus.—Christch., H.F.C.; I.W., Brading, 1 sp., *I.W.G.*

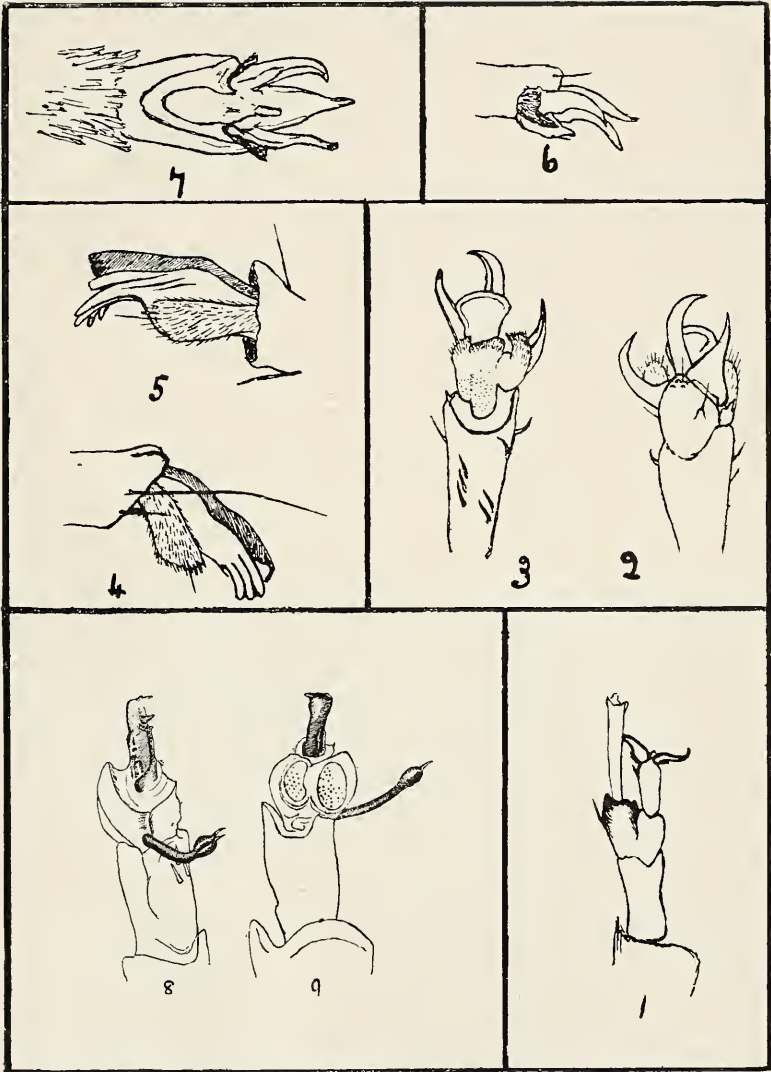
Calamotropha paludella.—Occurs, H.F.C.

- Platytes cerussellus*.—Hayling, I.W., v. abt., V.; Culver, *I.W.G.*
- Crambus alpinellus*.—Hayling, V.; I.W., St. Helens, loc. c., *I.W.N.H.S.*, Cr.
- Crambus falsellus*.—Occurs, H.F.C., V.; I.W., Sandown, 1 sp., *I.W.G.*
- Crambus pratellus*.—c. probably ev.
- Crambus dumetellus*.—Ly., H.F.C., Stainton; Soton, v. r., F.; I.W., old records only.
- Crambus sylvellus*.—N.F., loc. abt. in bogs, V.; Ly., H.F.C.; Beaulieu, c., R., Cr.; Ch. Fd., r., R.
- Crambus hamellus*.—N.F., freely nr. Ly., V.; Beaulieu Rd., c., Cr.; Matley, sc., R.; Ch. Fd., sc., R.
- Crambus pascuellus*.—N.F., c., T., Cr.; Soton, abt., F.; Ch. Fd., c., R., Cr.; abt. in damp places, V.
- Crambus uliginosellus*.—N.F., abt. in bogs V. R.; Beaulieu Rd., Cr.; Boscombe, Ch. Fd., c., R.; Woolmer, c., E.
- Crambus pinellus*.—N.F., V.; Wood Fidle, Cr.; Baddesley, f. c., F.; Soton, n. c., A.; Ch. Fd., f. c., R.; I.W., Sandown, *I.W.G.*
- Crambus latistrius*.—N.F., Ly., V., H.F.C., R.; Minstead, 1 sp., Cr.; Ch. Fd., c., R.; Hayling, abt., V.; I.W., Sandown, loc. c., *I.W.G.*
- Crambus perllellus*.—c. nearly ev.; var. *varringtonellus*, I., N.F.
- Crambus selasellus*.—N.F., Hk.; Ly., H.F.C.; Matley, R.; Christch., c., R.; Soton, n. c., Ch. Fd., v. c., R., Cr.; Hayling, c., E.; I.W., Sandown, loc., Brading, *I.W.G.*
- Crambus tristellus*.—c. nearly ev.
- Crambus fascelinellus*.—I.W., Yarmouth, 1 sp., Stainton; abt. in one locality in Hants in 1886, not seen since, H.F.C.
- Crambus inquinatellus*.—c. nearly ev.
- Crambus contaminellus*.—I.W., St. Helens, *I.W.N.H.S.*, Cr.
- Crambus geniculeus*.—Abt. ev., V.; Ch. Fd., f. c., R.; Soton, c., F.; Havant, c., E.; I.W., Ryde, Bembridge, abt., Freshw., c., Shanklin, *I.W.G.*
- Crambus culmellus*.—Abt. ev.
- Crambus chrysonuchellus*.—Mottisfont, Cr.; Farley Mt., n. c., F.; Portsdown, n. c., T.; Havant, n. c., E.; I.W., loc. abt., V.; Downs above Steephill Castle, f. c., Freshw. Downs, f. c., *I.W.G.*
- Crambus hortuellus*.—c. nearly ev.
- Eromene ocella*.—N.F., 1 sp., 1899, A.
- Anerastia lotella*.—Boscombe, c. on sandhills, R.; Hythe, A.; Hayling Sandhills, c., E.; I.W., St. Helens, Cr.
- Ilithya semirubella*.—I.W., Bembridge, *I.W.G.*; Vent., loc. c., Freshw., r., A.
- Myelophila cribrum*.—N.F., Beaulieu, H.F.C.; Christch., H.F.C.; Soton, f. c., F.; Ch. Fd., n. c., R.; Eastleigh, f. c., K.; Havant, c., E.; I.W., old records only.
- Homoeosoma sinuella*.—N.F., Beaulieu Rd., Cr.; Portsdown, Ps.; I.W., Sandown, abt., V.; Vent., abt., Limpet Run, *I.W.G.*
- Homoeosoma nimbella*.—Hayling, I.W., Shanklin, V.; Sandown, *I.W.G.*
- Homoeosoma binaevella*.—Ch. Fd., sc., R.; I.W., Sandown, *I.W.G.*
- Homoeosoma senecionis*.—I.W., Cr.
- Ephestia elutella*.—Occurs, V., H.F.C., Ch. Fd., n. c., R.; I.W., St. Helens, *I.W.N.H.S.*



The Entomologists' Record.

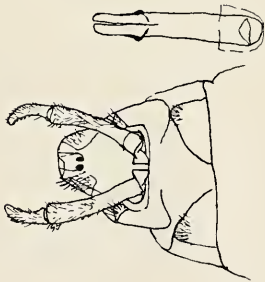
SOMATIC MOSAICS.



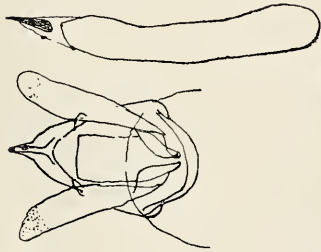
The Entomologist's Record.

TERATOLOGICAL LEGS IN LEPIDOPTERA.

- | | |
|------------------------------------|-------------------------------|
| 1. <i>Apocheima hispidaria.</i> | 6 & 7. <i>Lycia hirtaria.</i> |
| 2 & 3. <i>Lasiocampa trifolii.</i> | 8 & 9. <i>L. trifolii.</i> |
| 4 & 5. <i>A. hispidaria.</i> | |



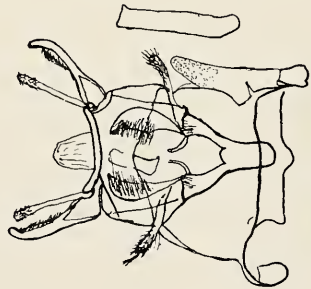
HYDROPSYCHE PELLUCIDA



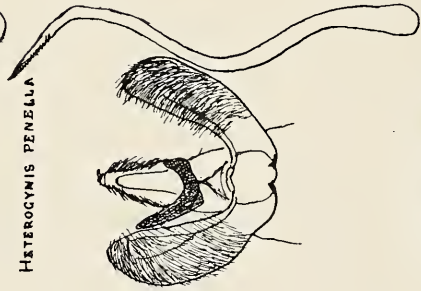
HETEROCYMIUS PENELLA



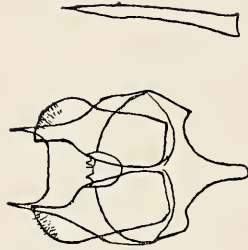
HETEROCYMIUS LUPULINUS



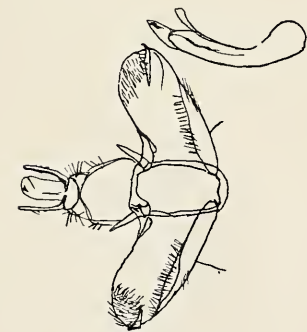
DREPANA CULTRARIA



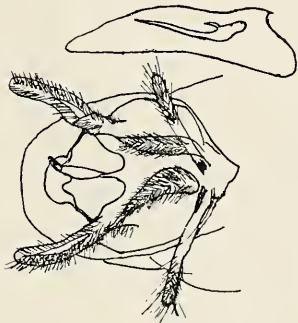
HETEROGENEA ASELLA



PSYCHOIDES VERRUCULICELLA



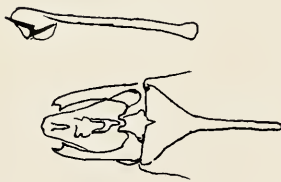
LYPUSA MAURELLA



MEGALOPYGA Sp?



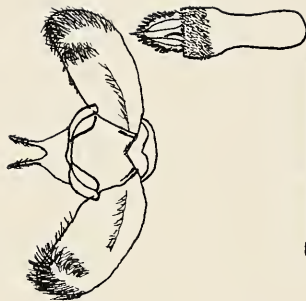
ADESA VIRIDELLA



TINEA VINCULELLA (RICHARDSONI)



ORCYIA ANTIOQUA



ZYOAENA FILIPENDULAE





ERNST MAYR LIBRARY



3 2044 114 198 294

U. HOLZER
BOSTON, MASS.

