

THE
ENTOMOLOGIST'S RECORD
AND
JOURNAL OF VARIATION

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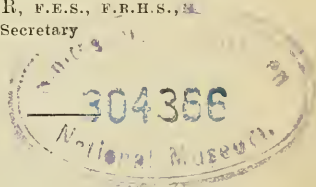
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Editorial Secretary



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We have much pleasure in welcoming Mr. T. Bainbrigge Fletcher, R.N., F.L.S. F.Z.S., F.E.S., who has consented to join the panel of editors of the magazine. His varied experience of practical entomology especially in the study of microlepidoptera in many parts of the world, and his long tenure of duty in India as Imperial Entomologist is a guarantee of his ability to assist in carrying on the study of Variation initiated by our revered founder, the late J. W. Tutt, more than forty years ago. We shall also have in Mr. Fletcher a man of wide experience in the economic field of Entomology, whilst as a field naturalist among the macrolepidoptera his co-operation will be of great value.

In the Special Index an attempt has been made to correct the errors in spelling of specific names and to indicate the correct up-to-date genera with the alternatives or those in general use up to the present. It was the late J. W. Tutt's view that with all names below the species name, a special (*i.e.* a species) index should include the species and genus to which such names belong. The labour of this is considerable, and errors are almost bound to slip in unless several collaborators take part. In all our current text books and lists numerous names are incorrect, modern innovations and spellings instead of the real original name.

We hope to get more notes of captures during the coming year. Those readers who want information as to captures should also send notes of their own captures. There are many parts of the country still unrecorded as to their insect life; even the commoner species are still unnoted for them.

Good wishes to all.



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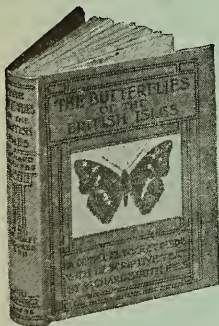
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VOL. XLIV. No. 1.

JANUARY 15TH, 1932.

Stray Visits to Kerry in Search of Moths.

By CANON G. FOSTER, B.D.

It was with great interest that I read Major Graves' article "Collecting in Kerry" in the July-August, 1930 number, since I myself, have casually collected for many years in this county. It was especially so since he has, to some extent, covered the same ground as I have done, only at a different season of the year. I did not, however, touch upon either the Killarney or Kenmare districts proper, which seem to have the highest reputation and where the vegetation is more or less virgin. For much of Kerry strikes one as being but cut out bog, while the more fertile districts have been completely cleared and the old wood absolutely exterminated. The localities I have worked in recent visits are the Inch peninsula on the North side of Dingle Bay; the South side of Caragh and Glenbeigh, Kells, and Valentia Island; then further South of Dingle Bay, Darrynane, West Cove, Sneem and Blackwater. Inch is most promising, though I had only about 10 days there, there are 5 miles of sandhill backed by marsh, with cliff and mountain on the mainland. Caragh is a miniature Killarney with plenty of wild native scrub. These are the 2 best localities as worked. Entomologists in Ireland labour under difficulties principally from lack of fellowship. They may average one in a county. They cannot compare notes and so learn what to look for, or where to look for it. Under such circumstances, through ignorance, no doubt numerous insects though perhaps locally abundant escape detection. Again we have no one with whom we can compare our specimens. Accordingly this record will be found, I am painfully aware, much poorer than it ought to be, or would be, if made by a trained English collector. It might be mentioned that some of the commoner species are omitted as I did not preserve specimens.

RHOPALOCERA.

Pieris brassicae, L.—Summer brood abundant at Valentia; autumn ditto Ballymac Elligott. As Major Graves remarks they are very similar to the English specimens.

P. napi, L.—Both broods are very abundant; Valentia supplied a small specimen, of which the upperside of the wings are both very dark and also strongly tinged with yellow.

Colias croceus (edusa).—Single specimens at Caragh, July; Kells, August; Valentia, August.

Euchloë cardamines, L.—As a schoolboy at Ballymac Elligott this was my earliest capture,—the males. I took 2 females, June, 1928, at Valentia, typically Irish, the lower wings upperside strongly tinged with yellow.

Melitaea aurinia, Rott.—In the beginning of June, 1928, *M. aurinia* was most abundant at Darrynane, both in the sandhills near the Abbey and also higher up the valley among the woods. Later on in the month a single specimen appeared on Valentia; where it came from I do not know, but I am inclined to think the headquarters must have been on the islands in the harbour. The Kerry *aurinia*, as far as my experience went, is not nearly so strongly marked as Mr. T. Greer's Tyrone broods, which are far more highly coloured.

Dryas paphia, L.—Ballycarthy near Tralee used to be my hunting ground in the early eighties for *D. paphia*. Some of the specimens which I still possess are verging towards *ab. valesina*.

Aglais urticae, L.—Everywhere abundant, August, on the flowers of the creeping thistle.

Pyrameis atalanta, L.—Abundant on every nettle patch at Ballymac Elligott in August-September. Here (Co. Down) I do not see it frequenting the nettles, but instead it attends to the garden flowers. Can it be that here in the north the specimens are but migrant, while in the south they are native born and therefore continue attached to the food-plant on which they were reared?

Pyrameis cardui, L.—Abundant at Valentia, June, 1928, also on the mountains above Aunascaul, July, 1905. I always, strange to say, find *P. cardui* abundant on Irish mountain tops (as also *P. atalanta* in the North) the earlier part of the season. So at Valentia it was on the higher ground it occurred profusely, while in the lower parts of the island I do not remember noticing it.

Vanessa io, L.—Abundant, August and September, at Ballymac Elligott. In July, 1905, there were some huge colonies of larvae on nettles at Inch. I have not noticed anything abnormal in the markings. *V. io* constantly attempts to colonise the North of Ireland, but it never seems to succeed.

Pararge aegeria, L.—Very generally distributed and is to be seen on the wing here (Co. Down) from the end of April till late September. Plentiful at Valentia in June and at Ballymac Elligott in August and September. The Kerry specimens appear darker than those of the Co. Down.

Pararge megera, L.—Very general, abundant at Ballymac Elligott in August and September.

Epinephele jurtina, L.—Abundant; Valentia, June, 1928.

E. tithonus, L.—The only place I have met it was on an island in Lough Curran at Waterville in August.

Coenonympha pamphilus, L.—Abundant at Inch, June and July.

Ruralis betulae, L.—Was recorded in "the Field" some years ago from Milltown in September, but I have not met it.

Strymon quercus, L.—The locality for *S. quercus* is the Glencar end of Lough Caragh, but again I have not tried for it.

Callophrys rmbi, L.—Abundant and widely distributed in south Kerry. My localities are Caragh, Lough Acoose, Kells, and Darrynane at the end of May and throughout June.

Rumicia phlaeas, L.—Valentia, June, including an abnormally small specimen, otherwise they did not show much variation.

Polyommatus icarus, Rott.—Valentia, June, 1928.

Lycaenopsis argiolus, L.—Very abundant at Caragh, May-June, 1912, but they were so worn as not to be worth taking. One specimen was beaten out of a holly tree at Glanleaw, Valentia, June, 1928. I have seen no signs of a second brood in Kerry.

SPHINGIDAE.

Mimas tiliae, L.—Miss O'Connell has taken the larva and reared the perfect insect at Darrynane.

Amorpha populi, L.—Abundant, *e.g.*, the perfect insect was taken by me on wing in Valentia, June, 1928.

Smerinthus ocellata, L.—Taken by the Miss Delaps at Valentia.

Theretra porcellus, L.—Inch, July, 1905.

Emmorpha elpenor, L.—Caterpillar abundant in Valentia, August.

Hemaris tityus, L.—Frequented rhododendron flower at Caragh in extraordinary abundance, June, 1912; Valentia, June, 1928.

NOTODONTIDAE.

Cerura vinula, L.—Caragh, Valentia, abundant.

Stauropus fagi, L.—The caterpillar has been taken and reared by the Misses O'Connell at Darrynane.

Leucodonta bicolor, Hb.—I have obtained two specimens in S. Kerry.

After sheltering under a hazel tree from a heavy thunder shower, I proceeded to beat my host with the result that *L. bicolor* tumbled out. I showed it to my friends with whom I was staying and the next evening on returning they informed me they had found a second specimen resting on the window ledge. Both were in perfect condition. This was the beginning of June.

Lophopteryx camelina, L.—No doubt abundant if searched for in the larval stage. One specimen came to the light of my lamp while I was reading, the beginning of July.

Phalera bucephala, L.—Abundant, *e.g.*, at Valentia, June, 1928.

THYATIRIDAE.

Thyatira batis, L.—Abundant, Glanleam Valentia, June, 1928.

Palimpsestis duplaris, L.—Abundant in the Caragh woods, June, 1912.

P. fluctuosa, Hb.—I beat out a single specimen in the Glencar woods, June, 1928.

LYMANTRIDAE.

Orgyia antiqua, L.—Larva at Ballymac Elligott.

Dasychira pndibunda, L.—Larva at Blackwater, October, 1908.

LASIOCAMPIDAE.

Macrothylacia rubi, L.—Most seasons the caterpillar is in profuse abundance on blackberry leaves through the autumn, and the moth itself flies wildly the end of May over the heather, *e.g.*, at Caragh, May-June, 1912.

DREPANIDAE.

Drepana lacertinaria, L.—Abundant around Caragh, June, 1912.

ARCTIIDAE.

Spilosoma lubricipeda (menthastri), Esp.—Abundant, West Cove, June, 1928.

Diaphora lutea (lubricipeda), Esp.—Abundant, Valentia, June, 1928. Both of the above I have found so abundant in both larval and perfect stages that I have few records. But I have not met with any of the remarkable varieties such as one finds in Scotland.

Parasemia plantaginis, L.—On the mountains around Aunascaul, July, 1905.

Arctia caia, L.—Abundant everywhere, *e.g.*, Valentia, 1928.

Hipocrita jacobaeae, L.—Apt to snow you out if you work with light in July, *e.g.*, at Inch, July, 1905. At times the ragweeds in August are curtained with the larvae. The perfect insect has a habit of falling into the dust of the road, and it used to be a duty of us children to rescue them and restore them to the grass.

Nudaria mundana, L.—Locally abundant; Inch, July, 1905.

(To be concluded.)

The Coleopterous Fauna of a Willow Swamp in Windsor Forest.

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

One of the many productive spots for insects in Windsor Forest is a willow swamp where we have worked on and off for the last five years—chiefly for Coleoptera, though a certain number of Hymenoptera (Sawflies, etc.) and Diptera have been taken. Some of the willows are cut down for faggots every year in different parts of the swamp and these make very good traps for insects. A few of these faggots are generally left from year to year; and these and the moss, which grows around the roots and stumps of the willows, are very productive. The undergrowth consists of Flags (*Iris pseudacorus*), which grow to a great height; Comfrey (*Symphytum officinale*); Convolvulus (*Calystegia sepium*); Meadow-sweet (*Spiraea ulmaria*); Meadow Crane's-bill (*Geranium pratense*); Marsh Yellow Cress (*Nasturtium palustre*); Purple Loosestrife (*Lythrum salicaria*); Woody Nightshade (*Solanum dulcamara*); coarse grasses, etc., etc. Some of these, of course, grow on the margins and more open spaces of the swamp, as do also a few Black-thorns (*Prunus spinosa*) and Hawthorns (*Crataegus oxyacantha*). A couple of small pools of water are present, and sometimes after very wet weather the bottom of the swamp is entirely under water in the winter. A certain number of species I have only taken in this spot in Windsor Forest, and others I have only taken here at all.

The total number of species taken in this swamp to date is 162; a full list of which is given at the end of this paper. All the rare and more interesting species are marked with an asterisk; but it may be as well to say a few words about some of them.

Helophorus laticollis, Th.—As far as I know this species has only been taken at Woking and the New Forest heretofore.

Oxygoda salictaria, Donis.—I have recently described this species which is new to science, from a specimen taken in moss in this swamp.

Oxygoda nigrocineta, Muls.—This species has only been taken at Yarnton near Oxford, before, where I first discovered it, new to Britain, in a marshy place. In both localities it was found in damp moss in company with *Calodera riparia*, Er., and *C. aethiops*, Gr.

Proteinus macropterus, Gyll.—I have taken this species on several occasions in this spot, by sifting moss. Fowler gives fungi as well as flood refuse, etc. In the experience of others who have taken it since Fowler's work and in that of my own, this insect is not found in fungus.

Meligethes morosus, Er.—Fowler treats this insect as being a somewhat doubtful species. I swept a specimen in this swamp with dark legs which Colonel J. Sainte Claire Deville identified as *M. morosus*, Er.

Micrambe villosa, Heer.—Abundant by beating faggots (I have taken it in plenty by beating faggots in a wood in Windsor Forest, very far removed from this locality) and by sweeping. Neither broom nor gorse occurs near this swamp.

Dasytes plumbeus, Muls. (*oculatus*, Fowler).—Plentiful by sweeping and beating; this very distinct species may be easily known by the very large eyes in the ♂, but especially by the partly yellow anterior femora in both sexes.

Longitarsus pellucidus, Foudr.—Locally plentiful on *Convolvulus*. Fowler gives *Trifolium* and *Mentha*, but Reitter gives *Convolvulus arvensis* as the foodplant.

Ceuthorhynchidius palustre, Edmonds.—By sweeping *Nasturtium palustre*. This distinct little species has only been taken at Bovey Tracey, Devon, the type locality before.

Ceuthorhynchidius rufulus, Dufour.—This species is chiefly found at the seaside and almost confined to the South Coast. I was rather astonished at sweeping a specimen in this swamp.

I am indebted to Mr. Keys for the names of the *Athetæ*, and Mr. Britten for the name of the *Trichopteryx* species.

CARABIDÆ.—*Dyschirius globosus*, Hbst., *Acupalpus meridianus*, L., *Anchomenus albipes*, F., *A. oblongus*, F., *A. micans*, Nic., **A. scitulus*, Dj., *Bembidium rufescens*, Guér., *B. biguttatum*, F., *B. riparium*, Ol., **B. clarki*, Daws., *Dromius linearis*, Ol., *D. melanocephalus*, Dj.

HYDROPHILIDÆ.—*Helophorus aeneipennis*, Th., **H. laticollis*, Th., *H. brevipalpis*, Bed.

STAPHYLINIDÆ.—*Aleochara lanuginosa*, Gr., **Oxygoda salictaria*, Donis., *O. longiuscula*, Gr., **O. nigrocineta*, Muls., *Ocyusa maura*, Er., **Calodera riparia*, Er., **C. aethiops*, Gr., **Atheta cambrica*, Woll., *A. tolini*, Joy., *A. graminicola*, Gr., *A. nigella*, Er., *A. aequata*, Er., *A. circellaris*, Gr., *A. analis*, Gr., **A. major*, Sharp., **A. decipiens*, Sharp., *A. ravilla*, Er., **A. canescens*, Sharp., *A. sordida*, Marsh., *A. laticollis*, Steph., *A. fungi*, Gr., *A. clientula*, Er., **Gyrophaena lucidula*, Er.,

**Placusa infima*, Er., *Hygronoma dimidiata*, Gr., *Oligota inflata*, Man., **O. parva*, Hr., **Conosoma pedicularium*, Gr., *Tachyporus obtusus*, L., *T. solutus*, Er., *T. pallidus*, Shp., *T. chrysomelinus*, L., *T. humerosus*, Er., *T. hypuorum*, F., *Quedius fuliginosus*, Gr., *Q. cinctus*, Pk., *Q. rufipes*, Gr., *Q. schatzmayri*, Grid., *Gabrius nigrifolius*, Gr., *G. pennatus*, Shp., *Lathrobium brunnipes*, F., **L. filiforme*, Gr., *Stenus bimaculatus*, Gyll., *S. juno*, F., *S. rogeri*, Kr., *S. pusillus*, Er., **S. exiguus*, Er., *S. fuscipes*, Gr., *S. nanus*, Fauv., **S. carbonarius*, Gyll., **S. argus*, Gr., *S. brunnipes*, Steph., *S. pallipes*, Gr., *S. bifoveolatus*, Gyll., *S. latifrons*, Er., *Oxytelus rugosus*, F., *Haploderus caelatus*, Gr., *Trogophloeus elongatulus*, Er., *T. corticinus*, Gr., *Lestera longelytrata*, Goez., *L. heeri*, Fauv., *Homalium riculare*, Pk., *H. caesum*, Gr., *Proteinus ovalis*, Steph., **P. macropterus*, Gyll.

SILPHIDAE.—*Choleva nigricans*, Spence.

SCYDMAENIDAE.—**Euconnus hirticollis*, Ill.

PSELAPHIDAE.—*Tychus niger*, Pk., *Rybaxis sanguinea*, L., **R. sanguinea* ab. *nigripennis*, F. and D.

TRICHOPTERYGIDAE.—*Trichopteryx fratercula*, Mat.

PHALACRIDAE.—*Olibrus aeneus*, F.

COCCINELLIDAE.—*Coccinella 10-punctata*, L., *C. 11-punctata*, L., *Halysia 22-punctata*, L., *Chilocorus similis*, Ross., *Coccidula rufa*, Hbst.

NITIDULIDAE.—*Brachypterus urticae*, F., *Cercus bipustulatus*, Pk., *Pria dulcamarae*, Scop., *Meligethes difficilis*, Heer., **M. morosus*, Er. (black legs), *Eपुरaea aestiva*, L., *E. florea*, Er.

LATHRIDIIDAE.—*Enicmus transversus*, Ol., *Melanophthalma fuscula*, Hum.

CRYPTOPHAGIDAE.—*Cryptophagus dentatus*, Hbst., **Micrambe villosa*, Heer., *Atouaria umbrina*, Gyll., *A. fuscata*, Sch., *A. atra*, Hbst., *A. pusilla*, Pk., *A. analis*, Er., *A. ruficornis*, Marsh.

SCARABAEIDAE.—*Aphodius sticticus*, Pz.

TELEPHORIDAE.—*Telephorus haemorrhoidalis*, F., *T. bicolor*, Hbst. (*thoracicus*, Ol.), *T. bicolor*, Hbst., ab. *suturalis*, Schil., **T. bicolor*, Hbst., ab. *theresae*, Pic., **Dasytes plumbeus*, Muls. (*oculatus*, Fow.).

CHRYSOMELIDAE.—*Melasoma populi*, L., **Plagioderma versicolora*, Laich., *Phaedon tumidulus*, Germ., *Phyllodecta vitellinae*, L., **Galerucella pusilla*, Dufts., **Longitarsus castaneus*, Dufts., *L. luridus*, Scop., **L. flavicornis*, Steph., *L. pusillus*, Gyll., **L. pellucidus*, Foud., *Phyllotreta nodicornis*, Marsh., *P. atra*, Pk., **Crepidodera chloris*, Foud., *C. aurata*, Marsh., *Chaetocnema hortensis*, Fourc., *Psylliodes affinis*, Pk.

PYTHIDAE.—*Rhinosisimus planirostris*, F.

MORDELLIDAE.—**Anaspis florenceae*, Donis., *A. subtestacea*, Steph., *A. maculata*, Fourc., *A. maculata* ab. *pallida*, Marsh.

ANTHICIDAE.—*Anthicus antherinus*, L.

CURCULIONIDAE.—*Rhynchites uncinatus*, Th., *Apion dissimile*, Germ., *A. nigritarse*, Kirb., *A. apricans*, Hbst., *A. onopordi*, Kirb., *A. virens*, Hbst., *A. dichroum*, Bed., *A. loti*, Kirb., **A. simile*, Kirb., **A. pubescens*, Kirb., *A. humile*, Germ., *A. aethiops*, Hbst., *Exoniopsis araneiformis*, Schr., *Phyllobius pomonae*, Ol., *P. viridiaeris*, Laich., *Sitones sulcifrons*, Thunb., *Hypera variabilis*, Hbst., *H. nigrirostris*, F., *Anthonomus rubi*, Hbst., *Nanophyes lythri*, F., *Miccotrogus picrostris*, F., *Ceuthorhynchus contractus*, Marsh., *C. erysini*, F., **C. hirtulus*, Germ., *Ceuthorhynchidius floralis*, Pk., **C. palustre*, Edmonds, *C. troglodytes*, F., **C. rufulus*, Duf.!, *Phytobius comari*, Hbst.

Notes on Algerian Butterflies with Special Reference to some Localities in Kabylia.

By Miss L. M. FISON.

(Continued from Vol. XLIII., p. 167.)

- Leptostia duponcheli*.—Spring and summer.
- Pontia daplidice*.—The plain of the Sebaou near Azazga. (L.M.F.)
- v. *vaphani*.—Sebaou, Tlemçen, Lambèse.
- v. *albidice*.—Algiers, Plateaux, Tell, Sahara.
- v. *flava*.—Biskra.
- Anthocharis belemia* f. *glauce*.—Biskra, Blida-Lambèse, Guelma, Bougie, Bon-Saada. Very fine in Sebaou Valley. (L.M.F.)
- ab. *distincta*.—Philippeville, Batna.
- ab. *evanescons*.—El Kantara.
- ab. *desertorum*.—Tunis.
- ab. *falloni*.—Biskra, Plateaux, Sahara.
- ab. *seitzi*.—Biskra.
- A. belia* (*crameri*) r. *ausonia*.—Kantara, Blida, Tell, Constantine, Lambèse, Guelma. This butterfly is one of the commonest insects of Kabylia. I have frequently observed it from March until June on the mountains at the back of Djemaa Sapidj—on the mountains above Fréha and on the mountains and in the ravines all around Michelet. It flies often at a considerable height. (L.M.F.)
- Euchloë tagis*.—Algiers, El Kantara, Plateaux, Lambèse.
- E. charlonia*.—Biskra, Kantara, Msila, Plateaux.
- E. eupheno*.—Atlas, Lambèse, Guelma, Blida, Philippeville, Tlemçen, Hammam. This beautiful southern "orange tip" is very common in Kabylia, and is one of the earliest butterflies to appear. Sometimes in February it is already on the wing. Some localities for *eupheno* are the Valley of the Sebaou near Mékla, and mts. around, all around Azazga, at Port Gueydon, in ravines around Michelet, in the Gorges de la Chiffa near Blida; between Marbot and Tenienn-el-Had, on the Bauzarea hills near Algiers, and above the Boulevard Bru. It seems to fly from end of February to May.
- I have never seen *E. cardamines* in N. Africa and should be interested to know if it exists here. (L.M.F.)
- Teracolus evagore* r. *nouna*.—Biskra, Aurès Mts., Oran, Plateaux, Sahara.
- Gonepteryx rhamni* r. *ueridionalis*.—Algiers, Tell, Plateaux, Kabylia.
- G. cleopatra*.—Tenienn, Algiers, Plateaux, Tell. It is abundant in Kabylia, and I have seen it at Mékla, Azazga, Fréha, Michelet, and Port Gueydon. (L.M.F.)
- Colias hyale* and *Colias croceus* (*edusa*).—The "clouded yellows" especially *croceus* are common in Kabylia, and in places they literally swarm. The fields in the plain of the Sebdaou are alive with these insects in March, April, May, and even in June. They appear again in the autumn. Mr. Tutt says of "*edusa*" that its true home is along the Mediterranean littoral and in the Algerian Valleys." This is certainly true in Kabylia. It would be interesting to know how many broods there are in Algeria. Mr. Tutt suggests there may be four, in February, May, August, and October. I wonder is this so? or if

the clouded yellows are an especially strong race of butterflies and live longer than some. I have seen them flying vigorously although considerably worn and old. (L.M.F.)

Melanargia galathea.—Teniett, Saïda.

M. ines.—Teniett, Plateaux, Tell. I shall hope to look more carefully this year for *ines*, also for *M. syllius*. (L.M.F.)

The genus *Satyrus*.—This genus is well represented in Algeria. The forest region between Azazga Yakouren and Elkseur should prove a fruitful locality for the Satyrids. In this forest, composed for the most part of the *chêne-zien* and the *chêne-liège* wild boar are plentiful, also hyaenas, and occasionally panthers are to be found. Flocks of monkeys roam in the secluded parts, and occasionally may be seen sporting in the trees, or in the ravines drinking at the brooks. (L.M.F.)

Satyrus alcyone.—Philippeville, Kabylia.

Satyrus briseis, r. *major*.—Kabylia, Aurès Mts., Tlemçen, Plateaux.

S. priouri.—Plateaux, Tell.

S. semele r. *algirica*.—Algiers, Teniett.

S. statilinus r. *hansii*.—W. Algeria, Sebaou.

S. fatua.—W. Algiers.

S. abdelkadir.—Oran, Plateaux, Tell. v. *lambessana*.—Aurès Mts.

Pararge aegeria.—Azazga, Michelet, Sebaou, Mékla, all the season. (L.M.F.) Algiers, Guelma, Bougie, Philippeville. r. *intermedia*.—Blida.

P. megera.—Aumels, Aggribbes, Port Gueydon, Sebaou, Michelet. (L.M.F.)

P. maera r. *lyssa*.—Guelma.

Epinephele janivoides.—Kabylia, Guelma.

E. pasiphaë.—Teniett. r. *philippina*, Teniett, Oran, Guelma.

E. ida.—Tlemçen. r. *caecilia*.—S. Algiers.

E. jurtina r. *fortmata*.—Teniett, Hamman, Oran. r. *mauretunica*.—Teniett.

Coenonympha arcanoides.—Atlas, Blida, Plateaux, Tell.

C. fettigii.—Sebaou, Tell.

C. pamphilus.—Hamman, Sebaou (common). Michelet. (L.M.F.) r. *lyllus*, Sebaou, Tlemçen, Salda Marina, Guelma.

(To be concluded.)

Lithosia pallifrons [vitellina] ab. *pygmaeola*. (Doubleday.)

By H. B. D. KETTLEWELL.

On the night of August 5th I was collecting near Lydd in Kent. Moths were coming in numbers to the headlights of my car. At 12.15 a.m. there arrived two "footmen" (♂s) which I thought must be *Lithosia caniola* on account of their habit of rolling their wings around their bodies, thus making a narrow and very inconspicuous cylinder of themselves.

Also *L. caniola* is recorded as having been taken in "Romney Marsh."

On examining them a few days later I found that they were not *L. caniola* and did not fit in with any British "footman" I knew.

Mr. Tams at the British Museum (Natural History) has been good enough to identify them. He made preparations of the genitalia of:—

- i. Our so called *L. lutarella* ab. *pygmaeola* from Deal.
- ii. Continental *L. lutarella*.
- iii. Continental *L. pallifrons*.
- iv. My two *Lithosia*.

He has reported that the species which has flourished so long on the Deal Sandhills under the specific name of "*lutarella*" is not really that species but is in fact a form of *L. pallifrons* (*vitellina*), hitherto an exclusively continental species. Furthermore he has identified my two *Lithosia* as this species also. Whereas the form hitherto taken in England—namely at Deal and, I understand, the Norfolk Sandhills—has been referable to ab. *pygmaeola* an account of its marked difference from the Continental form, my two from near Lydd are identical with the true Continental *pallifrons* and they differ from *pygmaeola* in the following points:—

- i. Their much larger size—being nearly a quarter as large again as my largest *pygmaeola* male from Deal.
- ii. The well-marked yellow colour of the wings.
- iii. The bright yellow thoracic tufts.
- iv. The distinct black shading at the base of the hindwings.

It will be noted that this locality is nearly forty miles distant from the original locality at Deal and that this new ground has no sandhills anywhere near it. I think that this little colony (as I hope it is) provides a link between our local *pygmaeola* form on the one hand and the true Continental *pallifrons* on the other.

I wish to thank Mr. Tams for his work in identifying these species.

Dates of Hübner's Plates (Noctuae).

The date usually quoted for Hübner's Text *Noctuae* is 1805. This seems to be an impossible date, since there are descriptions of many species which were not figured until much later; for instance fig. 658 (Text p. 185) was issued between 1818 and 1822, and nearly 60 of the figures mentioned in the text were issued between 1808 and 1818. On the other hand fig. 613 was mentioned on the third page of the text, p. 158.

The dates of Hübner's *Noctuae* Plates as given me by my late colleague Mr. J. Durrant of the S. Kensington Museum are as follows:—

Plates	1-74	(figs. 1-345)	1802.
,,	75-86	(346-405)	1802-1808.
,,	87-94	(406-445)	1808.
,,	95-139	(446-638)	1808-1818.
,,	140-150	(639-697)	1818-1822.
,,	151	(698-703)	1823.
,,	152-160	(704-752)	1826-1828.
,,	161-169	(753-802)	1828-1833.
,,	170-176	(803-839)	1834.
,,	177-185	(840.882)	1834-1841.

Hv.J.T.

On the "Illustrations of Varieties of British Lepidoptera"
S. L. Mosley.

By S. G. CASTLE-RUSSELL.

With reference to Mr. Griffin's interesting article on the above work, I possess a copy which is identical with the one he describes. My copy was obtained for me by Mr. Mosley himself in 1912 and compared by him with an original subscriber's copy to which he had access. I think it can therefore be taken for granted that the work as described and collated by Mr. Griffin is complete, and as issued to subscribers. Mr. Mosley told me that the parts were entirely his own handiwork, including the printing. A cheaper edition appears to have been issued consisting of 6 parts with 30 coloured plates, for in a "Quaritch" list of 1922 an extract from a letter from Mr. Mosley to Van Voorst is given as follows:—"If your subscriber desires he can be supplied with hand painted copies of varieties at the usual price of 8s. per part but they take so much labour that I sent out the 5s. parts to all who would be satisfied with them."

Information on these old books is very useful. Mr. Turner I believe possesses a copy of the very rare work by Petiver and it would be of great interest if he would describe it.

NOTES ON COLLECTING, etc.

CACOEZIA PRONUBANA AND ITS PARASITES.—On September 9th last I received a consignment of some two dozen larvae and pupae of this species very kindly sent by Mr. Robert Adkin from Eastbourne, with some foliage of *Euonymus japonica* and *Coronilla glauca*. Having none of the former I substituted the wild *F. europaeus*, which is abundant about here and in the garden, and I also have a good sized plant of the *Coronilla*. I subsequently found that the larvae did not appreciate the wild spindle but fed up on the *Coronilla* entirely. The first moth, a female, came out on the 5th, and the next was a male on the 13th, after which one or two appeared about every other day until the end of the month, most of them being males. I let 2 go, kept several for eggs and set the rest. Several batches of eggs were laid in a pillbox, some being yellow and others green; no change has taken place in their coloration, but all of them seem to have flattened and I fear all are infertile, though I shall keep them until the spring to see whether they will hatch.

Two Braconids, probably *Meteorus* sp., appeared in September but unfortunately I lost them both. In October a couple of Tachinids emerged which Miss Aubertin has kindly determined as *Nemorilla floralis* and says that although they have been reared from several lepidopterous hosts, including *Cacoecia murinana*—which, by the way, I cannot find in Meyrick and suppose it is a continental species [yes]—she has seen no record from *C. pronubana*.—C. NICHOLSON, (F.E.S.) Tresillian, Cornwall. November 23rd.

LATE LARVAE OF *DYSSTROMA TRUNCATA*.—On October 13th I boxed a somewhat worn female of the *centum-notata* form of this species, the dark forms of which are commonest about here, with an occasional *comma-notata* and are usually seen in and about the house in late

autumn. I kept her for eggs and was rewarded with about 50, laid on the glass and paper of the receptacle in which I kept her and also on the potted sallow plant provided for her. I kept these eggs for three weeks not expecting them to hatch, as several had caved in badly, suggesting infertility, and wanting the glass I rubbed off those on it (about a dozen) as most of them had collapsed. The rest were put into a glass bottomed pillbox and I was surprised to see that in a few days they began to darken slightly and a larva hatched on November 10th. The fallows being all but leafless I potted up a small plant of wild strawberry which abounds in the garden and as the larvae hatched at the rate of one or two daily they were placed on the plant and at once made themselves at home and began to feed. At present there are about 20 feeding comfortably and the 5 remaining eggs will probably not hatch. I send this note because it seemed very late for larvae to hatch, but as they hibernate and strawberry is evergreen I suppose it doesn't matter! I have little doubt that strawberry is their normal food here—in the winter at any rate—and a search of the wild plants might result in a good haul of larvae, but they would be extremely difficult to see, being at present only a fifth of an inch in length and just the colour of the ribs on the underside of the strawberry leaves, on which they extend themselves at rest. I was struck by their almost perfect invisibility when extended upwards from the lid of the pillbox, owing to their being nearly white, and even when I used a reading glass to make sure that I did not miss one I often spotted them only because of their brown heads.—C. NICHOLSON, Tresillian, Cornwall. *November 23rd.*

LARVAE OF *PIERIS BRASSICAE*, *P. RAPAE* AND *P. NAPI* ON SAME PLANT.—I noticed some larvae of *P. rapae* on a plant of sea kale in the garden—grown for its wonderful autumn colouring and not for culinary purposes—and on examining the plant carefully I found those of *P. brassicae* and *P. napi* also. I wonder if this is a record, as *P. napi* does not usually descend to cabbage! One pupa of *P. napi* was found under a window sill in the verandah; this was bright green with a few brownish marks and was evidently discovered by a wren, which takes the place of the bat in winter and picks up spiders, flies and other unconsidered trifles there. High up on the brown hall-window frame is another of a pale buff-grey. Under another window-sill outside the verandah is another pale grey pupa and high on the open wall near is a dark grey one. These two should have been reversed in site to suggest the protective coloration theory! We always find a few *P. rapae* pupae in and about the verandah, but they always disappear when the weather becomes generally colder, except in two cases when the larvae (one *P. rapae* in the sitting-room and one *P. brassicae* in the bedroom!) entered through the windows and pupated in the rooms. It is remarkable that the larvae escape destruction whilst crawling up the wall and awaiting pupation, but are picked off as pupae which are on the whole less conspicuous, and it can only be explained, I think, by the keener searching by the birds in colder weather.—C. NICHOLSON, Tresillian. *November 23rd.*

A NATURE STORY.—The following anecdote appeared in the "Western Morning News" of November 7th under the above heading and I am

sending it out of curiosity to see whether any reader can identify the "beetle" and its "parasite." I do not know who J.B. is and I haven't attempted to communicate with him through the editor as I find that such attempts are almost invariably futile.

"The streaked-winged lightning beetle crawls slowly up the rough surface of the granite wall, its wing-cases of metallic blue glinting as it turns in and out of the crevices. The beetle is in pain, for now and then it pauses, to repeatedly strike with one hooked leg the roughened surface, dislodging the weathered grains of stone with its wasted efforts.

"Faster it seems to writhe, almost losing its grip on the stone, then suddenly a little insect appears on its head, running swiftly over the polished, horny skin. Scarce as big as a pin's head, it seems but a yellow spot as it checks and turns, to creep round over the beetle's back and push itself into the crevice between head and neck. Sharply the beetle rears, and once more the parasite is dislodged, taking almost the same path as before.

"While it creeps slowly back the beetle stumbles on wards, half-falling as the carelessly clutched granules give way. The insect attacks again. The antennae tremble, and the wing-cases are half lifted as if for flight. Warily the beetle raises itself, shifting its weight from leg to leg. It is weaker now, and only for a brief space does the insect withdraw from the neck. One more struggle, and then the beetle falls, to lie helpless on the ground with legs waving feebly in the air.—J.B."

The description of the beetle suggests a *Geotrupes*, and of the parasite, one of the usual mites, but how can the name be accounted for? No doubt it is "something" *striatus* and there is a good deal of fancy in the interpretation of the phenomena observed!—C. NICHOLSON.

EUGONIA POLYCHLOROS IN ESSEX.—The large tortoiseshell had been fairly common in this neighbourhood up to the year 1910. In 1911 it was fairly plentiful and nests of caterpillars could be seen on many trees. I collected a number of the larvae, which were fullfed: they proved to be all stung. Since that year I have not noted one butterfly, although continuously on the look out. I wonder whether any of your readers have noticed the absence of this species elsewhere. I expected this area would have been peopled again by immigration, but it is not so.—E. E. BENTALL, (F.E.S.) Wickham Bishops, Essex.

BUTTERFLIES IN KABYLIA IN DECEMBER.—The following butterflies were flying here at Michelet, Kabylia, Algeria up to December 18th last, when we had our first fall of snow. *Colias croceus* (*edusa*), *Pyrameis cardui* excessively common, *Pararge aegeria*, *P. megera*, *Aricia medon* 1, *Rumiccia phlaeas* common, *Pieris rapae* and *P. brassicae* occasionally. *Anthocharis belia* (*crameri*) r. *ausonia*, *Gonepteryx rhamni* and *Eugonia polychloros* both of which last hibernate here.—(Miss) L. M. FISON, Michelet, Algeria. January, 1932.

CURRENT NOTES AND SHORT NOTICES.

In the *Ent. Zeit.* for August, H. Auel reports finding a chrysalis of *Aglais urticae* on October 26th, 1930, at Sansouci from which, in a warm and moist atmosphere, the imago emerged on November 9th, and contends that this represents a third generation.

The *Int. Ent. Zeit.* for Sept. contains a well illustrated account of the breeding, biology and structure of *Ruralis (Zephyrus) betulae*, with 3 plates containing many figures.

The *Ent. Zeit.* for September contains a portion of the Faunal List of Lepidoptera of Upper Styria.

The *Mitt. Münch. Ent. Ges.* 1931 (1) has a very interesting article on the insular parallel forms in the Genus *Papilio*, and (2) the Lepidoptera of the Gran Chaco (Argentina), a collection made in 1925-6. *Sphingidae* by Baron von Rosen, *Geometridae* by L. B. Prout, and *Pterophoridae (Alucitidae)* by E. Meyrick.

The *Zeit. Oester. Ent. Ver.* contains an account of the career of the well-known Dr. Hans Rebel of the Vienna Museum, who has just reached his 70th year. There is a very clear portrait of the Doctor. It is very pleasing to see a portrait of one who has done so much to spread the knowledge of European Lepidopterology for so long a space of years.

We have recently received the *Trans. Ent. Soc. South of England*, no. 6. It contains XIV. pp. of Rules, Financial Statement, and List of Members, and 136 pp. of matter made up of four important papers. There are no Proceedings, as in former years. Two papers are on Diptera (1) The "British Species of *Asilidae* and their Prey" by B. M. Hobby and (2) "British *Tabanidae*" by E. Rivenhall Goffe, the latter with two plates. These will be reviewed at length in a subsequent number of this magazine. The other two papers are short and deal with Lepidoptera. (1) "*Leucania favicolor*," a Life-history compiled from the Notes of the late Eustace Bankes with notes, by W. Parkinson Curtis, and (2) "Additions and Corrections to the Lists of Lepidoptera of Hampshire and the Isle of Wight," by W. Fasnidge. The former is a good piece of work, the putting together of scattered private notes and observations in a species not commonly met with, and the latter a necessary completion of two admirable lists published a few years ago, to bring them up to date.

A considerable portion of Heft 3 of *Iris* is taken up with a consideration of the Micro-lepidoptera. The first article by Dr. Vorbrodth dealing with the Tessin Fauna and the second paper by H. G. Amsell that of the Mark Brandenburg (Berlin area).

We note that the "Painted Lady," *Pyrameis cardui*, is reported from as far north in the British Isles as Shetland.

In the *Ent. Rundschau* for September is a List of the Butterflies found in Haiti from May 15th to June 21st, 1930, some 75 in number, including 5 *Papilio*.

We have received an interesting and useful separate of an account published in *Trans. Am. Ent. S.*, the "*Cuban Hesperidae*," by R. C. Williams, Jr., with one coloured plate and 14 text figures of genitalia. The collection was made by the Querci family from November, 1929, to October, 1930. There is a table of emergences of each species. 36+5 are dealt with.

A part of the *Lepidopterorum Catalogus* recently issued deals with a second portion of the *Satyridae*. The enormous mass of references collected in this wonderful encyclopedic catalogue is phenomenal. The aid to research afforded by these volumes is of untold value. We congratulate the compilers, editor and publishers on the production of these volumes. That they are comprehensive may be judged from the instance that seven and a half quarto pages are filled with references to *Erebia euryale*.

We quote the following note from the *Canadian Ent.* "Invaluable Words."

"Certain invaluable words and phrases as "apparently," "seems to be," and "it appears," have become to be an almost necessary part of the equipment of scientific investigators and writers. The majority of the articles that come to hand are liberally sprinkled with such words, and perhaps not unnecessarily so. To one unfamiliar with the subject matter of an article or to a tyro in the field, the thought comes that the author is treading as if on thin ice and is hesitant to commit himself by drawing definite conclusions. Doubtless this is true and it is well that it is so, for such an attitude makes for open-mindedness and tolerance. It is ever a dangerous thing to approach the region where opinions crystallize, and such words are buffers of the greatest import. Such loophole phrases offer a way out to investigators and probable often advert disagreements, which many times result in bitter feelings. The words "apparently" and "probably" must serve on numerous occasions as life preservers in the rough experimental waters of science. The importance of the frequent and timely use of such words as "possibly" and "nearly" should be early impressed upon young scientists and authors. John Ray said that "Nature refuses to be forced into the fetters of a precise system" and, with the infinite number of exceptions and yet unexplained variances, a high premium should be placed upon such pertinent tools and indispensable servants to progress in scientific research."

We have received two separates from Dr. U. Rocci (1) A consideration and Discussion of the Mode of Variation in *Melitaea athalia*. (2) General Observations on a few species of Lepidoptera. The former is illustrated by 2 plates giving figures of the two groups into which he divides the various races he has met with in the Ticino area of N. Italy, one of 22 figures of the *melathalia* group and the other of 18 figures of the *divergens* group. Both seasonal (generations) and local variation is dealt with.

An interesting and useful feature of some of the descriptions of the distribution of the Lepidoptera in the continental magazines is the inclusion of a map. The *Ent. Zeit.* for October contains such a map of the distribution of *Polygonumatus meleager* in Germany. Herr G. Warnecke in his article shows that there is no connection of the German races with those south of the Alps nor with the S. Western area the French alpine slopes. The same number contains instructions for handling and rearing the cocoons of the larger silk-moths.

As we go to press we regret to hear of the death of W. J. Lucas, F.E.S., who was well-known as a student of the Orthoptera.

SOCIETIES.

LANCASHIRE AND CHESHIRE ENTOMOLOGICAL SOCIETY.

EXHIBITION MEETING—OCTOBER 20TH, 1931.—This being the annual Exhibition Meeting was devoted to the inspection of exhibits brought by the members. The scarcity of Lepidoptera in many parts of the country during a remarkably wet, cold and sunless season was commented upon, but those members who had collected in the South-eastern Counties had found insects more numerous, and some good series of local and rare species had been secured. Despite the poor reports exhibits were quite as numerous and varied as usual.

Mr. R. Tait showed bred series of *Biston strataria* and *Asphalia ridens* from the New Forest, and from Dorset series of *Agriades thetis* (*bellargus*), *Polyommatus icarus*, *Aricia medon* (*astrarche*), *Cupido minimus*, *Melitaea aurinia* and *Adscita* (*Ino*) *statives*.

Mr. W. Buckley exhibited *Agriades coridon*, *A. medon* (*astrarche*) and *Chiasmia clathrata* from Royston. From Symonds Yat he had *Brenthis selene*, *Leptosia sinapis* and bred specimens of *Zygaena filipendulae* of a dull, greasy appearance. The same member also showed examples of *Rumicia* (*Chrysophanus*) *phlaeas* from Nevin with only a trace of the usual orange band on the hind wings.

Mr. and Mrs. A. W. Hughes, who had had a particularly productive season, brought a very large exhibit representative of captures made up to July. These included—from localities in Surrey. *Apocheima hispidaria*, *Lycia hirtaria*, *Hemerophila abruptaria*, *Ephyra pendularia*, *Ectropis* (*Tephrosia*) *punctulata*, *Boarmia punctinialis* (*consortaria*), *B. roboraria*, *Comibaena* (*Enchloris*) *pustulata*, *Drymonia trimacula*, *Toro-campa pastinum*, *Calymnia pyralina*, *Dyschorista suspecta* and a specimen of *Triphaena pronuba* with partly bleached fore-wings. From Essex—*Brephos notha*. From Wye, Kent—*Pachetra leucophaea*, *Mysticoptera* (*Lobophora*) *sexalata* and *Anaitis efformata*. From the New Forest—*Synanthedon* (*Sesia*) *culiciformis* (bred), *Apamea ophiogramma* (bred), *Callimorpha dominula* (bred), *Boarmia cinctaria* and *Pachycnemis hippocastanaria*. From Lewes, Sussex—*Acidalia immorata*. From the Isle of Wight—*Endrosa irrorella*, *Ptychopoda* (*Acidalia*) *humiliata*, *Agrotis lunigera*, *Xylophasia sublnstris* and *Acosmetia caliginosa*.

Mr. J. B. Garner-Richards brought an exhibit from the Isle of Wight including *Colias croceus* and *Polygonia c-album* and also a golden variety of *R. phlaeas* from Formby.

Mr. W. Mansbridge exhibited, on behalf of Mr. A. R. Davidson, a specimen of *Phyxus livornica* captured at Formby in June, and Mr. G. de C. Fraser exhibited one of two specimens of the same species captured at rhododendron flowers in his garden at Freshfield during the same month.

Mr. R. N. Snell had *B. strataria* from Dolgelly, a variable series of *Nyssia zonaria* from Conway and *Hibernia leucophaearia* from Eastham. From Symonds Yat—*Leptosia sinapis*, *Abraxas sylrata*, *Anaitis plagiata*, *Minoa murinata* and *Cepphis* (*Epione*) *adrenaria*. From Wicken—*Arsilonche albovenosa*, *Phragmatobia fuliginosa* and *Calamia phragmitidis*. From Abbots Wood—*Lymantria monacha* (including specimens with yellow bodies), *Aspitates ochrearia*, *Drepana binaria* and specimens of *Nola albula*, *Eremobia ochroleuca* and *Lithosia complana*, and also bred examples of *Pterostoma palpina* from Devon.

Mr. H. W. Wilson exhibited a bred series of *Callimorpha quadripunctaria* (red, yellow and intermediate forms) from Devon, and from the same County *Xanthorhoë rivata* and *Acidalia imitaria*. From Wallasey—*Taeniocampa opima* and a specimen of *Boarmia repandata* variety *nigricata*. From Burnt Wood—*Bomolocha fontis* and *Semiothisa notata*, and a long varied series of *Calamia lutosa* from South Lancashire.

Mr. G. A. Longworth showed specimens of *Calocampa solidaginis* from Moel Fammau, *Dasychira fascelina* (bred) from Formby and *Hipparchus (Geometra) papilionaria* (bred) from Thurstaston.

(52) B I T U A R Y .

Edward Step, F.L.S.

There has recently passed from us one of the greatest teachers of Natural History of the last half-a-century. Edward Step was born 76 years ago, and for more than half that period he had devoted the whole of his energy to inculcate a knowledge of the natural beauties of our countryside. An ardent lover of the woods, fields, hillsides and commons, an adept photographer of taste and judgment, he gradually acquired an encyclopedic knowledge of our indigenous plants and animals. He early recognised that the more technical language of biological science tended to repel would-be enquirers into nature's mysteries, and in all his work his aim was to present his facts in such easy, and yet not over simple, language that the "man in the street," so to say, readily understood and grasped the truths. To illustrate what he taught he looked upon as a "sine quâ non" of his work, and this his skill and practice in photography successfully achieved. Perhaps the leaning of his study was to Botany; his numerous published volumes on wild flowers, garden flowers, trees and shrubs, and fungi soon became the invaluable handbooks of rambles in our woodlands, heaths and commons. He joined the South London Entomological and Natural History Society in 1872, the year of its inception, had been its President more than once, and was to have been again in the chair during 1932, its Jubilee Year. But unfortunately this was not to be, and he passed away in mid-November last. Every member of this popular Society esteemed him greatly, for he was rarely absent from its meetings and was also particularly interested and helpful in the field meetings. His writings differ from those of the average bookmaker in natural history, in that they teem with his own actual experiences in the field and many of his illustrations such as those in "Wild Flowers Month by Month," can be recognised by the ardent Rambler as pictures of famous beauty spots of the wild Surrey hills. A desire to study the life of the sea shore led him some years ago to reside for a while on Cornwall's rocky coast. The result of the knowledge so gained we find in his "Shell Life," and his lectures on crabs and other sea creatures were delivered out of the fullness of the knowledge thus gained. London publishers discovered his skill and knowledge and all the best natural history books for years were issued under his editorship. Only one need be mentioned here, and that is the three volumes of "South's Butterflies and Moths of the British Isles," which no British lepidopterist can possibly do without. He will be missed by many a lover of nature throughout the land, but he will still live and teach through his beautiful books.—HY.J.T.

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Duplicates.—*S. Andrenaeformis*, Bred 1928, well set on black pins, with data.

Desiderata.—Very numerous British Macro Lepidoptera.—*J. W. Woolhouse, Hill House, Frances Street, Chesham, Bucks.*

Desiderata.—Species of Dolerine and Nematine sawflies not in my collection; list sent.—*R. C. L. Perkins, 4, Thurlestone Road, Newton Abbot.*

Duplicates.—*Albimacula**, *sparganii**.

Desiderata.—Ova of *D.oo.* pupae of *X. gilvago*, *D. caesia*. *A. J. Wightman, "Aurago," Bromfields, Pulborough, Sussex.*

EXCHANGES.—Living Eggs of *Catocala fraxini* and *sponsa*, exchange for butterflies of British Isles.—*C. Zacher' Erfurt, Weimar, Street 13, Germany.*

Duplicates.—*Pyralina**, *Salicis*, *Ianthina**, *Orbicularia**, *Repandata* in variety, *Doubledayaria*, *Black rhomboidaria**, *Black virgularia** and others.

Desiderata.—*Hyale*, *Welsh aurinia*, *Polychloros*, *Tiphon Agathina*, *Lunigera*, *Lucerneae*, *Neglecta*, *Diffinis*, *Populeti*, *Gothica v. gothicina*, *White Leporina*, *Tridens Putrescens*, *Littoralis*, *Typhae v. fraterna*, *Rurea v. Combusta*, *Gilvago*, *Fulvago v. flavescens*, *Liturata v. nigrofulvata*. *Harold B. Williams, Woodcote, 36, Manorgate Road, Kingston Surrey.*

Duplicates.—*Ocellatus** 5, *Hastata* 1, *Cambricaria* 3, *Blandina* 12, *Protea** (melanic) 2, *Camelina** 2, *Dromedarius** 1, well set on black pins with data.

Desiderata.—*Betulae*, *Trepida*, *Diluta*, *Or* and *Myricae*. *Geo. Nicholson, 24, Nun's Moor Crescent, Newcastle-on-Tyne.*

Duplicates.—A large number of species of European and Palaearctic *Rhopalocera* and *Heterocera*.

Desiderata.—All British species especially those illustrating characteristics of an island fauna. *Dr. Lor. Kolb, München 54, Dachauer-str. 409, Germany*, and *Franz Daniel, München, Bayer-str. 77, Germany.*

MEETINGS OF SOCIETIES.

Entomological Society of London.—41, Queen's Gate, South Kensington, S.W. 7. 8 p.m. February 3rd, March 2nd.

The South London Entomological and Natural History Society, Hibernia Chambers, London Bridge. Second and Fourth Thursdays in the month, at 7 p.m. January 28th, Annual Meeting, February 11th.—*Hon. Secretary, Stanley Edwards, Avenue House, The Avenue, Blackheath, S.E.3.*

The London Natural History Society.—Meetings 1st and 3rd Tuesdays in the month at 6.30 p.m. at the London School of Hygiene and Tropical Medicine, Keppel Street, Gower Street, W.C. Visitors admitted by ticket which may be obtained through Members or from the Hon. Sec. A. B. Hornblower, 91, Queen's Road, Buckhurst Hill, Essex.

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The Early Stages of *Procris globulariae*, Hb., and of *P. cognata*, H.-S.

By Dr. E. A. COCKAYNE, A.M., F.E.S., and C. N. HAWKINS, F.E.S.

On May 2nd, 1931, we went to Lewes to look for larvae of '*globulariae*.' On the lower slopes of Cliffe Hill the leaves of *Centaurea nigra* showed obvious signs that many larvae had been feeding, but we found only a few. Higher up the hill they were much more plentiful, so that presumably most of those lower down had pupated. We found about 140 larvae, of which all but a few were in the last instar and many were nearly full-fed. Most of them were in blisters of various sizes formed by the cuticle of the leaf all the rest having been eaten; others were in the act of eating their way into a fresh leaf; some with nothing but the head inside, and others with a smaller or larger part of the body already hidden. Larvae only partly inside a leaf dropped to the ground as soon as they were disturbed. Some were cutting a way in from the upper side, but the majority were making a new blister, by entering a leaf from its under side. In one leaf two larvae, both nearly full-grown, were lying side by side in the same blister, but in no other blister was more than one larva found. Three or four larvae were sitting on the central short leaf of the plant, probably full-fed and resting prior to pupation, for they were not changing skin, an operation carried out inside the leaf. Old blisters of all sizes were seen and in many of them the cuticle had turned brown, but not infrequently one was found still showing the shape of the larva that had left it and with the pale green colour of the cuticle unaltered. In such cases a larva was usually found pushing its way in or already inside a neighbouring leaf. Frass was present in strings between the two layers of cuticle in many of the old blisters, for though the larvae extrude some frass, most of it is passed within the blister. The plants of *Centaurea nigra* are very small with the leaves often few in number, short, and rounded so that they are quite inconspicuous, and the discoloured patches left by the larva are often the first thing to draw attention to them. In some of the smaller leaves a blister occupies the major part or even the whole of the leaf. The larvae were surprisingly active, much more so than those of a *Zygaena*, rolling themselves into a ball when disturbed and falling, but soon crawling away to a better shelter if exposed to view.

Expecting a green larva we were surprised when the first larva was seen to be greyish-brown and still more so when at the end of the day we had not taken a single green one. Our first surmise as we came home by train was, that two species must occur on the continent both forming blisters in *Centaurea* and that Buckler must have obtained the wrong one for his figures and description, and on looking at his book found that he obtained eggs in the autumn and larvae in the spring from Herr Heinrich Disqué of Speier. Referring to other authorities it was seen that South, Barrett, and even Tutt had been content to copy Buckler and that all gave the colour of the larva as green. The article in Seitz showed that our guess was very nearly correct.

Dr. Karl Jordan in Seitz *Palaearctic Macro-Lepidoptera* Vol. II., p. 8 (1909) says that *Procris cognata*, H.-S., or what he takes to be this

species, is very like *globulariae*, Hb., differing in the imago having longer pectinations to the antennae and in the claspers of the male being narrower and having a long free thorn-like process at the base directed backwards. He goes on to say that it is found in Spain, Italy, France, and the South coast of England, perhaps also in Germany and Austria, and mines in the leaves of *Centaurea*, especially in *C. nigra*. Of *globulariae* he says it is found in all the countries of Europe except the most Northern and that it is not found in England. Meyrick however in his *Revised Handbook* of 1927, though admitting that *globulariae* and *cognata* are distinct, retains the name *globulariae* for the British species. In all probability it will never be possible to decide which name was applied to the species accepted by Jordan as *cognata*, but it will avoid endless confusion if his determination is accepted. Rebel *Berge Schm. Buch*, 9th edition p. 450 (1910) also uses the name *cognata* for the British species.

Freyer, *Neue Beiträge*. (1833), I. 119, Pl. 62, gives a figure and description of the larva of *globulariae*. The figure shows a larva with a greyish-green ground colour, narrow pale yellow dorsal stripe, a row of large black dorsal spots, another lateral row and a red stripe between them, but in the text he says that there is a row of red spots in a light green (hell graun) line. *Globularia vulgaris* is given as the food-plant. Kirby, *European Butterflies and Moths* (1882) Pl. 21, fig. 2a, figures a pale green larva with a narrow pale yellow dorsal line, a row of large black dorsal spots and another row of black subdorsal spots and between them a blackish-green band with a red wart on each somite. His description states that the larva is green with reddish warts and two zigzag straw-coloured lines on the back. He gives *Centaurea scabiosa* as the food-plant. Hoffmann, *Schm. Eur.* (1893) Pl. 9, fig. 15. has a very similar figure, but the ground colour is not so clear a green and the band between the two rows of black spots is a pale bluish-white so that the red warts show much more distinctly. In the text he says "Grau mit rötlichen Warzen und zwei strohgelben, eckig vortrenden Rücklinien." He gives *Centaurea scabiosa* and *Globularia* as food-plants. Spuler, *Schm. Eur.* (1906) uses the same figure. Hoffmann's figure shows the dorsal black spots as a series of triangles occupying the whole of the anterior and outer part of the dorsum of each somite and uniting anteriorly across the mid-line and laterally, while the lateral row of spots forms a continuous band. It seems clear that these authors are all dealing with the same species.

Buckler's figures, and description made from the larvae from Speier on the Rhine are different in many respects. The following comparative account is extracted from Buckler.

"The larva has a green ground colour, the dorsal black spots are rounder and meet neither across the middle line nor laterally, and there is no pale yellow dorsal line shown in the figures or mentioned in the text. The white subdorsal marking inclines to creamy-white, sometimes to yellowish-white, and this is strongly contrasted below by a broadish stripe of dark green." These markings are not mentioned or figured by Freyer, Kirby, and Hoffmann, while Buckler's figures show no red warts and they are not described. If these red warts are the subdorsal tubercles, they are very unlike those of Buckler's larvae, for all the large tubercles in these are green, the dorsal ones being light bluish green set with short fine blackish bristles.

It is not improbable that there are three species of *Procris* with larvae mining in the leaves of *Centaurea*, one with a grey or greenish larva with red warts first described by Schmidt and figured by Freyer, Kirby, Hoffmann and Spuler, another with the bright green larva with red warts figured by Buckler, and third, our British species with a brownish larva, of which I have found no published description or figure.

If the green larvae belong to two species it is probable that a microscopical examination of the skin of blown larvae would show structural differences. The question as to whether they belong to one or two species might be settled by breeding from green larvae with and without red warts and examining the antennae and genitalia of the two lots of imagines.

Although Jordan pointed out more than twenty years ago that the British species is *cognata* and not the much commoner Continental species *globulariae*, he did not mention the larva of either of them, and, with the exception of Meyrick, no British author has taken any notice of Jordan's remarks. Both before and after Seitz published his book all have followed Buckler attributing a green larva to the British species and they have in consequence taken the imago to be *globulariae*, to which this green larva belongs. None of the Sussex collectors, who have been breeding it from time to time for many years, seem to have noticed that the larva they found was quite unlike that described in all our books. It is remarkable that Tutt in his *British Lepidoptera* copied the old mistake. He must have seen that Buckler's larvae came from abroad, but he never tried to confirm Buckler's account by obtaining larvae from Sussex as he could have done quite easily. The description of the early stages contributed by Chapman is probably correct, but unfortunately the source from which the eggs came is not stated.

The following is a description of our British species, *P. cognata*.

LAST INSTAR.—Larva of the shape common to *Procris* and *Zygaena*, short and stout in the middle, tapering greatly at both extremities. Head very small and flat, nearly black. Prothoracic plate dark brown and shining, 1mm. in length, and 1.5mm. in breadth at the widest part. The plate is triangular in shape with the posterior margin forming the base of the triangle and the apex directed forward. The apex however is very sharp pointed and the sides are not straight lines. Commencing from the base, the sides run parallel or nearly parallel to each other and to the long axis of the larva for about one fourth of their length, then they curve sharply inwards, and finally curve gently forwards again for about the last third of their length so as to meet at a very sharp angle at the apex. The base is almost straight or is slightly sinuous. A narrow strip of colourless chitin runs up the middle of the posterior half dividing it into two parts. On each side from the anterior end of the straight part of the lateral margin a line runs inwards and forwards, curving first with a convexity and then with a concavity forwards, and these lines form by their junction a very sharp projection in the mid-line pointing towards the head. The portion of the plate in front of these lines is covered with long light brown setae and that behind is bare. The anterior portion of the prothorax is not covered by the plate, but is quite soft and the

head can be retracted almost entirely within it or can be thrust far forward for the purpose of eating out the parenchyma of a leaf.

Legs black. Ground colour pale greyish-brown (grayish olive—Ridgway), appearing darker on the dorsum between the dorsal and subdorsal tubercles and below these tubercles owing to the greater abundance of black dots with which this part of the skin is studded. At the beginning of an instar the larva appears to be very dark because the dots are then close together, but it becomes paler as they separate with the growth of the skin. There are four rows of large tubercles either pink or avellaneous (Ridgway); the dorsal tubercles oval, set obliquely with the anterior ends close together, so that only a small space is left between them and almost touching one another on the 2nd thoracic; the subdorsal tubercles oval with their long axis lying transversely. These lie in the line of the anterior ends of the dorsal tubercles and extend downwards nearly to the spiracles, which are at the level of their anterior borders. Below the spiracles are the two subspiracular rows of tubercles, smaller and nearly round. There is one tubercle of each row on each somite. Hairs of two kinds arise from each tubercle, short ones varying somewhat in size, sharp, smooth, pale brown with dark brown tips, and much longer ones, white or colourless, divided up into numerous short segments each a little wider at the distal than at the proximal end. Small numbers of both kinds of hair are also present on the lower part of each proleg, but both kinds are smaller than on the tubercles.

Just external to the dorsal tubercles is a fairly broad stripe, whitish, cream-coloured, or clear pale yellow, curving inwards towards the middle line in the intervals between the tubercle of one somite and the next and sometimes running up the sides of each tubercle. In some larvae this stripe is bordered externally at a point opposite each tubercle by a narrow bright red line. Anal plate small and dark brown. Prolegs with brown crochets. Spiracles small, oval, and black.

Seen under high magnification ($\frac{1}{3}$ objective) the whole of the prothorax excepting the plate is thickly covered with short sharp black spines pointing backwards and similar spines are also present on the dorsum of the second thoracic and there are also a few low down on the lateral aspect of all the somites, some of them on the prolegs. The black dots, seen with a lens on all somites except the first and second thoracic, are small raised round black chitinous plates, from which arise short blunt spines. These plates vary in size. A few have only a single spine, others have three or four, while the largest have a row of about eight around the margin and three or four in the central part. The central spine is longer than the others and vertical, while the rest point obliquely outwards from the centre. These spiny plates are numerous on all parts above the spiracles with the exception of the subdorsal stripe on which they are scanty, but become very sparse at the level of the subspiracular tubercles.

In addition to these spiny plates the skin, except that of the prothorax, is thickly studded with minute raised dots, much smaller and more numerous than the plates, black where the ground colour is brown and white on the subdorsal line.

On each somite from the second thoracic to the eighth abdominal, in the mid-line half way between each pair of dorsal tubercles is a small area, apparently a shallow depression, variable in size and shape,

but as a rule nearly oval. These areas are free from the small black dots and the larger spiny plates and are occupied by flat plates of thickened cuticle, each approximately round and outlined by a very narrow wavy brown line. The average number in each area is about ten, but they vary in number and in size. There is also a lateral row of similar areas, one on either side of each somite at the level of the upper border of the subdorsal tubercles and lying half way between one tubercle and the next. These areas correspond with the flat black plates found in the same situations in the larva of *Zygaena exulans*, on the dorsum of which there are two roughly semicircular ones with posterior ends close together or even touching, and between the subdorsal tubercles a long narrow plate lying at right angles to the long axis of the larva. *Exulans* however has another lateral row of small round plates at the level of the subspiracular tubercles.

The skin is soft and distensible like that of a *Zygaena*, but no oily drops are exuded, as they are from many points on the skin of a *Zygaena*, when it is rolled preparatory to being blown. There appears to be no prothoracic gland. The blood is a rich orange colour like that of all the species of *Zygaena* examined.

PENULTIMATE INSTAR.—In all respects the same, except that no larva with a red line bordering the subdorsal stripe was met with.

COCOON AND PUPA OF PROCRIS COGNATA, H.-S.—When full-fed the larva rests for some time, often as long as three or four days, on the ground or some object such as a stem or leaf of the food-plant. It then buries itself just beneath the surface of the ground, travelling along for a short distance, frequently pushing up the surface of the earth into a little mound above it. Next it spins the grains of earth above it into a kind of cover with strands of soft silk, which may also occasionally be attached to a leaf of the food-plant or other object lying on the earth beneath it thus forming a fragile outer elongated oval cocoon of earth, which is subsequently strengthened by spinning a layer of silk all over the inside. Within this outer cocoon is an inner one formed of soft but fairly tough pale brownish-grey silk (not greenish-white as described by Buckler and Hofmann, but agreeing very nearly with Zeller, who describes it as "braun-grauen"), closely woven and lightly attached to the outer cocoon, with little nodules of pure white silk here and there in the texture. Very rarely a larva will in captivity form its cocoon upon some object just above the surface of the ground, but these cases are probably due to some abnormal circumstance such as disturbance by another larva. Upon emergence of the imago the pupal skin is often withdrawn entirely from the cocoon and left lying loose on the ground, but this is certainly not always the case. Usually the empty pupal skin is left projecting from the cocoon as in *Zygaena*. The dehisced pupa is fairly transparent, very pale brown in colour, and evidently thinly chitinized. At the same time it is of reasonably stout substance and does not usually lose shape badly on emergence of the imago.

The male pupa is 11.5 to 12mm. long and nearly 4mm. wide outside the wings at the widest part, the third abdominal somite, while the female is about 1mm. less in length, but of stouter build, that part of the abdomen not covered by the wings being considerably stouter than in the male. Chapman's description of the pupa under the name *globulariae* as quoted by Tutt in *Brit. Lepidopt.* Vol. I. pp. 412-3,

appears accurate so far as it goes except that the number of "fine brown spinous points" forming the dorsal rows of spines near the anterior margin of the abdominal somites 2 to 9 varies from 10 to 24 on each side in a female and from 8 to 18 in a male according to the width and position of the somite instead of from 14 to 18 as mentioned by Tutt. A few further details can however now be given from an examination of dehisced pupae. The dorsal head-piece is well developed, as long as the prothorax, or even longer, at the sides and shortening toward the centre-line to about one third of that length. Epicranial suture distinct and effective on dehiscence, leaving the dorsal head-piece attached to the prothorax. Prothorax short and of nearly the same length throughout its breadth, but becoming slightly shorter towards the external margins and in the middle. Mesothorax rather more than three times the length of the prothorax at the sides and about four times the length at the mid-line, there being a large backward projection into the area of the meta-thorax. Metathorax comparatively short, about half the length of the meso-thorax at the sides and shortened by nearly half in the middle by the backward projection of the mesothorax. On dehiscence all these parts separate partially from each other and from the abdomen and usually slide over one another to a certain extent, which makes accurate measurement difficult. The dorsal head-piece and prothorax divide completely down the centre-line and the meso-thorax divides nearly but not quite to the posterior margin. With regard to the head parts, the front is placed well forward and there is no visible fronto-clypeal suture. There does however appear to be some trace of a suture between the clypeus and labrum although it is only a faint line. The invaginations for the anterior arms of the tentorium are slit-like and of considerable size. The labial palpi are either not visible at all externally or they are reduced to two minute knobs at the posterior margin of the labrum, probably the former, in which case the labrum appears to extend slightly over the bases of the maxillae. Mandibles are clearly indicated and consist of raised irregularly oval roughened areas at the posterolateral angles of the labrum. The maxillae are long and reach to about the posterior margin of the 6th abdominal somite or a little further, as also do the tarsi of the 3rd pair of legs. The tarsi of the 2nd pair of legs and the antennae are much shorter and reach barely to the posterior margin of the 4th abdominal. The meso-thoracic wings are about 5mm. long in the female and slightly longer in the male. There is one other point about Chapman's description as quoted by Tutt which appears to need correction. He says there is no definite trace of maxillary palpi. In fact there is, just outside the sculptured eye-piece on each side, a curious little knob-like projection, which appears under the microscope and by transmitted light to show distinct signs of segmentation, the apparent number of segments being three, and a basal part extending to the outer angles of the maxillae. There would seem no doubt that these are maxillary palpi.

As Chapman says there is no cremaster nor anal armature of any description nor are there any setae or spines whatever on any part of the pupa, except the dorsal rows of spines on the abdominal somites. The spiracles on the 8th abdominal are placed very far back, almost at the posterior margin of the somite, and are very prominent particularly in the female.

The date of emergence is much influenced by temperature, for from the pupae kept in an unheated room in London, imagines appeared from June 11th to June 18th with the exception of two belated ones; whereas from those taken on June 2nd to Braemar, where the weather was cold, the imagines appeared from June 27th to July 5th. Emergence generally took place in the afternoon.

Only two larvae were parasitized. A single specimen of *Cremastus bellicosus*, Gr., an Ophionine ichneumon was bred from one, and several *Apanteles* (probably *geryonis*, Marshall from the other. Our thanks are due to Mr. Claude Morley, who identified the former, and to Mr. K. G. Blair who identified the latter.

Stray Visits to Kerry in Search of Moths.

By CANON G. FOSTER, B.D.

(Concluded from page 4.)

NOCTUIDAE.

- Phaetra (Acronicta) rutilicis*, L.—Kells.
- Agrotis segetum*, L.—Blackwater, Oct., 1908.
- A. vestigialis*, Hufn.—Abundant on the flowers of the bent grass, at the Inch sandhills, July, 1905.
- A. corticea*, Hb.—Inch, 1905.
- A. nigricans*, L.—Glenbeigh, August, on ragweed.
- A. tritici*, L.—Abundant at Glenbeigh, on ragweed.
- A. obelisca*, Hb.—Glenbeigh.
- A. strigula*, Thnb.—Glenbeigh.
- Noctua rubi*, View.—Glenbeigh.
- N. xanthographa*, Fb.—Glenbeigh.
- Axylia putris*, L.—Inch, July, 1905.
- Triphaena interjecta*, Hb.—Glenbeigh, abundant on ragweed in August.
- Mamestra persicariae*, L.—One came in to light, June 1928, Valentia; *persicariae* is very scarce in Ireland, and this is the only occasion I have met with it.
- M. brassicae*, L.—Valentia, June, 1928.
- Apamea gemina*, Hb.—Valentia, June, 1928.
- Hadena pisi*, L.—Caterpillar often to be seen on rushes, etc., in August.
- H. nana (dentina ssp.)*.—Sitting on rocks in daytime, Valentia, West cove, June, 1928; also at sea campion by night.
- Apamea oculea*, Gn.—Generally abundant.
- Dianthoecia cucubali*, Fues.—Abundant. Darrynane, June, 1928, also on sea campion at Valentia same date. Here (Strangford) I have never seen it at sea campion; its place is taken by *D. conspersa*, Esp., which I did not see at Valentia, or anywhere in Kerry. *D. cucubali* here keeps to 'ragged robin.'
- D. carpophaga*, Bork.—I have never seen a typical *carpophaga* in Ireland, but *capsophila*, Dup., is abundant on every part of the coast I have worked; e.g., Strangford and Ardglass, Down; Ballintoy, Antrim; Howth, Dublin; Greystones, Wicklow; Valentia and Inch, Kerry. The darkest, and those with the obscurest markings, were from Inch, Kerry, in late July.

Cleocera viminalis, Fb.—While beating for caterpillars at Glanleam, Valentia, a specimen dropped into the umbrella, June 1928.

Xylophasia rurea, Fb.—Valentia, June, 1928.

Phlogophora meticulosa, L.—Blackwater, Oct., 1908.

Hydroecia nictitans, Bork.*—Darrynane, on window of Hotel. I have not had an opportunity in recent years of visiting Kerry when this insect was on the wing, but it used to be abundant at Glenbeigh.

Leucania litoralis, Curt.—Inch, July, 1905, abundant on sandhills.

L. conigera, Fb.—Inch, July, 1905.

Caradrina alsines, Brahm.—Inch, July, 1905.

C. taraxaci, Hb.—Inch, July 1905.

C. quadripunctata, Fb.—Common everywhere.

Amphipyra tragopagonis, L.—Glenbeigh.

Dyschorista iners, Tr. (*suspecta*, Hb.)—Glenbeigh.

Amathes lota, Clerck.—Blackwater, Oct., 1908; Valentia, larva, June, 1928.

A. macilentata, Hb.—Blackwater.

A. circellaris, Hufn.—Blackwater.

Xanthia lutea (*flarago*, Fb.)—Sneem.

Orrhodia vaccinii, L.—Blackwater.

Xylina socia, Rott.—Blackwater, Valentia, June, 1928, larva.

X. ornithopus, Rott.—Blackwater.

Calocampa exoleta, L.—Blackwater.

C. vetusta, Hb.—Blackwater.

Erastria fasciana, L.—Caragh, June, 1912. Glencar, June, 1928; abundant.

Phytometra viridaria, Clerck.—

Plusia bractea, Fb.—Inch, July, 1905.

P. gamma, L.—There seemed to have been an invasion of Kerry by *gamma*, in June, 1928. They rose in clouds as you tramped through the heather and made it difficult to fix the eye on anything else. They must have been in thousands. Strange to say there was also an invasion of two other insects, *Nomophila noctuella*, Schiff., and *Scopula ferrugalis*, Schiff. Usually of these last two but odd specimens turn up here, but in June, 1928, they were ubiquitous in Kerry. And when I returned home here (Co. Down) *N. noctuella* was equally plentiful in this district, while *Scopula ferrugalis* was far more so than usual. *P. gamma*, of course, is a migrant, but why these other insects so abounded I do not know. *P. gamma* here is frequently to be captured hovering over the sea-campion in early June. Later its place is taken by *Plusia iota*, *P. pulchra*, and *P. festucae*. But when they go it appears again at ragweed and ivy. In Belfast I have reared a caterpillar which was found on a geranium leaf in a greenhouse during September.

Habrostola tripartita, Hufn.—Abundant, Valentia, June.

H. triplasia, L.—Abundant, Valentia, June.

Enclidia mi, Clerck.—Kells and Darrynane, frequent.

Zanclognatha tarsipennalis, Tr.—Inch, July, 1905.

Z. grisealis, Hb.—Valentia, June, 1928.

Bomolocha fontis, Thnb.—Abundant at Caragh and Glencar.

* *crinanensis*?—E.A.C. Some since identified are *crinanensis*.—Hy.J.T.

GEOMETRIDAE.

- Hipparchus papilionaria*, L.—Caragh, July.
Iodis lactearia, L.—Caragh, June, 1912.
Hemithoa aestivaria (*strigata*, Müll.)—Came to light, Inch, 1905.
Ptychopoda biselata, Hufn., and *P. dimidiata*.—Generally abundant.
Acidalia floslactata (*remutaria*, Hb.)—Caragh, June, 1912.
Cosymbia pendularia, Clerk.—Caragh, June, 1912.
Ortholitha mucronata (*plumbaria*, Fb.)—Abundant on the hills in June.
O. chenopodiata (*limitata*, Scop.)—Abundant everywhere in August.
Lygris pyraliata, Fb.—Abundant, Inch, July.
Cidaria fulvata, Forst.—Inch, Glenbeigh, June, July.
Euphyia corylata, Thnb.—Caragh, May and June, much lighter coloured than Perthshire specimens.
Dysstroma truncata, Hufn.—Valentia, June, 1928.
Calostigia pectinataria (*viridaria*, Fb.)—Abundant in June, e.g., Caragh, 1928.
Entephria caesiata, Schiff.—Glenbeigh, June, 1928.
Xanthorhoë montanata, Bork.—Generally distributed.
Epirrhoë galiata, Hb.—Darrynane, June, 1928.
E. alternata (*sociata*, Bork.)—Caragh.
Euphyia manyulata, Haw.—Inch, July, 1905.
Enlype hastata, L.—Abundant, Caragh, June, 1912, caterpillars on tips of bog myrtle at Sneem, September; on birch, Glenbeigh.
Mesolenca albicillata, L.—Inch, Caragh, Valentia, June and July.
Perizoma albulata, Schiff.—Valentia, Darrynane, June.
P. blandiata, Hb.—Abundant on the hill, "Devil's Elbow," Caragh, June, 1912 and 1928.
Euphyia bilineata, L.—Abundant, June-July.
Hydriomena coerulata, Fb. (*impluviata*, Hb.)—Valentia, June, 1928.
Eupithecia pulchellata, St.—Valentia, June, 1928.
E. succenturiata, L.—Inch, July.
E. venosata, Fb.—Valentia, June, abundant.
Orthonoma obstipata, Fb. (*fluviata*, Hb.)—Two specimens on Ivy, Oct., 1908, Blackwater.
Bapta bimaculata, Fb.—Abundant at Caragh, May and June, 1912.
B. temerata, Hb.—Caragh, June, 1912 and 1928.
Anagoga pulveraria, L.—Caragh and Glencar, June, 1912.
Selenia bilmaria, Esp.—Valentia, June, 1928.
Phalaena syringaria, L.—Caragh, July.
Gonodontis bidentata, Clerck.—Valentia, June, 1928.
Crocallis elinguaris, L.—Caragh.
Plagodis dolobraria, L.—Caragh, June, 1912.
Pseudopanthera macularia, L.—Abundant at Oulagh Lake, Caragh, June, 1912. The Caragh specimens are much deeper yellow than those taken at Rathdrum, Wicklow, 1925. Perhaps they are descended from an earlier and more ancient colonisation of Ireland.
Semiothisa notata, L.—Caragh, June, 1912. Also June, 1928.
S. liturata, Clerck.—Caragh, June, 1912.
Biston betularia, L.—Ballymac Elligott, July. I have not seen *carbonaria* (*doubledayaria*) in Ireland, though taking *betularia* in Cos. Kerry, Armagh, Down, and Antrim.

Boarmia rhomboidaria, Schiff. (*gemmaria*, Brahm.)—Valentia, Inch.

B. repandata, L.—Valentia, June, 1928.

B. consonaria, Hb.—Very local where it does occur. Robert's Island, Caragh, June, 1912; Glanleam Woods on left, Valentia, June, 1928.

Ectropis punctulata, Hb.—Abundant, Caragh, June, 1912.

Ematurga atomaria, L.—On all heaths in June..

Bupalus piniaria, L.—Abundant, Caragh, June, 1912.

Lithina chlorosata, Scop. (*petraria*, Hb.).—Abundant, Caragh, May and June, 1912. Valentia, June, 1928.

Chiasmia clathrata, L.—I took a specimen in the train while returning from a visit to Kerry, but cannot maintain it came on board in Kerry. Of course *clathrata* is locally abundant in many Irish counties, e.g., Antrim and Armagh.

ZYGAENIDAE.

Zygaena filipendulae, L.—Is abundant on sandhills, e.g., at Inch; also Valentia, June, 1928.

Procris statices, L.—Inch, July, 1905.

HEPIALIDAE.

Hepialus hectus, L.—Glencar, June, 1928.

PYRALIDES, ETC.

Eurrhypara urticata, L.—Inch, July, 1905.

Botys fuscalis, Schiff.—Darrynane, June, 1928.

Scopula lutealis, Hb.—Abundant everywhere, August.

S. ferrugalis, Schiff.—Abundant, Valentia, Kills, Darrynane, June, 1928.

Nomophila noctuella, Schiff.—I was interested to notice that Major Graves comments on the abundance of *noctuella* July, 1928. Apparently the June swarms which I met with continued undiminished into July. Kills to Darrynane, June, 1928. Killarney, September, 1904.

Scoparia dubitalis, Hb.—Valentia, June, 1928.

S. crataegella, Hb.—Glencar.

Schoenobius forficellus, Thnb.—I did not meet with it in Kerry, but used to take it abundantly in the drains, locally called "guts," running into Lough Neagh, west of Lurgan, Co. Armagh, in July, 1904 and 1905.

S. mucronellus, Schiff.—Inch, July.

Crambus pascuellus, L.—Abundant at Glencar, June, 1928.

C. perlellus, Scop.—Inch, July, 1905.

C. geniculens, Haw.—Sandhills at Darrynane, June, 1928.

Homoeosoma binaevella, Hb.—Inch, July.

Aphomia sociella, L.—Valentia, June, 1928. The Miss Delaps have unearched the nest of a bumble bee of sorts, and it was crowded with the cocoons of *sociella*. These kept emerging throughout the month of June.

TORTRICES.

The list of Tortrices is short since I have not had them verified.

Tortrix viridana, L.—Glencar, June, 1928.

Capua favillaceana, Hb.—Inch, July.

Sericoris micana, Haw.—Caragh, June.

Aspis udmanniana, L.—Inch and Valentia, June and July.

Cnephasia chrysanthemata, Dup.—Inch, July.

Mivodia schulziana, Fb.—Inch, July.

Laspeyresia aurana, Fb.—Inch, July.

Excluding the *Tineina* something about 600 species of lepidoptera have been recorded for Kerry. This list therefore, 166 or so, only amounts to about one quarter. Many exceedingly common insects are omitted, and a fair number are new records for Kerry. A resident Entomologist working the year through would no doubt enlarge the list immensely and in all probability make important discoveries. It was only during three visits that I have done any serious work. These took in, the end of May, June, and 10 days towards the end of July, while my last visit was rendered almost hopeless by incessant wet weather.

The specific names and the Geographical Variations of *Melitaea parthenoides*, Kef. (=parthenie, auct. nec Borkh.) and of *parthenie*, Borkh. (=aurelia, Nickerl).

By ROGER VERITY, M.D.

(Concluded from p. 189, vol. XLIII.)

We next come to the group of races, which fly on the southern watershed of the Alps. One of its peculiarities is that at low altitudes it produces a second generation at the end of August, often quite as abundant as the first of May or June. Taken as a whole, this group differs in a comparatively very distinct way from all those described above: the wings are, on an average, shorter and rounder at the apex; the fulvous is more even in tone and thus less variable both as regards the different parts of the wing surface and the various individuals; the black pattern is, on the contrary, less uniform and notably the central elbowed row of spots tends to form a broad band, across all the wing (never broadened at the back of the cell of the forewing into a triangular patch, as it is particularly in *nigroboscuro*), whereas the premarginal bands tend to be thinner. These features all contribute to give the races of this group a more *athalia*- and *parthenoides*-like aspect than one ever finds in the others, and some individuals may even be so very like these species as to make it quite difficult to separate them without the aid of the genitalia. My experience is that the fulvous colour of the palpi, which is considered the best distinctive feature of *parthenie*=*aurelia*, is not sufficiently sharpe and constant to be reliable in all difficult specimens. It must also be noted that there is a certain parallelism between these features of the southern Alpine watershed and those which distinguish the *athalia* of the same regions from the nominotypical one of Central Europe.

Race *mendrisiota*, Fruhst., l.c. The dry mountains of the Canton Tessin (typical from 600 m. on Mount Generoso, south of Lugano, and of June) produce the race with the thinnest black pattern known in the species: in the males the inner premarginal streak goes so far

as to be entirely obliterated in some individuals, so that they might easily be taken for *varia*, M.-D. ; the females are very similar to that form of *rhaetica*, which has a thin black pattern, because the fulvous can be, as in the latter, either replaced by light yellow or by reddish-brown, but on the other hand, they differ from it in that the two colours are never combined together ; the light-coloured females recall those of *parthenoides*, the darker-coloured those of *athalia* ; both are transitional between the appearance of *aurelia* and that of *luceria* from the Cogne valley ; *mendrisiota* differs more from *aurelia* than does *rhaetica* and what distinguishes it from *luceria* is the regularity of the rows of spots over both fore and hindwing.

Race *imitatrix*, nom. nov. : The race, which is broadspread in the Susa Valley, whence I have a large series of specimens from Oulx, 1100m., and others from Mount Musinè, 1000m., at the entrance of that valley and only a few miles from Turin, certainly cannot be called *luceria* as defined below. It is the one which *M. britomartis*, Assm. race *aureliaeformis*, Vrtý, from the Venaria park of the latter locality so exactly resembles that the genitalia are the only possible way of distinguishing them. The late Reverdin has dissected those of all my males from Mt. Musinè and several I sent him direct from Oulx, in hopes we might discover a new locality of *britomartis*, but the result was they all turned out to be the species we are dealing with here.

Allowing for the usual very great variability in every respect, race *imitatrix*, taken as a whole, can be described as being of small size, of a rich tone of fulvous and as having a rather heavy black pattern, comparatively with the other races of the southern Alpine water shed ; it thus is exactly the opposite of *luceria* by all three of these features and it resembles *britomartis* on this account, even the difference of thickness between the elbowed band and the two premarginal not usually being as accentuated as in the other races just mentioned. Only about 6% of both sexes can be considered transitional to *luceria* by their larger size, clearer and brighter fulvous and by the thinner and less uniform black pattern ; the females nearly invariably belong to the form which resembles the male most and only 5% point to the one characteristic of *rhaetica* by having a broad black suffusion over the basal half of the wings and the fulvous alternately reddish and yellowish, to the degree which is frequent in *poenina*.

Race *luceria*, Fruhst., *Archiv für Naturgesch.*, 1916, A., 2, p. 11 (1917) : The original description is anything but a happy one and the further comment in the *Archiv* of 1917 (publ. 1919), *l.c.*, only adds to its vagueness and confusion. Fruhstorfer at first only had six specimens, he had collected above the village of Cogne at 1650m. "They constitute," he says, "the most striking form of *aurelia* we are hitherto acquainted with from Europe ; their appearance is that of true children of the south, on account of the brightness of the yellow-brown spots and of their breadth, which is more than double. These specimens are so much more remarkable than 36 I have from Martigny, the Simplon and the Barmsee, in Upper Bavaria, that they are nearly exactly like Seitz's figure of *mongolica*, Stdgr. on pl. 66h." He adds that *luceria* is probably a transition to the "*aurelia*" recorded by Rocci from Turin, but we, of course, now know, these are *M. britomartis*, Assm.

on the strength of the genitalia. In 1919 he complicates matters by describing a "lowland form" of *luceria*, based on males collected in August in the Brianza (hill district of Lombardy) and on spring specimens from Salsomaggiore (province of Parma), which are said to be of a still brighter leather-yellow and with thinner black streaks than the Cogne examples. Turati informs me he has three specimens of the Soldo, near Alzate (Brianza), collected in May and June 1875. The Salsomaggiore example evidently must have belonged to the following race, which had already been named three years previously from a locality about 30 miles further east and likewise nearly in the plain, at the foot of the Apennines. Excluding, as it should be done, the latter lowland race, one can positively take it that the name of *luceria* must stand for a large Alpine one resembling Seitz's figure of *mongolica*, Stdgr. This sets it on a tolerably definite base.

Race *mussinae*, Costantini, *Atti Soc. Nat. Modena* (5) 3, p. 14 (1916) has been described from La Mussina, near Borzano (prov. of Reggio Emilia). It is said to be abundant there in June and it is described very unsatisfactorily as follows; "a little larger; wings slightly rounded; upperside of wings more fulvous; underside wholly yellow; black pattern, whitish bands, premarginal lunules, ex., different." Some photographic plates the author has sent me show that he compared his specimens with a few from Vienna and fortunately I have also obtained some of his cotypes of both sexes collected on June 11th and a female of June 15th from Mount Gibbio 400m., a few miles further east, near Modena. All doubts are thus removed as to *mussinae* belonging to this species, except for a remote possibility that they should be *britomartis*; this will have to be decided by the dissection of the genitalia, but it compares so much better with the second generation of the race of the Carso and to some specimens of Oulx than to *aureliaeformis*, Vrtý, of Turin, that I feel quite sure this is not the case. As a matter of fact it only differs from the second generation of the Carso by its larger size (not equal, however, to that of the first one) and by the black pattern being thicker than in the darkest specimens of the latter; on the other hand it is far from being as dark as many *imitatrix* of Oulx, so that the general aspect of the race can be described as intermediate between the two. It seems very likely that a second generation will be found to exist in Emilia, as it does in Brianza, according to Fruhstorfer, and on the Carso.

Race ***carsicola***, nom. nov., and II gen. ***postcarsicola***, nom. nov.: One is rather surprised at the fact that this species thrives on the dry tableland of the Carso, at about 300m. above Trieste. The first generation flies at the end of May and I have myself collected the second emerging abundantly in late August on the slopes, facing northward, near Opcina. The spring generation attains a larger size than I have seen in any other race, some males having forewings of 18mm. in length, whereas the late summer generation produces some extremely minute individuals of only 14mm. The usual size is 17mm. in the first and 16mm. in the second, and, trifling as this difference may seem, it corresponds to quite a marked one in the aspect of the whole insect. A feature which strikes one in both generations is the far lesser

variability than in other races. The shape of the wings is quite the rounded, *athalia*-like one, of the southern watershed of the Alps. So is the very uniform and even tone of the fulvous, which is rather clear, but decidedly dull; it is lighter and a little brighter in the second generation. So is also the pattern: the central elbowed band is broader, the outer ones narrower, but they are all of the same even breadth across the whole wings and the premarginal ones are very straight and regular; in a few exceptional individuals the inner one is partly or nearly entirely obliterated, but these specimens then stand out amongst the rest, for there is no tendency to vary in this direction, as there is in the very variable *mendrisiota*. The few individuals which occur in both sexes with an extremely thin pattern are also of a very light yellow-fulvous and give one the impression of being aberrations due to the excessive drought. As a rule the females belong to the form most similar to the male, as it is the case in all the driest localities of the species, and thus contribute to increase the uniform aspect of the race as a whole. The darker forms of the species never occur in either sex, as they do further east, in Austria. The second generation, besides being considerably smaller than the first, also exhibited on an average, a thinner black pattern and a lesser and lighter coloured basal suffusion, accompanied by a paler tone of fulvous, so that on the whole there is quite a notable difference. Stauder figures three specimens from this region in the *Zeit. wissenschaft. Insektenbiolog.*, 1922, p. 83, but in the text the figures referring to them are mistaken: fig. 12 represents the very small size to which the second generation is often reduced, 13 is quite an abnormal form, with the pattern partly obliterated, 14 is an unusually small female of the first generation, but it shows the thin and even black pattern reduced to the utmost extent; I have found one of the same sort, but smaller, in the second generation.

Newly-described Forms of British Species of Lepidoptera.

Euchlœ cardamines ab. *subflavopicta*, Mezger.—“The underside of the forewings have a yellow spot, between the discoidal and the outer margin, of variable shape in different examples.” *Lamb.* XXXI. 115 (1931).

Mimas tiliae ab. *vitrina*, Gehlen.—“With a round transparent spot on both hindwings symmetrically placed.” *Ent. Zt.* XXXV. 204 (1931).

Melitaea aurinia ab. *tetramelana*, Cabeau.—“The yellow basal portion of the hindwings has four large black spots instead of the typical pale yellow spots.” *Lamb.* XXXI. p. 174 (1931).

Mimas tiliae ab. *griseothoracea*, Cabeau.—“The thorax is entirely whitish grey.” *Lamb.* XXXI. p. 174 (1931).

Melanargia galathea ab. *nigerrima*, Kautz.—“Upperside almost markingless black, with normal white fringes chequered at ends of the veins with black. The forewings with a somewhat grey-whitish suffusion; above the middle of the inner margin in cells 1b and 2 there stands a spot divided by the black vein 2; in cell 2 there is also a small spot seen. The hindwings whitish on the inner-margin, the white of the disc of zigzag shape; bestrewn thickly with fine grey scaling.” *Zeit. Oestr. Ent. Ver.* XVI. 86, pl. IV. (1931).

CURRENT NOTES AND SHORT NOTICES.

A meeting of the Entomological Club was held at "Durandesthorpe," 19, Hazlewell Road, Putney, on December 17th, 1931, Mr. H. Donisthorpe in the Chair. Members present in addition to the Chairman:—Messrs. Robert Adkin, H. Willoughby Ellis, Jas. E. Collin, W. J. Kaye, Dr. Harry Eltringham. Visitors present:—Sir T. Hudson Beare, E. C. Bedwell, K. G. Blair, Capt. A. F. Hemming, Dr. Karl Jordan, G. C. Leman, Martin E. Moseley, Wm. G. Nelson, Capt. N. D. Riley, and W. H. T. Tams. The meeting was called for 6.30 p.m. On arrival the members and guests were received by Mr. and Mrs. Donisthorpe, when light refreshments were dispensed in the Drawing-Room. The Chairman's collections were on view, and he specially exhibited two living ant colonies and his collection of British Coleoptera. The Windsor Pilot Files compiled by the Chairman, recording a very large number of interesting insects, which during many years he has collected at Windsor Forest, created much interest. Supper was served at 8 o'clock, and the very enjoyable meeting was continued to a late hour.—H.W.-E.

The *Can. Ent.* for October contains an interesting article "The Reactions of Some Insects to Rain." Observations were made on the action of bees and butterflies on the advent of sudden and violent storms and these were compared with the reactions caused by artificial similar showers from a hose and sprinkler. In spite of the absence of the darkening of a heavy cloud in the latter case the insects responded in the same way and hastened to shelter at once. The reaction is distinctly different from the sudden flight which takes place if the insects recognise the movement of one's own person.

In the *Ent. Rund.* for November, Herr H. Beuret discusses the biology and systematic position, etc., of *Plebeius ismenias* under a generic name *Lycaenides*. We have seen this species put under the generic name *Lycaeides*. The Plebeiid seems to be unfortunate in the hands of the nomenclator both specifically and generically.

Two further parts of the *Catalogue of Indian Insects* have recently appeared. Pt. 21, The *Lycidae* (Col.) by R. Kleine and Pt. 22, *Phaloniidae* and *Chlidanotidae* (Lep.) by T. Bainbrigg Fletcher the Imperial Entomologist.

Parts 28 and 29 of the *Supplement to Seitz Fauna Palaearctica* are to hand. Pt. 29 contains additions to *Rumicia phlaeas*, *Aricia astrarche* (*medon*), *Polyommatus icarus*, *P. coridon* and *Pamphila palaemon*, etc., and a large portion of the Index to the Rhopalocera. Pt. 29 is a continuation of the volume of additions to the Bombyces some fifteen of which are of British species. The correction of *lubricipeda* to *lutea* is made but the necessary corollary, the correction of *menthastri* to *lubricipeda*, has not been made. Of *Lithostia pygmaeola* M. Drauat suggests that it is a genuine species although in the main volume it was classified under *pallifrons*. This last was definitely proved by Messrs. Kettlewell and Tams in our January number. There is a long discussion of the various forms of *Coscinia cribraria* and also of *Parasemia plantaginis*. *Phragmatobia fuliginosa* has a long paragraph devoted to it. Among the other British species dealt with are *Miltochrista miniata*, *Philea irvorella*, *Oeonistis quadra*, *Utetheisa pulchella* and *Lithostia caniola*. There is a coloured plate of 67 figures very well portrayed.

There is an excellent portrait of Auguste Forel the great student of Ants in the November *Mitt. Deutsch. Ent. Gesell.*

On the evidence of reports in most of the continental journal there have been captures and observation of *Phryxus (Celerio) livornica* in many places throughout Europe. In *Lamb.* for November last there is an interesting and useful summary of the distribution, occurrence and life-history of this species. The plate in this number contains figures of 4 forms of *Aglais urticae*, viz., ab. *leodiensis*, ab. *nigricaria*, ab. *victori* (melanic), and an albinistic form.

We have received a copy of a new journal, *Stylops*, promoted by the Entomological Society of London, to be issued monthly. It is "primarily designed to meet the demand for the prompt publication of short (and purely) taxonomic papers" we are told, and preference will be given to "short" communications of that description. We trust that our three current British entomological journals will not be adversely affected by this new periodical. The late founder and editor of the *Ent. Record* decided to publish on the 15th of the month in order to facilitate the "more prompt publication of new entomological matter," since the two other magazines came out on the 1st. Thus our present current magazines give opportunity for prompt publication twice a month. By far the greater number of both British and continental students of the palaeartic fauna will either be ignorant of this journal or unwilling to subscribe 24s. to a journal of which the bulk of the contents will be of no interest to them. We trust that all palaeartic taxonomic matter will be excluded. And specifically we protest against the inclusion of the description of a new palaeartic Lycaenid in the present issue. We believe that nearly all the contents will be exotic matter and in that way the journal will doubtless be very acceptable to all centres of economic entomological activity. But all short palaeartic taxonomic matters would have much greater dissemination if sent to either the *Entomologist*, the *Entomologist's Monthly Magazine* or the *Entomologist's Record*. Needless to say the journal is well produced, as one would expect under the auspices of the Entomological Society of London with its able Secretary, Dr. S. A. Neave, who acts as editor.

The annual portly volume from Portici has recently come to hand, *Boll. Lab. Zool. Gen. e Agraria*, the XXIVth of its issue, consisting of some 340 pp. 150 figures and 4 plates. It is astonishing what a wonderful run of interesting and useful memoirs are issued from this institution year by year. The subjects of these deal with Isopods, Pseudoscorpions, *Psyllidae*, *Chermidae*, Tinea, the Honey-bee, Coccids, Coleoptera, Ants, *Chalcididae*, Thysanura, etc. The whole of the papers are well illustrated, most of the "figures" being composite ones. To lepidopterists the history of *Ptychopoda herbariata* will be very interesting and is illustrated by no less than 73 diagrammatic figures. The matter is dealt with under the following headings:—Systematic position and nomenclature: adult (head, thorax, abdomen): ova: larva (head, thorax, abdomen) at hatching: ditto at maturity: pupa: description of life and habits (date of appearance, copulation, oviposition, number of ova, etc.): plants attacked by larva: economic considerations: bibliography. A very thorough and comprehensive study. Four of the 21 memoirs are contributed by Signor Sylvestri, five by Signor Boselli, the memoir on ants is by W. M. Wheeler.

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EXCHANGES.

Subscribers may have Lists of Duplicates and Desiderata inserted free of charge. They should be sent to **Mr. Hy. J. TURNER**, "Latemar," West Drive, Cheam.

Duplicates.—*S. Andrenaeformis*, Bred 1928, well set on black pins, with data.

Desiderata.—Very numerous British Macro Lepidoptera.—*J. W. Woolhouse*, Hill House, Frances Street, Chesham, Bucks.

Desiderata.—Species of Dolerine and Nematine sawflies not in my collection; list sent.—*R. C. L. Perkins*, 4, Thurlestone Road, Newton Abbot.

Duplicates.—*Albimacula**, *sparganii**.

Desiderata.—Ova of *D. oo. pupae* of *X. gilvago*, *D. caesia*. *A. J. Wightman*, "Aurago," Bromfields, Pulborough, Sussex.

EXCHANGES.—Living Eggs of *Catocala fraxini* and *sponsa*, exchange for butterflies of British Isles.—*C. Zacher* Erfurt, Weimar, Street 13, Germany.

Duplicates.—*Pyralina**, *Salicis*, *Ianthina**, *Orbicularia**, *Repandata* in variety, *Doubledayaria*, *Black rhomboidaria**, *Black virgularia** and others.

Desiderata.—*Hyale*, *Welsh aurinia*, *Polychloros*, *Tiphon Agathina*, *Lunigera*, *Lucernea*, *Neglecta*, *Diffinis*, *Populeti*, *Gothica v. gothicina*, *White Leporina*, *Tridens Putrescens*, *Littoralis*, *Typhae v. fraterna*, *Rurea v. Combusta*, *Gilvago*, *Fulvago v. flavescens*, *Liturata v. nigrofulvata*. *Harold B. Williams*, Woodcote, 36, Manorgate Road, Kingston Surrey.

Duplicates.—*Ocellatus** 5, *Hastata* 1, *Cambricaria* 3, *Blandina* 12, *Protea** (melanic) 2, *Camelina** 2, *Dromedarius** 1, well set on black pins with data.

Desiderata.—*Betulae*, *Trepida*, *Diluta*, *Or* and *Myricae*. *Geo. Nicholson*, 24, Nun's Moor Crescent, Newcastle-on-Tyne.

Duplicates.—A large number of species of European and Palaearctic *Rhopalocera* and *Heterocera*.

Desiderata.—All British species especially those illustrating characteristics of an island fauna. *Dr. Lor. Kolb*, München 54, Dachauer-str. 409, Germany, and *Franz Daniel*, München, Bayer-str. 77, Germany.

MEETINGS OF SOCIETIES.

Entomological Society of London.—41, Queen's Gate, South Kensington, S.W. 7. 8 p.m. March 2nd, 16th.

The South London Entomological and Natural History Society, Hibernia Chambers, London Bridge. Second and Fourth Thursdays in the month, at 7 p.m. February 25th, March 10th, 24th.—*Hon. Secretary*, Stanley Edwards, Avenue Homse, The Avenue, Blackheath, S.E.3.

The London Natural History Society.—Meetings first four Tuesdays in the month at 6.30 p.m. at the London School of Hygiene and Tropical Medicine, Keppel Street, Gower Street, W.C.1. Visitors admitted by ticket which may be obtained through Members, or from the *Hon. Sec. A. B. Hornblower*, 91, Queen's Road, Buckhurst Hill, Essex.

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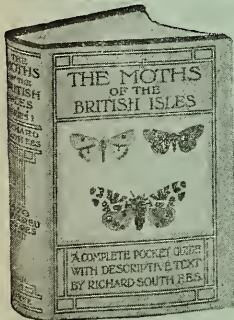
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“Catalogue des Insectes Coléoptères de la Forêt de Fontainebleau avec indication des espèces nuisibles aux arbres.” Colonel F. Guardet.

Assn. Nat. Vallée du Loing. Moret-sur-Loing. 1930. pp. 1-227.

This very interesting work dealing with the Coleopterous Fauna of the Forest of Fontainebleau is much more than a mere list and, as will be seen later, it also gives a variety of other valuable information.

One may conveniently quote here from a letter written to me by my friend Colonel J. Sainte Claire-Deville (a friend of Colonel Guardet) some years ago:—

“We have in the vicinity of Paris two old, well preserved, forests with ‘réserves artistiques,’ the forêt de Fontainebleau and the forêt de Compiègne. It is very striking that the fauna of the ancient British woods is much more analogous with that of Fontainebleau. The Compiègne forest, which was an extreme patch of the primitive ‘Arduena silva’ of Julius Caesar, has retained many elements of Eastern origin, which do not occur in Fontainebleau. The relictæ of our semi-primitive woods on both sides of the Channel, are gradually vanishing, and it is high time that a good list should be published of them.” 9.xi.26.

In this review I propose to compare the Coleoptera of Windsor Forest (of which I have the materials to hand, right up to date, ready for publication) with that of Fontainebleau.

In the preface the author points out how the fauna is inclined to change more or less rapidly by the disappearance of very old trees; the effect of forest fires; the changes in the flora and vegetation: the replacing of oaks, etc. with other trees, especially pines; etc., etc.

He explains that the work is based on the numerous insects which he captured in the forest and town during two sojourns at Fontainebleau, from the end of December 1900 to April 1909, and October 1911 to December 1912. It is evident from two supplementary lists to the Catalogue that he has collected in this district from time to time since those dates. He has also obtained further information from the works, and collecting, of L. Bedel, J. Sainte-Claire Deville, H. du Buysson, Max Bernhauer, A. Dubois, F. Duchaine, etc.; and from captures recorded in the *Annales et le Bulletin de la Société entomologique de France*.

He justly points out that to make a work of this sort as complete as possible one must:

1. Live in the region for a number of years, 15 to 20, on account of the variations in the number of individuals of the same species from one year to another, and more generally during a period of many years.

2. Be able to give up one's whole time to entomology. It is also necessary not to neglect the commonest species. The number of species listed in the main body of the catalogue is 2558 of which a large number appear to be very rare, but with a printed supplementary list of 89, dated December 15th, 1930, and a manuscript list of 67, dated September 30th, 1931, the grand total is 2714. The order and the names used are those of Reitter's catalogue dated 1906.

All his own captures are indicated by the number of the month or months of capture being given immediately after the name of the species, and the circumstances of the capture.

The species harmful to trees are signified in a special manner, and are classed in two grand categories.

1st Category.—Insects which attack healthy trees in full vigour, and in consequence are especially harmful. Their species are not numerous, and belong especially to the families *Cerambycidae*, *Curculionidae*, and *Ipidae*. These species are preceded by two asterisks (**).

2nd Category.—Insects which either attack unhealthy trees in the parts where the sap no longer circulates, or quite dead trees, either blown down by the wind, or cut down by the foresters. Their species are a little more numerous than those of the first category. Most of them attack trees which still retain their sap, the state in which one finds trees recently cut down. Their larvae then live either under the bark, or in the thickness of the same, or in the interior of the tree. A certain number only attack quite dry trees, in the interior of which their larvae excavate their galleries. In reality all these species are not really harmful except that they depreciate the marketable value of the trees by boring their galleries in the inner part of them. They do not cause damage to healthy trees. Nearly all of them have almost disappeared from forests which are regularly exploited, or are very rare there. Most of those which attack dry trees are found again in timber yards or houses.

Those species of which the larvae penetrate to the interior of the tree either during their life, or to construct their cells, are marked with a single asterisk (*).

Those species of which the larvae live between the bark and the wood, or in the interior of the bark itself, but do not penetrate into the wood itself are marked with a broad stop (•). These species are not harmful properly speaking because they do not depreciate the marketable value of the tree. Nevertheless their workings render easy the introduction of damp under the bark, thus permitting the development of fungi, and by this means the rapid decomposition of the wood. He places in this last group a certain number of species of which the larvae live in the little branches, and slender dead twigs, of different trees, as well as the greater part of those which attack the leaves of healthy trees, and of which the damage is almost nil.

The greater part of the species of which the larvae live under the bark or in the interior of trees recently dead multiply in an extraordinary manner as a consequence of forest fires. This is particularly remarkable with those which belong the family *Ipidae*.

There is occasion to remark that the insects of the first category never attack dead trees, and those of the second category always respect healthy and vigorous trees. The only exception is for certain species in the family *Ipidae*, which having multiplied in an extraordinary manner on account of forest fires as has already been pointed out, become harmful to healthy trees on account of the great invasion of these insects.

He marks species observed by himself with—CC=very common; C=common; AC=fairly common; R=rare; and RR=very rare.

Two lists also are given at the end of the Catalogue—the one refers to species that have been recorded in error, or whose existence in the forest requires verification; the other to species recorded in the

Annales de la Société Entomologique de France (Bulletins), of which the identity requires to be verified.

I now propose to compare the Coleopterous fauna of Windsor Forest with that of the Forest of Fontainebleau. The number of species listed by me for the former locality was on December 31st, 1931,—1602 (on December 31st, 1922, the then known list was—147) a considerably lower figure than that of the latter, but it must be remembered that beetles in France are vastly more numerous in species than in England. Also very local species, or those confined to a single locality in England are widely distributed in France—one may mention such very local British beetles as *Cicindela germanica*, L., *Oberea oculata*, L., and *Chrysomela cerealis*, L., which all occur at Fontainebleau, and there are many others such. Some 1035 species occur in, or have been recorded from, both localities. It will thus be seen that nearly 600 species found at Windsor have not yet been recorded for Fontainebleau, though nearly all the Windsor specialities occur there.

A certain number of species have been recorded for both localities which do not occur now, or at any rate have not been refound at Windsor. The following is a list of such species:—*Teretrinus picipes*, F., *Tillus unifasciatus*, F., *Triplax rufipes*, F. †, *Hyperaspis reppensis*, Hbst., *Adelocera quercea*, Hbst. †, *Selatosomus cruciatus*, L. †, *Melanotus punctolineatus*, Pel., *Elater cinuabarinus*, Esch., *Phaenops cyæna*, F. †, *Ptinus lichenum*, Marsh., *Caenocara bovistæ*, Hoff., *Seraptia dubia*, Ol., *Marolia variegata*, Bosc. †, *Spondylis buprestoides*, L. †, *Leptura revestita*, L., *Donacia dentata*, Hoff., *Chrysomela limbata*, F. †, *U. lurida*, L. †, *Gymnetron rostellum*, Hbst., *Aphodius 4-maculatus*, L.

Those species marked with a dagger (†) are no longer included in the British list; nevertheless it is very probable that some of them at least were to be found formerly in Windsor Forest. To take two examples:—

Selatosomus cruciatus, L. Stephens [*Mand.* 3 267 (1830)] records that it was taken near Windsor by the late W. Griesbach, Esq., of whose capturing four or five examples are in the British Museum. There are five specimens (no doubt those referred to by Stephens) in the drawer of doubtful British species in the British collection of Coleoptera in the British Museum.

Spondylis buprestoides, F. Stephens [*Mand.* 4 226 (1831)] records that it was taken in Windsor Forest in August, 1831 by the Rev. F. W. Hope. There are two specimens in the Hope-Westwood British Collection of Coleoptera in the Oxford University Museum. One is labelled "Coll. Hope," and the other "Windsor Forest, F.W.H."

The following is a list of the Windsor specialities which also occur at Fontainebleau:—

Euryusa optabilis, Heer, *E. sinuata*, Er. §, *Tachysida gracilis*, Er. §, *Bolitochara reyi*, Shp. §, *Euplectus nitidus*, Fair. §, *E. afer*, Reitt., v. *infirmus*, Raffr. §, *Batrisodes delaportei*, Aubé. §, *B. aduenus*, Hampe. §, *Gnathonus byssonii*, Auz. §, *Abraeus granulum*, Er., *Rhizophagus oblongicollis*, Blatch, *Teredus cylindricus*, Ol., *Cis coluber*, Ab., *Ludius ferruginens*, L., *Megapenthes lugens*, Redt., *Procrærus tibialis*, Lac., *Elater nigerrimus*, Lac., §, *Ischnodes sanguinicollis*, Pz., *Euenemis capucina*, Ahr., *Agriilus sinuatus*, Ol., *Lymexylon navale*, L., *Dorcatoma dresdensis*, Hbst., *D. serra*, Pz., *Dryophthorus corticalis*, Pk. §, *Rhyncolus truncorum*, Germ.

Those species marked with a section (§) have only been found in Windsor Forest in Britain.

It is very remarkable that *Gnorimus variabilis*, L., which occurs rather freely in suitable old oaks in Windsor Forest, should not be recorded from the Forest of Fontainebleau.

It may be as well to mention the species which are attracted to burnt areas after forest fires, though not all of them have been recorded from both localities.

WINDSOR.

Pterostichus angustatus, Duft.
Agonum 4-punctatum, De G.
Micropeplus tessera, Curt.
¹*Cryptophagus ruficornis*, Steph.
²*Melanophila acuminata*, De G.
Ernobius mollis, L.
E. mulsantianus, Sharp.
E. oblitus, Sharp.
Cricephalus poloricus, Mots.
Salpingus ater, Pk.
Pityophthorus vamulorum, Perr.
 (pubescens, Marsh.)
Pityogeres bidentatus, Hbst.

FONTAINEBLEAU.

Pterostichus angustatus, Duft.
Agonum 4-punctatum, De G.
Melanophila acuminata, De G.
Ernobius mollis, L.
Cricephalus poloricus, Mots.
Pityophthorus ramulorum, Perr.
Pityogene bidentatus, Hbst.

Of course many other species appear to be attracted to, or to become more abundant in burnt areas, but those of the above list are usually present.

Our final list consists of those species which are found in both localities and which Guardet has marked as being harmful. The signs are used which he employed to classify such species:—

Melasis buprestoides*, L., *Agriotes lineatus*, L., **Lyctus linearis*, Gvez. (*caualienlatus*, F.), **Xestobium rufovillosum*, De G. (*tessellatum*, F.), ■ *Enorbius mollis*, L., **Anobium striatum*, Ol. (*domesticum*, Fourc.), **Ptilinus pectinicornis*, L., **Prionus coriarius*, L., **Leptura scutellata*, F., **Crioccephalus polonicus*, Mots., **Asemum striatum*, L., **Tetropium fuscum*, F., **Phynatodes testaceus*, L. (*Callidium variabile*, L.), ■ *P. alni*, L., **Liopus nebulosus*, L., ***Saperda populnea*, L., ***Melasoma populi*, L., ■ *Phyllobius pyri*, L., ■ *Polydrusus cervinus*, L., ***Strophosomus melanogrammus*, Forst. (*coryli*, F.), *S. capitatus*, De G., ***Hylobius abietis*, L., ***Pissodes notatus*, F., ■ *Orchestes quercus*, L., ***O. fagi*, L., ■ *Rhynchites betulae*, L., ■ *Attelabus nitens*, Scop. (*circulionoides*, L., ***Eccopogaster scolytus*, F. (*Scolytus destructor*, Ol.), ■ *E. intricatus*, Ratz., ■ *E. rugulosus*, Ratz., ■ *E. multistriatus*, Marsh., ***Hylesinus fraxini*, Pz., ***Myelophilus piniperda*, L., ***Hylastes ater*, Pk., ***H. attenuatus*, Hbst., ***H. opacus*, Er., ■ *H. palliatus*, Gyll., ■ *Cryphalus fagi*, F., *Pityogenes bidentatus*, Hbst., ***Ips laricis*, F. (*Tomicus laricis*, F.), ■ *Dryocoetes villosus*, F., **Xyleborus saevuseni*, Ratz., **X. dryograppus*, Ratz., **X. dispar*, F., **Platypus cylindrus*, F., ***Melolontha melolontha*, L. (*Melolontha vulgaris*, F.).—H. DONISTHORPE.

¹ In the Fungus *Daldinia concentrica* on young burnt birch trees.

² The "fire-beetle."

A Review of Mr. E. Rivenhall Goffe's paper on Tabanidae (Trans. Ent. Soc. S. of England 1930.)

By J. E. COLLIN, F.E.S.

There can be no Collector of any Order of Insects who has not experienced during summer excursions unpleasant attentions from the blood-thirsty *Tabanidae*; few are interested beyond the immediate destruction of such pests, but my friend Goffe for the last two or three years has apparently never been really happy except when surrounded by swarms of these insects, and would travel many miles to any locality where *Tabanidae* were known to be particularly venomous in their attacks in order to secure specimens. The interesting and instructive pamphlet which he has published in the Transactions of the Entomological Society of Hampshire and the South of England is proof that his energies and self-sacrifice in the cause of Science has not been in vain.

About 70 pages are devoted to tables and short descriptions of all the British species while there are two plates illustrating details of some of the structural and other differences. Twenty seven species are listed as British while Verrall in Vol. V. of "*British Flies*" described only twenty five, but one of Verrall's species *Tabanus glaucus* was certainly partly described from the species correctly recorded by Goffe as *T. miki*, Brauer. The two additional species included by Goffe are *Therioptectes borealis*, Mg., and *Atylotus plebejus*, Fln. *Th. borealis* is reinstated as British on the strength of two specimens:—the male upon which Austen introduced the species as British in 1906 (British blood-sucking Flies), and a female without date or locality in the old Entomological Club Collection now in the Hope Department at Oxford. The male can quite definitely be ruled out as being only *Th. montanus* as indeed it was considered to be by Verrall. Austen working with Brauer's Monograph quite correctly ran this male down to *borealis* (Mg.) Brauer, but Villeneuve (*Wien. Ent. Zeit.* 1910) has proved from an examination of Brauer's specimens that the male of Brauer's *borealis* was *montanus*. With regard to the female, there must have been some "lapsus" on the part of Goffe. I have examined the specimen referred to and it is only an ordinary *Th. bisignatus*; *Th. borealis* therefore still remains to be discovered in this country and has no right to remain in our "List." *Atylotus plebejus* is recorded on the strength of two specimens in the British Museum taken by Mr. H. Womersley in Cheshire in 1911.

This paper of Goffe's is a remarkably good one when the fact that the author has only recently taken up the study of the Diptera is taken into consideration, but one feels that it could have been much improved if the author had delayed publication for another twelve months and spent the time in special investigations on a few of the more difficult species. There are also two outstanding faults, one being the acceptance without enquiry of the generic names* contained in Meigen's *Nouvelle Classification* of 1800 and the consequent use of *Chrysozona* in place of *Haematopota*; the other is the practice of giving names to "forms" of a species. These "forms" are all dealt with

* For the present position in regard to the status of these names see the note by F. W. Edwards in the January number of *Ent. Mo. Mag.* and *Entomologist*.

under the heading "variation" and the author makes no distinction between a generally distributed variety or aberration such as those occurring in the genus *Chrysops* and restricted to one sex only (the female), and a possible local race such as his *sudeticus meridionalis*. No doubt it is hoped that an easy reference to different "forms" may lead to a better knowledge of their distribution and biological significance, but the value in this respect is no compensation for the immense burden placed upon nomenclature. One can only hope that the author's action will hasten the day when it will be universally accepted that such names are outside the pale of the "Law of priority" and can consequently be ignored by taxonomists. Apart from these faults the work is one which should not only stimulate present workers in this family but add to their numbers.

Those who intend to help in the study of this interesting family may be glad to note one or two observations and additions to Goffe's work which I am in a position to make, often largely due to the examination of material collected by Goffe himself, or to the re-examination of my own material in the light of that author's work with the idea of confirming or confuting some of his conclusions.

Tabanus bovinus group.

The common New Forest large *Tabanus* has so long been considered to be *bovinus* that it comes as a shock to find that though true *bovinus* does occur in the Forest it appears to be a rare species. Goffe and Verrall both realized this in regard to the male, but both failed to distinguish correctly the female. In fact I am not certain that Goffe at present possesses a female while the great majority of Verrall's females were not *bovinus*. This is not the place to go into details of the characters distinguishing the true female of *bovinus* but one should on no account fail to catch and pin any of these larger New Forest Tabanids having green, or coppery-green, instead of coppery-brown, eyes. The more common New Forest large *Tabanus* will probably prove to be identical with *sudeticus* var. *perplexus*, Verrall, which I am convinced must rank as a species.

In trying to separate his "forms" of *sudeticus* ♀ Goffe places too much faith in small differences in the shape of the shining frontal callus, this is a character which is particularly liable to suffer from abrasion, an injury which may increase with the age of the specimen and is almost unavoidably inflicted to a greater or less extent when specimens are caught. One has only to compare Goffe's figure of the frontal callus of his supposed female *bovinus* with that of his *perplexus*, to see that the differences are only such as might easily be due to abrasion.

Theriopectes tropicus, L.

There has been much confusion in the use of this name. Brauer, according to specimens sent to him by Verrall and returned as *tropicus*, certainly included at least two species under this name, for the "Worcester" specimen is quite distinct from all the others. Verrall noted the differences of this specimen but, though Brauer had returned it as typical *tropicus*, treated it as an extreme pale form of *tropicus*, and used the name *tropicus* for what I should call *bisignatus*; he

probably did this because Brauer had also returned some similar *bisignatus* forms as typical *tropicus*. Having used the name *tropicus* for this form, Verrall (perhaps influenced further by Brauer's statement that he considered *bisignatus* to be a melanochroitic form of *tropicus*) used the name *bisignatus* for the darkest form with "the reddish colouring sometimes quite absent" from female abdomen. Goffe naturally follows Verrall with the exception that he begins to be suspicious of the *tropicus tropicus* of Verrall and would place males which Verrall considered to belong to that form as males of *bisignatus*, and in doing so is probably correct. The few females which Goffe refers to *tropicus tropicus* are, like Verrall's, almost certainly only a form of *bisignatus* with the pale markings at sides of segments 1 and 2 more extensive.

True *tropicus* must be a species with the sides of the first three abdominal segments yellowish in the female, and if it occurs in this country is represented by the "Worcester" specimen mentioned above. An examination of the so-called form of *tropicus* mentioned by Verrall in the Addenda to *British Flies*, Vol. V., as taken by Col. Yerbury at Crymlyn Bog in 1908, reveals the fact that they are specifically identical with the Worcester specimen, and the same species also occurs in the Norfolk Broads district. The separation of this species (which I feel bound for the present to call *tropicus*) from *bisignatus* and the raising of *T. perplexus* to the rank of a species adds two additional species to the British List, making 28 in all.

Theriopectes solstitialis, Mg.

I feel certain that Goffe has mixed up two species under this name. I have not seen Andrews' Sutton Broad specimens but the species I have taken in the Norfolk Broads is the British *tropicus* (v. above) and quite distinct from the species occurring in Chippenham Fen, and at Lyndhurst and other parts of the New Forest, mentioned by Goffe, these latter being probably the true *solstitialis* of Meigen. My specimens of the Norfolk Broads species (*tropicus*) occurred early in August in company with *distinguendus* but were at the time easily recognised as distinct.

It may be gathered from the above remarks that there is still plenty of useful work to be done in collecting *Tabanidae*, while a study of Goffe's paper will show that there is an immense field of research awaiting those who will take up the study of variation, especially in such species as *Tabanus sudeticus* and *perplexus* and *Theriopectes distinguendus* and *wontanus*.

No one, I am sure, will be more pleased than my friend E. Rivenhall Goffe if the publication of his paper gives the necessary impetus to the collecting and study of this interesting family—which includes some of the largest of the British Diptera—with the consequent clearing up of outstanding problems, and the acquisition of a sound knowledge of the species inhabiting these islands. He will, I know, willingly offer information and advice to anyone interested who cares to enter into correspondence with him, and I would conclude by asking all students of Diptera to give him every possible help.

Nomenclature.

We have been asked what is the justification for the very modern introduction of the generic name *Lycaeides* in place of the original generic name *Plebeius* of Linneus. We can find none except a matter of ignore-ance, i.e., ignoring the work of Linneus. The query has caused us to look up what Tutt and his band of skilled helpers said in *British Lepidoptera*. Tutt based his nomenclatorial conclusions upon every scrap of information and fact, for which he gave ample references.

Turning to the chapter on Tribe: *Plebeiidi* in *British Lepidoptera* Vol. X.=*British Butterflies*, Vol. III. p. 150 and seq. p. 160 (1908) we find every point dealt with. Of course one must bear in mind that the terms "family," "tribe," "genus," etc., used by Linneus and other early authors did not indicate the same degree of classification as in modern usage.

A modern writer has said that true facts cannot be repeated too often so that must be our excuse for reprinting here much of the fact and argument given in the above, merely stating that we have verified all the references except Kluk.

Ex *Brit. Lep.* p. 160. "Scudder announces and states (*Hist. Sketch*, pp. 93, 252, 1875) that *Plebeius* was not used by Linneus in a generic sense, and that he only used the name in the plural form."*

After giving (*Sys. Nat.* Xth ed. p. 482) the name *Plebeii* to the whole of the "hairstreaks," "blues," "coppers" and "skippers," and subdividing them into (1) *Plebeii rurales* (p. 482) and (2) *Plebeii urbicolae* (p. 484), Linneus prefaced his description of every species of these groups with the letters, "P.P." writing in full at the top of each page the names thus contracted "PAPILIO PLEBEIUS." Each species therefore had the singular form applied thereto, e.g., "*P.P. betulae*," "*P.P. argus*," etc., so that *Plebeius* was here used quite in the modern generic sense of the division next above the species. Tutt then refers to Müller, *Fn. Ins. Frid.* p. 37, (1764), to Linné *Sys. Nat.* XIIth ed., p. 787 (1767), where *Plebeius* was used in exactly the same sense. Tutt further says "Considering, as we do, that the basis of binomial nomenclature—species and genus—involves the necessity of treating the group directly above the species as a genus, we consider this use of *Plebeius* as essentially generic in the modern sense." Tutt then cites (teste Prout) Kluk, *Zwierzt. Hist. Nat.* IV. p. 81 (1780) in which the author "After briefly describing the butterflies in general, says that they be grouped in five genera, the last of which is

Genus V, PLEBEIUS divided into

RURALES—*Plebeius cupido*, etc.

URBICOLAE—*Plebeius comma*, etc.

which is exactly what Linné did in his *Sys. Nat.* Xth ed. pp. 483 et seq. where having divided *Papilio* into various divisions, of which the *Plebeii* are one, and after subdividing these into *Rurales* and *Urbicolae*, he calls each individual species in the *Plebeii*—"P.P." i.e. *Papilio*, *Plebeius*, the names being placed at the top of every page on which the *Plebeiid* species are described."

This argument seems so convincing to us that we shall continue to use *Plebeius* for the *aegon*, *argyrogon* group of *Lycaenids*.—H.Y.J.T.

*It is inexplicable how Scudder could make such a statement if he ever saw a copy of either the Xth or XIIth edition of the *Systema Naturae*.—H.J.T.

Cornish Notes for 1931.

By CHARLES NICHOLSON.

Referring to my notes on *Heliothis peltigera* and some Cornish Sphingids on pp. 157-8 of last volume I should like to add that the three *peltigera* that emerged were of the brown form, No. 2 in Mr. Wightman's classification on p. 182, and there is some brown suffusion on all these specimens over the whole of the space between the sub-terminal line and the basal line, except the subcostal area between the basal line and the reniform stigma, and this area is the only ochreous part of the wing. The other pupae either dried up or otherwise died.

The season of 1931, although on the whole a wet one here, was by no means unproductive as regards numbers of lepidoptera, which were about up to the average, but I have no records of *Phryxus livornica* to set off against those of *Agrius convolvuli* last year and must be content with *Manduca atropos* already noted.

Butterflies were about as usual with the exception of the following:—*Colias croceus*, one crossed the garden on September 8th, and one was seen on Perranporth Sandhills on August 30th. *Gonepteryx rhamni* was scarcer even than usual, only two males having been seen—one in the garden on September 15th, and one on red campion (its favourite flower about here) on October 11th. *Aglais urticae* was also even scarcer than usual, having been seen four times only, and three of these (in garden August 6th, on *Buddleia variabilis* flowers in next garden August 31st; on road wall of next garden October 14th) may have been the same specimen; the other was on flowers of *Escallonia illinita* in Boscawen Park, Truro, on October 7th. *Pyrameis cardui* was fairly common and seen in most localities I visited—in garden June 3rd, Malpas (very wasted) August 2nd, common and fresh on thistles near Probus on August 23rd, in garden on *Sedum spectabile*, September 25th and on Michaelmas daisy (very sandy) October 11th, finally at Boscawen Park, October 18th. *Lycaenopsis (Cyaniris) argiolus*, very scarce; I have no dates and cannot remember having seen a single specimen, although we usually see examples of the first brood. *Pararge aegeria* was even commoner than usual and seemed to be everywhere in shady lanes and rides in woods. First seen in the garden on May 7th and then almost continuously until October 18th (Boscawen Park) including a good many on thistles, August 23rd, and two in the garden all day on *Sedum spectabile*, September 25th. One of my most interesting captures was *Synanthedon (Sesia) respiformis*, of which I boxed a pair evidently just emerged—the male on an old oak stump in the garden on June 11th, and the female within two yards of it, but on an *Escallonia* bush on June 8th. No doubt both these had fed up in the old stump and as there are about a dozen other oak stumps in the garden I am surprised that I have not seen more of this clearing. About the middle of May I found two-thirds grown larvae of *Lasiocampa quercus* f. *callunae* on Bolenowe Moor, near Redruth, and on bramble in the hedges around upland fields about here, and the moths emerged during the first half of August. I tried sembling in the garden with the fresh females, and males came on August 1st, 3rd, 5th, and 7th, but only one male on each day! I allowed several of them to pair and also some of my bred males, and got several hundred ova, which began to hatch on August 30th. I fed them up on hazel, sallow and other things until

they were about half an inch long and then I turned them out into the garden in suitable spots, except about 20 which are at present feeding on ivy in the garden shed and are about an inch and a quarter long. The moths, by the way, were very typical.

On Sept. 24th the forewings of *Noctua c-nigrum* left by the bats were found in the verandah and on Sept. 25th the right forewing of *Chloroclysta siterata*—the first time I have seen this species here.

Of "other orders" the most interesting example of the Diptera taken was a female *Sargus bipunctatus*, which I saw settle on our hedge of *Cupressus macrocarpa* late in the afternoon of Sept. 25th. As it looked unfamiliar I netted it and was very pleased to see that it was unfamiliar. It is remarkable that Verrall never saw it alive, as he says in "British Flies," Vol. V. p. 170, although it seems to be widely distributed in Great Britain, and has been taken in Ireland.

The outstanding species of the season, however, was one of the Coleoptera, to wit, *Strangalia aurulenta*, which was quite common in the garden here. It may be recalled that I recorded two captures of this species, both females, in 1930, on a young Turkey Oak (July 5th) and a young Broom (July 22nd) respectively; see this magazine Vol. XLII. p. 155. The first capture last year was on July 1st, when I felt something alight on my head in the garden about 11 a.m. and, on putting up my hand quickly, found it was a male of this species flying in the bright sunshine. The next seen was a fine ♀ on a young tree of *Pyrus intermedia* on July 10th; then the species was seen nearly every day up to the 27th, after which no more were seen at all. As the circumstances of capture are rather interesting I give the list in brief, omitting the times of capture, which were usually in the morning. The weather on most days bright, but cloudy at first, usually followed by more or less sunshine all day and occasionally with a shower or two; the state of the sky did not appear to make any difference to the beetles, but on every day on which they were seen the temperature was between 58° and 75°. These are the other records: July 13th, small male on granite boulder on rockery. July 15th, fine ♀ on watercan in garden shed. July 16th, male on doorstep of shed. July 17th, male on a flower stake in garden. July 19th, male in shed with right posterior tarsus missing. July 21st, another male on the rockery; flew away before I could box it. July 22nd, female with damaged elytra tips, in shed. July 23rd, male on American currant in garden. July 24th, a fine female buzzing on the window of the shed fell down and was seized by a spider and carried into its tunnel; another fine ♀ was found in a bush of *Cistus salvifolius* and a male and a female were found on oak branches in shed, the male having a hole in the "shoulder" of his right elytron; these were boxed in a large glass bottomed box and promptly paired. July 25th, male with right posterior leg missing, in shed. July 27th, male and female in cop. on ground in front of shed.

It will be noticed that ten of these specimens were found in or about the garden shed, and as there were a number of oak branches (for firewood) varying between $2\frac{1}{2}$ and 5 inches in diameter, and between 3 and 10 feet in length I was led to the opinion that the beetles had emerged from these branches; as we have 3 large oaks and a number of old stumps in the front garden (in which all the other specimens were seen) it seems practically certain that they were the sources from which the other specimens came. We have no pines of any size in the

garden, so the idea I had previously been led to hold, that this species was attached to conifers, is evidently erroneous. We have no birch in the garden either except a young tree I myself planted, so Mr. Donisthorpe's note in this magazine, Vol. XLI. p. 125 will not apply. It is curious that, with the exception of the one taken on July 1st and the one that flew away on the 21st, I saw none on the wing in the open, although I have seen *Toxotus meridianus* flying in the sunshine in some numbers in Epping Forest near Chingford, and there oaks were almost the only trees.

It seems therefore from these records that July is the month for this species, but although Fowler says: "On flowers" I cannot corroborate this, for not a single specimen of those seen was on any sort of flower and only five of them were on living plants at all. The only other specimen I have was taken near Bovey Tracey in July 1924, when it flew down from some pines into an adjoining clover field and its unusual appearance aroused my curiosity. Dr. R. C. L. Perkins has had some experience with this species in that locality and I hope he will give us the benefit of it.

It may be well to call attention to an interesting point about the population of this insect. As a rule both sexes of all species of insect that I have observed are quiescent, if undisturbed, during this process, but in the case of this species the male in each case showed a slow but rhythmic pulsation (rather suggestive of pumping), which seemed to "flow" from his head backwards, causing a slight movement of the whole beetle, including the milk-white aedæagus, at least two-thirds of which was visible. Has anything of this kind been observed in other insects?

Collecting Lepidoptera in 1931.

By H. B. D. KETTLEWELL.

SPRING COLLECTING IN SCOTLAND AND THE NORTH.

For the first time this spring I had the pleasure of doing what all my older collecting friends have done many times in the past—namely of visiting Scotland in early April, and although the results of their various expeditions have more than once been written in the pages of this journal, I do not hesitate to repeat my own experiences of such pleasant and varied collecting.

I was accompanied by my mother who was a most active helper throughout the trip. We reached Scotland on April 9th and the following day leaving Stirling and travelling via the Sma Glen we passed through Aberfeldy and so on to Struan where we halted for about an hour.

We found *Nyssia lapponaria* fairly common but extremely local, being confined to a couple of hundred yards—both sexes in equal numbers were sitting about on posts. Several pairs were in copula. *Polyplocia flavicornis* was very abundant on these same posts.

We reached Aviemore about an hour later and in the failing light of the day I found one worn specimen of *Asteroscopus nubeculosa*.

After dark large numbers of insects came to the sap, which was running freely from recently cut birch trees.

Orrhodia vaccini, *Calocampa exoleta* and *C. vetusta* were extremely

common together with magnificent forms of *Taeniocampa incerta* and *T. gothica* var. *gothicina*. We spent the following days tree-searching by day and examining birch sap at night and aided by Mr. Brookbanks of Aberfeldy, who joined us, we took the following species:—

P. flavicornis.—Was common on some days on all posts and tree trunks and then was absent on others. It flies freely to birch sap in early afternoon particularly if the sun is shining. Some beautiful banded forms were taken.

A. nubeculosa.—16 were taken in all. 1 on the 10th, 3 on the 11th, 2 on the 12th, 4 on the 13th, 5 on the 14th, 1 on the 15th and none on the 16th or 17th. They sit on any side of a birch trunk from two to 15 feet from the ground—usually about 6 feet. Occasionally they are very difficult to see. We took a few on birch sap at night.

Eggs were laid freely by a ♀ in confinement on the muslin covering a cardboard box. At first the ova are an orange red colour, but they soon became dark. I gave Mr. Lees of Streetly the greater number and kept a dozen myself. He succeeded in getting nearly a hundred fullfed larvae, sleeving some and keeping others in breeding cages. Due to the enormous depth to which these larvae bury themselves he lost the larger part of the brood through their entering the ashes on which the eight or nine inches of peat stood.

Mine were fullfed by June 26th and throve in the middle of London provided the birch was sprayed every evening.

E. versicolor.—I was surprised to see this beautiful creature out as early as the 12th up here—the males dashing about in the few brief moments of sunshine. It was here that Mr. Esson several years ago assembled so many males around a cardboard box containing a female that the box was knocked off the post on which it stood! My own observations and method of catching were different,—I only saw four males on the wing and three I obtained in perfect condition by giving them a smart rap with a six foot birch bough!—in each case after a very active two hundred yards or so, which made me appreciate the quieter modes of collecting such as pupa digging or even 'assembling.' I saw one or two males on wet days sitting conspicuous on the birch trunks. I found them better sport when on the wing!

T. gothica.—Was very abundant on birch sap. About 40% were var. *gothicina*. Some very extreme forms were obtained.

T. incerta.—Was not very abundant at Aviemore. Some beautiful grey mottled forms were obtained.

Pachnobia rubricosa.—Only one example of this species was seen at Aviemore. It came to birch sap and was the most extreme ab. *lucida*, I have ever seen.

Orrhodia vaccinii.—Common on sap.

Scopelosoma satellitia.—A few on sap.

C. exoleta.—Very common on birch sap. One pair in cop: on the 16th ova obtained.

Brephos parthenias.—Very common in the sunshine. Visited birch sap by day but was even then alert. Ova not obtained.

Chloroclysta miata.—One on birch trunk.

Calostigia multistrigaria.—Very common after dark.

Nothopteryx carpinata.—Fairly common. Some beautiful forms of ab. *fasciata* taken; ova obtained.

Lycia hirtaria.—2 on the 12th, 2 on 14th. One fine yellow female.

Males of pale and bright yellow obtained. A very large number of ova were laid. I attempted to get the crossing *hirtaria* ♀ with *lapponaria* ♂, which I obtained so easily four or five years ago when the resulting ova proved infertile, but was entirely unsuccessful. I hope to try it again this spring.

Nyssia lapponaria.—At Struan. 9 on the 10th, 7 on the 12th (very cold). On the 18th I noted a ♀ busily engaged in ovipositing in the afternoon sunshine. She had her ovipositor fully $\frac{1}{2}$ inch extended into the crack of an old post in the depths of which I could see a large green batch of eggs. They laid very freely in captivity both in muslin balls and fluted paper. Mr. Lees kindly bred me them. The larvae fed up very slowly throughout the summer.

On the 17th of April we left Aviemore and went to Rannoch, where I met Messrs. Pennington and Poore. I learnt from them that the local *A. nubeculosa* had not appeared in the Rannoch district for some years, and in vain did I search its well known haunts of Finnart and Cairie Wood. I was very disappointed about this as I hoped to be able to point out what I have never seen noted before, namely the local difference between the Rannoch and Aviemore "sprawlers." All those I have seen from Rannoch have a distinct purplish brown tint—this never is seen from the Aviemore locality where a plain grey ground colour is the usual form.

Sallow at Rannoch produced large numbers of *P. rubricosa*, most of which were referable to the form *lucida*. I also took a nearly white *Taeniocampa nunda* (ova obtained). At sugar we took the *Taeniocampidae* in moderate numbers and some magnificent forms of var. *gothicina* turned up. I was surprised to note a fine ♂ *T. populeti* on sugar. *N. carpinata* and vars. came commonly to light and was plentiful on the tree trunks. One female *Ectropis bistortata* was observed on a birch tree.

In vain did I search the bilberry for early larvae but not one was taken.

Thanks to the kindness of Mr. Pennington, I was put on the track of two insects I had never before taken in numbers, namely *Pachnobia leucographa* and *Nothopteryx polycommata*, and was advised to try for them near Grange Over Sands on my return journey.

On the 26th we spent the night at Keswick. I searched the birch trunks in vain for newly hatched *Lophopteryx carmelita* without success.

The following night we arrived at Grange and were taken out to a wood in the vicinity by Miss Reid and Miss Molyneux to whom I owed all my success. They called it a "poor night" nevertheless we took 19 fine *P. leucographa* together with fewer numbers of *Taeniocampidae* on the sallows. I was sorry not to take *T. miniosa*, which they had been taking. *N. polycommata* was exceedingly abundant sitting motionless on ash twigs and a fine series were taken. There were about ten males to one female. I was fortunate in taking one absolutely black *Eupithecia abbreviata* and understand that this melanic form is not at all unusual in this particular wood.

The following day (April 23rd) I had the pleasure of meeting Dr. Lowther and seeing his wonderful local collection, and in the evening we met at the same locality as on the previous night. *P. leucographa*

was again fairly abundant. The ♀s lay freely on muslin balls and Mr. Lees has bred me a large number of larvae.

On the 24th we returned home and were thus away just a fortnight and during that time took the surprising list of 25 different species and this list not including many of the common spring Geometers which were not sought after.

I can recommend this spring trip for this "Year of Economy" to any of my Entomological friends who normally spend their April in possibly warmer climes but with certainly less invigorating collecting.

A new form of *Boarmia rhomboidaria*.

By H. B. WILLIAMS, LL.D., F.E.S.

As shown in my paper read before the South London Entomological Society on March 10th inst. I think I have established that my "yellow," so distinct in facies, has a genetic constitution distinct from "grey" *rhomboidaria*—at least as distinct, it may be precisely as distinct, as the violet grey *perfumaria*. I think then that it should now be described. Where in the scale of organisms inferior to a species it should be placed, I do not know. Turner calls *perfumaria* a "race." It is an odd one, to say the least. It may be an assemblage of races. I am content to call my form an aberration, and as a slight tribute to my friend and helper Mr. J. C. Haggart of Glasgow, who introduced it to my knowledge, I wish it to bear his name.

Boarmia rhomboidaria ab. **haggarti** ab. nov.

Head, thorax, patagia, abdomen and wings of a smooth pale yellowish grey, the bands on the abdomen only faintly suggested. The smooth appearance of the wings, a conspicuous feature in both sexes, is due to the almost entire absence of the freckling of black dots, which gives a rougher and darker appearance to *rhomboidaria*. In fact the yellowish grey ground colour of the wings, in spite of the pale appearance of the insect, is not paler than the whitish grey of typical *rhomboidaria*, the dark grey appearance of which is due to freckling, which is also a prominent feature in the bright ochreous aberration *australaria*, Curt.

On the pale ground, the usual markings are indicated, but in a paler shade than in other forms; the cross lines on the fore-wings quite weakly marked, the discoidal spot, on the other hand, being very distinct and prominent and accentuated by a clear pale area below it; the subterminal line distinct, and the apical and subapical markings clear and conspicuous.

The hind wings particularly smooth, but the markings are indicated. The second cross line tends to be weak and is obsolescent in one ♀ specimen.

Size of B. rhomboidaria.

Types. ♂ and ♀ in coll. mihi. ♂ bred 19.vii.1928.
♀ bred 29.vi.30.

Co-types 3 ♂ ♂. 3 ♀ ♀ in coll. mihi.

2 other ♀ ♀ in coll. mihi.

1 ♀ in coll. Dr. E. A. Cockayne.

Other specimens in coll. J. C. Haggart.

Habitat. Largs, Ayrshire.

This aberration only occurs, so far as is at present known, at Largs, on the Ayrshire coast. The only specimens found at rest have been on walls to which their colour assimilated well.

CURRENT NOTES AND SHORT NOTICES.

Many local lists of the Lepidoptera have appeared in this country from time to time, but few have included the so-called Micro-lepidoptera. All are for the most part mere lists including the names of a few general collecting spots, but none show even an attempt to combine such excellent biological facts and suggestive details of the life-history of the micros as does the book before us. *The Moths of Eastbourne*, Pt. II. The Pyralidina to the Micropterygina with the Obtectae, the Burnets, Clearwings, Swifts, etc. This third section of Mr. Robert Adkin's work, the most difficult portion, really outdoes the two excellent parts previously published. One would have said that it was impossible to condense so much information into the few sentences allotted to each species native to Eastbourne. When one turns to the plates, 25 in number one, is envious of the young nature lover whose privilege it will be to start studying the smaller fry of the district with this excellent guide in his possession. Even the older entomologist may study this volume with great advantage to himself with the suggestive details here given. Nothing is omitted that is of paramount importance, from the most effectual method of killing to the provision of an excellent map. We must congratulate the author on this most useful piece of work, and the Eastbourne Nat. Hist. Society, under whose auspices it has been published as a Supplement to their *Transactions*.

The *Ministry of Agriculture and Fisheries* have sent us a series of 14 "Advisory Leaflets" and Bulletin 29 on "Insect Pests and Fungus Diseases of Basket Willows." The latter is well-illustrated showing the pests themselves and views of their depredations. Among the pests are: Lepidoptera:—*Trochilium bembeciforme*, *Synanthedon formiciformis*, *Depressaria conterminella*, and *Hypermercia cruciana*. Coleoptera.—*Aromia moschata*, *Galerucella lineola*, *Phyllodecta vulgatissima*, and *Cryptorrhynchus lapathi*. Diptera, the midge *Rhabdophaga heterobia*. These are figured on the plates, but other species are referred to in the text. The leaflets are re-issues of older leaflets brought up to date with modern illustrations and additional information. They are quite adequately illustrated.

The *Int. Ent. Zeit.* for Oct. 8th describes and figures a remarkable aberration of *Zygaena transalpina* in which the spots of the forewing are wanting except the lower spot of the outer marginal pair. Spots 3, 4 and 5 are completely absent, but of 1 and 2 there are obsolescent traces. The captor O. Michalk has named it ab. *paradoxa*. It was taken in Bavaria.

To those who are interested in the naming of the lower grades of species of the Lepidoptera, one would wish to call their attention to an article in the *Ent. News* for October. The writer would place the naming of such on a biological basis and exclude most racial and aberration names. He would recognise the great regional subspecies but the naming of lower grades would be an exceptional occurrence.

To those Lepidopterists who visit Berne one would suggest a visit to the "Alpine Museum" to view the collection of alpine butterflies under the care of the Entomological Society of Berne. There are six sections. 1. Alpine species not found in the high north. 2. Alpine species also occurring in the high north. 3 and 4. Species of the lowland and the alpine slopes up to 4000 ft. 5. Lowland species and

corresponding forms of the Alps, which are attached to the same special alpine plants. 6. Species of the warmer zone and southern alpine valleys. Many examples of melanism are included.

Our trusted correspondent Capt. K. J. Hayward has sent us separates of three articles he has contributed to the *Revista Soc. Ent. Argentina*. 1. Instruction, with 2 diagrammatic plates for detailed descriptions of ova, larvae and pupae of a Lepidopteron. 2. Notes on a migration of the Argentine subspecies *automate* of *Pieris phileta (monuste)*. 3. Abnormalities of four insects he has recently met, with figures of the deformities.

A large quarto volume of 320 pages and 35 plates some coloured has reached our table from Sao Paulo, Brazil. *Archivos do Instituto Biologico*, vol. IV. 1931 contains 18 articles on natural history of which four deal with entomology Diptera, Coleoptera and Ants. The main body of the volume is in Spanish but every article has a long abstract of its contents in English and also several abstracts in German. The volume is very well got up and records admirable work done on the Fauna and Flora of S. America by competent experimenters.

We regret to note that several well-known continental entomologists have died recently including M. J. Culot of Geneva, who was the artist of those beautiful volumes on the *Noctuelles et Geometres*; P. J. S. Tavares, who was the editor of *Broteria* and devoted to the Cécidiés; M. J. P. Dognin, the great Belgian student of S. American Heterocera; and Dr. F. Rambousek of Prague well-known for his knowledge of the *Staphylinidae*.

A separate from the *Ind. Jr. of Veterinary Sci. and Animal Husbandry* illustrating and describing 24 species of Tabanid Diptera has been received from the authors, T. Bainbrigge Fletcher and S. K. Sen. The figures being in colour and of natural size must be of great practical use and the correctness of the matter must be inferred from the prestige of the authors.

L'Amateur de Pap. continues the descriptions of good French localities for Lepidoptera. In the November no. we have an account of Euzet-Les-Bains (Gard) by M. le Comte A. d'Aldin. The article includes a list of species indigenous to the neighbourhood. The same number contains a further portion of "Collecting in Madagascar."

There are two excellent black and white plates of albinistic and melanistic forms of *Melanargia galathea* in the December no. of *Zeit. Oster. Ent.-Ver.* with descriptive letterpress by Hans Hautz. A fine gynandromorph from the Höfer collection in Wien is given. There is a summary of the different named forms.

Hunting Insects in the South Seas. By Evelyn Cheesman. Philip Allan.—The authoress is rapidly becoming as good a writer as she is a good collector and observer of insect habits and transformations. She experiences unknown dangers often alone in the bush, even spending nights alone in deserted huts at the full mercy of native attacks; hitherto she has emerged unscathed. In fact at times, as she told us one evening in a lecture to the South London Entomological Society she was "taboo" and every native feared to cause her harm in any way. In the present work are such subjects as Potter wasps, Friendly Butterflies, Caterpillars, Fireflies, Bees, Praying Mantises, A night in the Bush, and A Climbing Adventure on the Marquesas Islands. This is not a record of mere fact, but a search for the reason and object of

all the curious habits of the creatures dealt with. Obviously the cocoon is an arrangement gradually evolved for protection of the pupa during its quiescent stage, when it would be exposed to attack without ability of defence. But there is a second "significance to the cocoon." "Why some caterpillars wrap themselves up so carefully in bales of silk before yielding to those delicate operations by which they are changed into the mature form is because they avoid risk of a shock by doing so." There are a few illustrations but one would like more and particularly one wants a map. The book is in a very attractive jacket illustrating one of the strangely fashioned insects encountered. Those who have heard Miss Cheesman lecture will need no further inducement to peruse this volume, and those who have perused the book will wish for a closer acquaintance with her in her lectures.

In *Lamb.* for October M. Derenne gives a summary of the views of different writers on the naming of varieties, which is well worth careful reading and thought.

The Entomological Society of London have recently added two eminent foreign entomologists to the much coveted honorary fellowship of the Society, *viz.*, Dr. Walther Horn of Berlin (Germany) and Monsieur René Oberthür of Rennes (France).

The following has been sent to us; an excerpt from a Daily Newspaper. It looks as if the writer was endeavouring to measure the depth of utter rubbish which the editor would insert.—"A curious beetle. Imprint of fly on its back. To the Editor of the Morning Post. Sir,—I am no ornithologist, but to-day (Friday), on a mountain-side in the Eifel, I saw a beetle which was quite new to me. He was wholly of a vivid scarlet, except his proboscis, which was black. At the end of each of his antennae was a good imitation of a penknife, which opened and shut like one, and, when open, gleamed like steel. On the perfectly flat back of this wholly scarlet beetle was the perfect impress, in black, of a fly. From time to time my friend would stop working his knife, and, with a hind leg, lazily polish the impress of the fly, by which the wings of the fly gained an additional shimmer." WANDERVOGEL, Altenahr."

We have just received the prospectus of the 5th International Congress of Entomology to be held in Paris this summer from July 16th to 23rd. The Meeting of the Congress will coincide with the celebration of the Centenary of the Entomological Society of France. Arrangements have been made for the occasion. Dr. P. Marchal will be President of the Congress, Dr. K. Jordan of Tring is the permanent Secretary, Dr. H. Eltringham represents Gt. Britain on the Executive Committee, Dr. R. Jeannel France, Dr. Walther Horn, Germany, Dr. Y. Sjosteat Sweden, and Dr. O. A. Johannsen the United States. We trust there will be a move in Nomenclature and that the Entomologists will strike away from the domination of the Zoologists. Those who wish to take part in the Congress should write to the General Secretary, Dr. R. Jeannel, Laboratoire d'Entomologie, Muséum National d'Histoire Naturelle, 45bis, Rue de Buffon, Paris (5e), France.

On page 126 of last year, July-August 1931, we called attention to the immigrant lepidoptera of which we had heard in this country

during the season. Any further records or a summary of what readers have noted along the coast, or far inland would be most acceptable. 'Tis individual observations we want, which when pieced together may give dates of arrival on the coast, dates of appearance in the inland south, dates in the centre of the country, dates farther north, and so on, besides indicating second immigration if occurring. The portents of the present season seems so far to point to further abnormal weather, when no doubt further mass movements of insect species will occur. The method of recording was well described by Dr. C. B. Williams in a Supplement to our journal in November last and we can supply prepared cards to all who ask for them.

The Annual Gathering of British Entomologists, The Verrall Supper, took place on January 19th and was again a very successful gathering of old friends from far and near with a fair sprinkling of new and younger men. There were not quite so many present as there has been for the past few years and a few of the old members were missing. Appended is a list of those present:—B. W. Adkin, J. H. Adkin, R. Adkin, H. E. Andrewes, H. W. Andrews, Dr. R. Armstrong, E. B. Ashby, S. R. Ashby, Maj. E. E. Austen, R. S. Bagnall, F. Balfour-Browne, H. F. Barnes, Sir T. Hudson Beare, E. J. Bedford, E. C. Bedwell, R. B. Benson, G. T. Bethune-Baker, K. G. Blair, S. F. P. Blyth, E. D. Bostock, H. Britten, Dr. G. V. Bull, Dr. M. Burr, L. C. Bushby, Prof. Bailey Butler, Dr. P. A. Buxton, Dr. M. Cameron, Dr. Hale Carpenter, S. G. Castle-Russell, Dr. E. A. Cockayne, C. L. Collenette, J. E. Collin, J. Collins, L. G. Cox, L. W. R. Cox, E. S. Craske, J. W. Parkinson Curtis, H. W. Daltry, R. P. Demuth, J. R. Dibb, Dr. F. A. Dixey, A. W. Dods, H. Donisthorpe, S. P. Duffield, H. M. Edelsten, J. H. Edmonds, F. W. Edwards, H. Willoughby-Ellis, Dr. H. Eltringham, W. Fassnidge, R. A. Fisher, L. T. Ford, G. Fox-Wilson, F. W. Frohawk, J. C. F. Fryer, A. G. Gabriel, A. F. J. Gedye, W. S. Gilles, F. J. Gilliat, E. Rivenhall Goffe, A. de B. Goodman, E. J. Griffen, T. H. L. Grosvenor, H. M. Hallett, A. R. Hamm, H. S. Hanson, C. N. Hawkins, A. R. Hayward, Dr. L. G. Higgins, W. D. Hincks, B. M. Hobby, A. W. Hughes, Prof. S. Issiki, Dr. K. Jordan, Dr. Norman Joy, H. B. D. Kettlewell, Dr. H. Lancaster, F. Laing, H. A. Leeds, H. G. Leeson, G. C. Leman, J. Spedan Lewis, H. Main, W. Mansbridge, A. M. Masee, Prof. S. Maulik, W. T. Mellows, Rev. J. W. Metcalfe, Dr. S. A. Neave, L. Nell, L. W. Newman, L. H. Newman, M. Niblett, F. A. Oldaker, H. E. Page, T. Parker, J. F. Perkins, F. N. Pierce, S. W. P. Pooles, Prof. E. B. Poulton, R. M. Prideaux, L. B. Prout, Capt. E. B. Purefoy, W. Rait-Smith, O. W. Richards, Capt. N. D. Riley, A. W. Richardson, Dr. E. Scott, Dr. D. W. Seth-Smith, C. D. Sherborn, Dr. H. D. Smart, A. E. Stafford, H. Stringer, E. E. Syms, G. Talbot, W. H. T. Tams, Rev. J. E. Tarbat, E. Taylor, E. Terzi, J. le B. Tomlin, A. E. Tonge, H. J. Turner, C. J. Wainwright, Comm. J. J. Walker, Col. R. M. West, Rev. G. Wheeler, Rt. Rev. W. G. Wittingham, Rev. Preb. A. P. Wickham, V. R. Wigglesworth, D. S. Wilkinson, H. R. Williams, C. G. M. de Worms, C. Worssam, L. H. Bonaparte Wyse.

REVIEWS AND NOTICES OF BOOKS.

A PRACTICAL HANDBOOK OF BRITISH BEETLES. By Norman Joy, M.R.S.C., L.R.C.P., F.E.S., M.B.O.U. Witherby, 2 vols., 3 guineas.— It may, perhaps, be permitted to an orthopterist to offer a few observations on this remarkable work. Dr. Joy has devoted an immense labour to its compilation over the last twenty years or more. He was inspired by the fact that Canon Fowler's work was not compact and had no synoptical tables for the major groups, which makes an orthopterist wonder, for no systematic work of importance on that order without such table had appeared since Brunner introduced them fifty years ago.

Anticipating the criticism of his colleagues because he has, in his own words, "returned to an older method of classification which the author considers more practical," he quotes in defence such eminent authorities as Sir Guy Marshall for sanction to use a key as opposed to a classification, and General St. Claire Deville, who, in a particular instance (the *Alaëocharinae*), hints at the possibility of the key eventually proving to be the scientific system.

But supposing his key is not scientific? What of it? The subtitle of the book is "Tabulated and Illustrated." It is, in fact, a tabulation, not a classification. He disarms criticism by disclaiming any pretensions to a scientific monograph and he should be judged only on his own claims. Does he help us name our beetles? If so, hats off to him, for that has been his sole object. If he places the *Brachelytra* at the beginning, it does not mean that he considers them either the most primitive or the most advanced form of beetle, but only that they are of such distinctive appearance that any fool can recognise them at a glance even in the field. Similarly with the *Gyrinidae*. Logically, it is an ordinary process of elimination, just as though he had started his classification like this,

- | | | | |
|----------------------------------|-----|-----|---------------|
| (1) (2) Males with enormous jaws | ... | ... | Stag Beetles. |
| (2) (1) Males with ordinary jaws | ... | ... | Others. |

That may not be scientific, but it would enable a beginner to tell whether his capture is a stag beetle or not.

For Dr. Joy is a utilitarian unshamed and claims to be nothing else. He has avoided certain characters merely because they are inconvenient; he prefers those which can be illustrated by figures, which do not involve highly skilful dissection, nor even, if possible, ungumming from a card.

He claims, too, to be a pioneer in the use of the aedeagus as a specific character, presumably in the Coleoptera, which, incidentally makes an orthopterist sigh for uniformity of classification. Judging by analogy, this should afford extremely useful characters, though presumably little is known of individual variation in these organs. Still, they must to a certain extent be a definite mechanical hindrance to inter-breeding. Nor does he mention the soft parts, which must offer valuable, though difficult, characters.

By economising space to the utmost, by avoiding characters that cannot be used for the immediate purpose of identification, he has been able to condense into one volume of synoptical keys the 3560 species of British Coleoptera, which is 300 more than Canon Fowler knew.

It is, in fact, in as compact a form as possible, a vade-mecum of British beetles, though only a stalwart entomologist could take it into the field with him. The figures, in a separate volume, seem very clear, as though showing up points of importance. They alone represent a great labour, as 1650 of them have been drawn by the author himself.

He seems to have achieved his object, which has been not to write a monograph, which it is not, but to make a handbook, which it is, in the simplest, most practical form. To what extent he has really succeeded in this extremely difficult task can be proved only by the touchstone of experience and actual test.

The publishers have done their work nobly. The price is a good deal of money, especially nowadays, but the work is not for one year only, and the information cannot be dear at the price.—M.B.

THE LEPIDOPTEROUS FAUNA OF ALBANIA. By Dr. Hans Rebel and Dr. Hans Zerny, Vienna. Large quarto. 126 pp, 1 plate, 1 map.—This extremely well got up and arranged work is an admirable report of the Lepidopterological observations made in Albania in 1918 by the members of the Expedition sent out by the Academy of Science, Vienna. In the report the results of all previous collecting in the same area have been incorporated, and a really comprehensive account has been produced. The introductory portion has been arranged on the same useful and instructive plan which one finds in Dr. Rebel's previous works on the Lepidopterous Fauna of Balkan-lands. There is a useful Geographical Sketch of the country, followed by a note on the Lepidopterous peculiarities of the adjoining territories, Montenegro and Macedonia, then come summaries of the faunal character of Albania; endemic species 21; Eurosiberian species 618; Alpine species 63; Boreal Alpine species 30; Mediterranean species 136; Pontic species 35, and Ponto-Mediterranean species 617; a List of References from which matter has been culled, including a number from the pages of our own magazine, and notes on the various places referred to in the text. 1500 species are recorded exclusive of many local forms. The inclusion of data concerning Montenegro, Macedonia, etc., have much increased the value of the record. 21 new species and forms are described, most of which are figured on the plate. The immense amount of research for records is simply marvellous, and the whole work will be of untold value to all future workers in Albania, Montenegro and Macedonia. The nomenclature used is that of Staudinger but is illumined in each species, by the insertion in brackets of the genera used by more recent workers, e.g., *Aricia*, *Hirsutina*, *Iolana*, *Agriades* and others in the omnibus genus *Lycaena* of old, recognising that such an unwieldy assemblage must be cut up to be grasped by the mind. We understand that Dr. Rebel has now completed his term of duty in the museum—we wish him a long and pleasant relief from official duties. The younger and most able Dr. Zerny will be a worthy successor to Rebel and we look forward to a continuance of the able memoirs which for so many years have been coming from the Viennese Lepidopterists.—Hy.J.T.

All MS. and EDITORIAL MATTER should be sent and all PROOFS returned to Hy. J. TURNER, "Latemar," West Drive, Cheam.

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

Reprints of articles may be obtained by authors at very reasonable cost if ordered at the time of sending in MS.

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EXCHANGES.

Subscribers may have Lists of Duplicates and Desiderata inserted free of charge. They should be sent to Mr. Hy. J. TURNER, "Latemar," West Drive, Cheam.

Duplicates.—*S. Andrenaeformis*, Bred 1928, well set on black pins, with data.

Desiderata.—Very numerous British Macro Lepidoptera.—*J. W. Woolhouse, Hill House, Frances Street, Chesham, Bucks.*

Desiderata.—Species of Dolerine and Nematine sawflies not in my collection; list sent.—*R. C. L. Perkins, 4, Thurlstone Road, Newton Abbot.*

Duplicates.—*Albimacula**, *sparganii**.

Desiderata.—Ova of *D.oo. pupae* of *X. gilvago*, *D. caesia*. *A. J. Wightman, "Aurago," Bromfields, Pulborough, Sussex.*

EXCHANGES.—Living Eggs of *Catocala fraxini* and *sponsa*, exchange for butterflies of British Isles.—*C. Zacher, Erfurt, Weimar, Street 13, Germany.*

Duplicates.—*Pyralina**, *Salicis*, *Ianthina**, *Orbicularia**, *Repandata* in variety, *Doubledayaria*, *Black rhomboidaria**, *Black virgularia** and others.

Desiderata.—*Hyale*, *Welsh aurinia*, *Polychloros*, *Tiphon Agathina*, *Lunigera*, *Lucerneae*, *Neglecta*, *Diffinis*, *Populeti*, *Gothica v. gothicina*, *White Leporina*, *Tridens Putrescens*, *Littoralis*, *Typhae v. fraterna*, *Rurea v. Combusta*, *Gilvago*, *Fulvago v. flavescens*, *Liturata v. nigrofulvata*. *Harold B. Williams, Woodcote, 36, Manorgate Road, Kingston Surrey.*

Duplicates.—*Ocellatus** 5, *Hastata* 1, *Cambricaria* 3, *Blandina* 12, *Protea** (melanic) 2, *Camelina** 2, *Dromedarius** 1, well set on black pins with data.

Desiderata.—*Betulae*, *Trepida*, *Diluta*, *Or* and *Myricae*. *Geo. Nicholson, 24, Nun's Moor Crescent, Newcastle-on-Tyne.*

Duplicates.—A large number of species of European and Palaearctic *Rhopalocera* and *Heterocera*.

Desiderata.—All British species especially those illustrating characteristics of an island fauna. *Dr. Lor. Kolb, München 54, Dachauer-str. 409, Germany*, and *Franz Daniel, München, Bayer-str. 77, Germany.*

MEETINGS OF SOCIETIES.

Entomological Society of London.—41, Queen's Gate, South Kensington, S.W. 7. 8 p.m. March 16th, April 6th.

The South London Entomological and Natural History Society, *Hibernia Chambers*, London Bridge. Second and Fourth Thursdays in the month, at 7 p.m. March 24th, April 14th, 28th.—*Hon. Secretary*, Stanley Edwards, Avenue House, The Avenue, Blackheath, S.E. 3.

The London Natural History Society.—Meetings first four Tuesdays in the month at 6.30 p.m. at the London School of Hygiene and Tropical Medicine, Keppel Street, Gower Street, W.C.1. Visitors admitted by ticket which may be obtained through Members, or from the Hon. Sec. A. B. Hornblower, 91, Queen's Road, Buckhurst Hill, Essex.

IRISH NATURALISTS' JOURNAL

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Communications have been received from or have been promised by Miss L. M. Fison, Rev. Canon Foster, Lt. E. B. Ashby, Dr. G. S. Robertson, Wm. Fassnidge, Dr. Verity, Capt. K. J. Hayward, Rev. C. R. N. Burrows, H. Willoughby-Ellis, W. H. T. Tams, A. Russell, Hy. J. Turner, A. H. Martineau, W. M. Crawford, W. H. Edwards, H. B. D. Kettlewell, H. Donisthorpe, J. Sneyd Taylor, Dr. N. H. Joy, W. G. Sheldon, and Reports of Societies.

All communications should be addressed to the Acting Editor, Hy. J. TURNER, "Latemar," West Drive, Cheam.

IMPORTANT

TO ENTOMOLOGICAL SOCIETIES and MUSEUMS.

BACK VOLUMES OF

The Entomologist's Record and Journal of Variation.

(Vols. I-XXXVI.)

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.

CONTENTS OF VOL. II.

MELANISM AND MELANOCHROISM—Bibliography—Notes on Collecting—Articles on VARIATION (many)—How to breed *Agrotis lunigera*, *Sesia spheniformis*, *Taeniocampa opima*—Collecting on the Norfolk Broads—Wing development—Hybridising *Amphidasys prodromaria* and *A. betularia*—Melanism and Temperature—Differentiation of *Dianthæcins*—Disuse of wings—Fauna of Dulwich, Sidmouth, S. London—Generic nomenclature and the *Acronyctidae*—A fortnight at Rannoch—Heredity in Lepidoptera—Notes on Genus *ZYGÆNA* (*Anthrocera*)—Hybrids—Hymenoptera—Lifehistory of *Gonophora derusa*, etc., etc., 312 pp.

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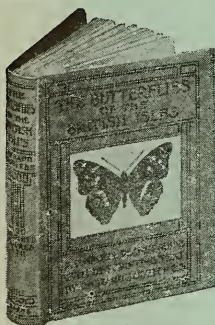
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Lepidoptera at Dieulefit (Drôme) in April, 1930 and 1931.

By WM. FASSNIDGE, M.A., F.E.S.

When my wife and I chose the small village of Dieulefit, of 3,600 inhabitants, in the entomologically unknown Department of the Drôme, as the place where we would like to spend the Easter holiday of 1930, we certainly had no intention of paying a second visit. But the finding of one or two interesting insects, coupled with the fact that 1930 was a very late season in that region, and further strengthened by our stumbling on a very pleasant "pension," induced us to go there again in 1931, in order to explore more fully the possibilities of the locality, while at the same time gathering material for the solution of at least one of the problems raised. Dieulefit is quite a small village in a lateral valley about 15 miles east of the Rhône at Montélimar. It lies at the end of a "tramway," which has now been replaced by a motor-bus service run by the same company, in the foothills of the Basses-Alpes at no great altitude, and the mountains in the vicinity range from about three to four thousand feet in height. One higher mountain is to be seen from the town—La Lance—which reaches over five thousand feet. For the most part the hillsides are steep and stony, dry and rather barren, with here and there oak scrub, pines, juniper, viburnum, etc. Even in April there is not much water in the streams, and no doubt later in the year the vegetation on the hillsides suffers much from drought. In April, 1930, the season was a late one, but in 1931 it was more normal, possibly even a little earlier than usual. In both years we spent about three weeks at Dieulefit, staying at "Le Jas," a pension run by Mlle. Barral, where we found ourselves very comfortable at a moderate price, being especially delighted with the spacious gardens gay with flowers of every kind.

I have already said something concerning three insects bred from galls on juniper found at Dieulefit (*Ent. Rec.* XLIII., 1931, p. 34), namely, *Poecilnota festiva*, L., *Laspeyresia interscindana*, Möschl., and *Synanthedon spuleri*, Fuchs, and propose now to add further observations made in 1931 to what I wrote there. One of my reasons for revisiting this locality was to investigate these juniper galls, though as my wife had already decided that she wished to spend another holiday there, perhaps it was just as well that I was able to agree so readily. We began at once in dull and windy weather to search on the junipers that grow so abundantly on every hillside and in every stony valley all around the town; we continued the process at intervals and I made notes on the spot. The hammer headed larva of the lovely green Buprestid, *P. festiva*, L., did not seem to be so common as in 1930, but still was plentiful enough, feeding in a flat burrow between the bark and the wood in stems of moderate thickness, and stuffing the mine behind it full with tightly packed sawdust-like frass. I soon learned to distinguish its mine from any other, and only bred two specimens this year, brought home by chance, as I did not want them. I found the beetle larva and the Aegeriid larva mining together occasionally, and the beetle larva and the Tortrix larva mining together rather more frequently. Normally, however, the beetle larva was all alone, and the swelling caused by it was not at all conspicuous, only the brown needles on the half dead twig betraying its presence. I did not once find two

beetle larvae mining in the same stem. The Tortrix larva, which has kindly been identified by Mr. E. Meyrick from insects bred in 1930 as *Laspeyresia interscindana*, Möschl, was very common. On April 5th, I found it mostly full fed or nearly so, sometimes spun up for pupation, twice already changed to pupa, in a silk lined chamber scooped out of the wood just under the bark. Fine reddish frass betrays its presence as well as the slight swelling of the stem. Twigs of all sizes are affected, sometimes quite thin ones only a quarter of an inch thick below the swelling. The larva is yellowish white, with a chestnut brown head and paler two-lobed neck shield, but no sign of an anal plate. Often there are three or even more larvae in one twig and but rarely only one. It is very frequently parasitised, and one may see the hymenopteron fully formed within the pupa. I carelessly did not note that Kennel in his great work on the *Palaearctic Tortricidae* does not mention the larva of *L. interscindana*, or I would have made more voluminous notes on it when I had the opportunity. I have no doubt whatever that this species is the sole cause of the slight swelling observed, but I cannot say if the swelling deserves to be ranked among the galls. The Aegeriid larva—that of *Synanthedon spuleri*, Fuchs, stated to be conspecific with *S. tipuliformis*, Cl.—was only moderately common although its old workings were comparatively abundant. In early April the larvae were of varying sizes, some being still quite small, while many were spun up for pupation, some few having already changed. The pupal chamber is formed well within the stem and lined with silk. It greatly weakens the thinner stems at that point so that there is great danger that they will break if carelessly handled, damaging the pupae. Apart from risk of damage there is no great harm done, for I succeeded in breeding a good proportion of pupae extracted from their mines. The smallest larvae were about three eighths of an inch in length, in borings just under the bark, rather more transparent than larger larvae, and having a reddish alimentary canal. They are quite easy to distinguish from the Tortrix larvae, which occur fairly frequently in the same swellings. I think these smaller larvae would feed up and emerge in the same season, though it is not possible to make a definite statement. Emergence in captivity is spread over a considerable period, as is often the case with Aegeriids, and almost certainly the species has only a one year cycle. I found this species in stems of all sizes, often in stems from which insects had emerged in previous years, in which case they were boring lower down in the stem nearer to the living wood, and not above the gall where the stem was dead or dying. Several times I found two or three larvae together, and a few times more than three. They are very heavily parasitised indeed. Old mines are easily found because of the dead and brown needles, but I found several larvae in galls where the stem was still quite living and the needles still almost as green as ever. These stems must have been only recently affected, and would not die away until after the first tenants had emerged. Many times I found the remains of the pupa case, sometimes even the complete case, projecting from stems containing one or more living larvae. Clearly the affected stem is used for several years by successive generations. The swelling thus caused is sometimes a very conspicuous one, for in September, 1931, I found these larvae at San Juan de la Peña, near to Jaca, in Aragon, feeding in stems as thick as my wrist, causing galls more than eight inches in length and four inches in thick-

ness. I have no reasonable doubt that these swellings are caused solely by the larvae of *S. spuleri*, which must certainly be maintained on the short list of gall-making lepidoptera. One very curious and welcome find came to break the monotony of the search for these juniper galls. After cutting off a galled stem I discovered that I was grasping a fine large cocoon of *Hoplitis milhauseri*, Fb., fixed to the stem close above the gall, from which cocoon a fine large female duly emerged as late as July 1st, at 4.30 p.m. Before leaving the subject of juniper galls, I ought to state that in spite of the rather large number of larvae necessarily spoiled by my investigations, yet I brought home a sufficient number of galls to yield a long series both of the Aegeriid and of the Tortrix. One other insect also emerged from these juniper twigs, namely, a single specimen of *Laspeyresia juniperana*, Mill., which is well known to feed on the berries, and doubtless had simply found a convenient spot for pupation in one of the mines.

One other Aegeriid rewarded my search at last, *Sciapteron tabaniformis*, Rott., a species I have sought for in vain in many localities in France. I found full fed larvae and pupae low down in young shoots of lombardy poplar growing in the open far from the parent trees, and bred two moths. Although this species has long been known as a gall-maker, these larvae had not caused the slightest swelling, and the copious frass extruded alone betrayed their presence.

(To be concluded.)

Aigle and the Rhone Valley, Switzerland, in May, 1931.

By LIEUT. E. B. ASHBY, F.E.S., F.Z.S.

Leaving London at 2 p.m. on May 9th, I arrived at Aigle station via Paris and Vallorbe at 9.1 a.m. on the following day. I decided to stay again at the Hotel Beau Site, because of its immediate proximity to Aigle station, and I was made very comfortable there during the whole of this trip.

May 10th.—I went out before and after déjeuner, but my bag only included the Butterflies, a ♂ *Carterocephalus palaemon*, and 3 *Leptosia sinapis*, the *Bombilius* fly *B. discolor*; and two specimens of *Chrysotoxum festivum*, L., the Coleoptera *Carabus auratus*, L., *Coccinella bipunctata*, L., var., and *Corymbites purpureus*, Poda., the Hymenoptera *Halictus laticeps* ♀, *Eucera longicornis*, and the Rhyncotid *Triecophora dorsata*, Germ. This last is new to the British Museum collection at S. Kensington, and more specimens are wanted. The B.M. is rather weak in *Triecophora* species in general. *T. dorsata* is to be found in Spain, S. France, Switzerland, Italy and Dalmatia. The country was looking exceedingly pretty and the weather was fine, tempered with a nice breeze. I also took a single specimen of the bee *Bombus hypnorum*, L. = *meridiana*, Panz., for the first time.

As I imagine that English collectors might very easily overlook this bee I give the following description of it by Dr. Schmiedeknecht, viz.: "*Bombus hypnorum*, L., is so characteristically coloured, that a mistake cannot occur. Only *Bombus gerstückeri* and *Bombus hortorum* var. *consobrinus* have any resemblance. In the female the head in front is blackish-grey, above the thorax it is covered with hairs of a fox-red colour. The black hairs of the abdomen appear dull on account of

interspersed greyish hairs. The whole underside is black with intermingled yellow-grey hairs. Segments 4 to 6 dingy white, segment 6 rather bare, underneath at the extremity covered with short fox red hairs. Legs black, the tarsi yellow-grey. In Germany the females nearly always have a black abdominal base, on the other hand the fore segments in the males are mostly rust-red coloured, less so in the workers. Varieties, in which the thorax is partially coloured black, appear to be very rare, I at any rate have never come across such.

"*Bombus hypnorum* moreover nowhere belongs to the over abundant species, but occurs everywhere in the northerly and central regions. I have noticed, that the species is extraordinarily variable in its occurrences. Thus it was, about 10 years ago, not exactly rare at Gumperda, but disappeared in the following years, so that for about 8 years I came across no specimen. In the year 1880 it occurred very suddenly again rather abundantly and single specimens occurred in the last two years. The females appear here about the middle of April and seek by preference the blossoms of gooseberry bushes. They also visit other spring flowers, such as *Anchusa*, *Lamium*, *Taraxacum*, etc. The workers have an especial preference for the flowers of *Rubus* and are met with there in company with *pratensis* and *scrimshiranus*. The males appear from the end of August. They may then be found freely on thistles, very freely also on *Epilobium augustifolium* and *Solidago*. On the latter flowers especially in company of the male of *Bombus lapidarius*.

"They are rather inactive. The nest above the ground."

Patria: Europa borealis et centralis.

From "Apidae Europaeae" by Dr. H. L. Otto Schmiedeknecht, Gumperda in Sachsen.—Altenburg. 1882.

May 11th.—This morning I walked up the Sepey road for several kilometers and then turning down to the right of the road on to a wooded footpath I found a collecting ground well shaded from the morning sun. Here I found some nice *Aglaia tau* in good condition; *L. sinapis*, *Nisoniades tages*, *Brenthis euphrosyne*, *Polygonatus semiargus* males only, and *Hesperia malvae* among the butterflies. *Papilio podalirius* and *P. machaon* were also flying but were out of reach.

The Coleoptera *Telephorus rustica*, Fall., *Cicindela hybrida*, L., *Necrophorus mortuorum*, F., the beautiful longicorn *Apanthia cardui*, L., *Cetonia hirtella*, L., *Malachius aeneus*, L.; the Hymenoptera *Chalicodoma muraria*, F., *Psithyrus vestalis*, Fourc., and *Andrena hattorfiana*, Fab.; and the Dipteron *Syrpitta pipiens*; the moths *Melanippe sociata*, Bork., *Bapta temerata*, Hb., and *Boarmia repandata*. At night the beetle *Melolontha vulgaris* ♂, flew into my bedroom with great noise. In the morning I also took the Ants *Formica sanguinea*, Latr. and *Camponotus ligniperdus*.

May 13th.—This morning by train to St. Triphon at 8 a.m. Thence by walking along a track directly parallel to and north of the railway in due course I reached the banks of the River Gryonne. These banks I found better up stream, rather than down stream, as the section where the Gryonne joins the Rhone and the Rhone banks themselves produced practically nothing. Working up the Gryonne banks against the stream I found *Hamearis lucina*, the "blue" *L. cyllarus* in some abundance and both sexes, some fresh *C. palaemon*, *Polygonatus thesites*, Cant., a few of both sexes but in splendid condition; *Cupido*

sebrus, *P. icarus*; the moth *Lobophora halterata*, Hufn., ♀; and the Neuropteran *Ascalaphus longicornis* in abundance; also the Rhyncotid *Carpocoris purpureipennis*, De Geer, on bushes in some numbers by the River bank.

After walking back along the banks of the Rhone, a most fruitless journey, I came to some woods alongside the Rhone, and just opposite to St. Triphon these produced a nice fresh series of *C. palaemon*; the Coleoptera *Trichodes albrearius*, Fabr., *Pyrochroa serraticornis*, Scop., *Phyllopertha horticola*, L., *Melanotus vittatus*, F., *Abax striola*, F., and *Leptura aethiops*, Poda; the Hymenoptera *Arge enodis*, *Tenthredella solitaria*, Scop., and the ant *Formica pratense*, Ritz.; *Macrophya ribis*, Schrk. and *Syrphus ribesii*, L., and the Diptera *Empis tessellata*, Fabr., and *Chrysotoxum italicum*, Rond., and the Neuropteran *Philopotamus gudificatus*, Meh. After midday the heat was pretty awful and I was glad to rest and take the afternoon train back from St. Triphon station to Aigle. I may mention that the road electric tramway Aigle—Ollon—Monthey serves this locality just as well and provides a more frequent stopping service than the Railway. It was interesting this morning to watch *Ascalaphus longicornis* emerging in great numbers along the banks of the River Gryonne. When the wings first begin to grow they are of a pale yellowish green, the distinctive colorations appearing later, but in short duration.

May 15th.—To St. Triphon station this morning early. Then I found the road which leads through the Charpigny Estate, only a short distance from the Railway, to the north of it. I spent several hours on this rocky eminence and took *Erebia medusa* quite fresh, also *Heodes dorilis*; *Melitaea cinxia*; the moth *Aglia tau*; and a few Coleoptera, amongst them *Telephorus rustica*, Fall.; and the Hymenoptera *Tenthredella temula*, Scop.; *Chalicodoma muraria*, F.; *Bombus pratorum*, L.; *B. sylvarum*, L.; *Odynerus pictus*; *Bombus subterraneus* (*latreillellus*); and the Diptera *Chrysotoxum fasciolatum*, M.G., a beautiful fly. *Cupido minima* was conspicuous amongst the Butterflies, and I saw several *P. machaon*, but they were elusive. The day was very hot, and the only one or two men I saw walking through the Estate seemed too much affected with the heat to take any notice of me. There is suitable collecting ground throughout the length of the road which winds around the Estate, which appeared to have hardly altered at all since I was last there by the courtesy of the late Monsieur Fison, in July 1909, a day which I shall never forget.

May 16th.—This morning I spent on the sloping marshy pastures between the Grand Hotel, Aigle, and Ollon. I took the following in superb condition *H. dorilis*, both sexes; *P. semiargus*, males only; *M. cinxia*, and *P. icarus*. I noticed also the moth *Aglia tau*, and *Erebia medusa*. There is a small pond in the area, to the right of the road around which a number of Dragon Flies were flying, but they managed to keep out of reach. I took the Rhyncotid *Syromastes marginatus*, L. At night a male and female of the moth *Melanippe procellata* flew into my bedroom.

May 17th.—Today by the River Gryonne, which flows into the Rhone between St. Triphon and Bex, and in the marshy fields adjoining the River for some distance *Erebia medusa* was becoming more abundant, and *Melitaea parthenie* was just emerging. A nice number of *P. thersites*,

both sexes and in good condition were found settled on *Onobrychis sativa* by the banks of the Gryonne. *P. icarus* were also in the same situation, I thought not so common as *P. thersites*; I took one specimen of the moth *Lithosia sororcula*. The day became stormy about 3.0 p.m. and ended in torrents of rain from 5.30 p.m. onwards after my return. *Zygaena achilleae*, Esp. were beginning to emerge.

(To be concluded.)

Notes on Algerian Butterflies with Special Reference to some Localities in Kabylia.

By Miss L. M. FISON.

(Concluded from page 8.)

The genus *Vanessa*.—Apparently the "Peacock Butterfly" (*V. io*) does not exist in Algeria. I have never seen it nor have I found any record of it.

Pyrameis atalanta.—Not uncommon in Kabylia. It seems to fly early and late. I have seen it as late as December, and yesterday, January 22nd, 1931, I saw one near a Kabyle village at a height of about 3000 ft. above sea-level. It must have been a hibernated specimen—which the first sunny day had brought out after weeks of torrential rain, snow and sleet. Michelet itself is placed at a height of 1132 French metres above the sea, and in winter we are frequently blocked with snow which lies at a depth of anything between 30 centimetres to 1 mètre 50.

P. cardui.—Common in the valley of the Sebaou. (L.M.F.) Plateaux, Tell, Sahara, Biskra and Blida. Sometimes in great numbers.

Eugonia polychloros.—Azazga, Djidjelli, Port Gueydon, Mékla, Michelet, Yakouren; also I think *E. erythromelas*.

Euranessa antiopa.—The "Camberwell Beauty" I have seen only occasionally in the forest of Yakouren. (L.M.F.)

Polygonia egea.—Azazga, Michelet, Valley of Oued, Djemaâ, Mékla.

P. c-album.—The same localities.

Melitaea aurinia subsp. *iberica*.—N. Africa, no locality given, I have never seen it yet. (L.M.F.)

M. desfontainii.—The Tell.

M. aetherie subsp. *algerica*.—Tlemçen, Tenienn, Plateaux and Tell.

M. phoebe.—Tlemçen, Lambèse.

M. didyma.—Plateaux, Tell, Sahara, Michelet, Oued, Djemaâ.

M. didyma subsp. *deserticola*.—Biskra and Tenienn.

M. deione.—Not seen.

M. cinxia.—Not seen.

Issoria lathonia.—Valley of the Sebaou, mountains above Fréha. (L.M.F.)

Argynnis aglaia.—Not seen.

A. adippe.—Kabylia. Probably subsp. *auresiana*.—Valley of the Sebaou. (L.M.F.) Aurés Mts. and Plateau.

A. paphia and *A. pandora*.—Both in woods near Azazga. (L.M.F.) Aurés Mts., Plateaux, Blida, Tenienn, Sebaou, Tlemçen, Oran.

The interesting and beautiful genus *Erebia* does not seem to exist

in North Africa, although of course probably the extreme heights of the Atlas Mountains have as yet not been much worked.

Libythea celtis.—I have not as yet found a specimen of this butterfly, but probably because I have not paid sufficient attention to it.

Neither the "Purple Emperors" nor "White Admirals" seem to exist here. The "Hairstreaks" were remarkably abundant in two localities with a profusion of rare "blues" in June and July, 1921, in a ravine near Djemaâ Sahridj. I would especially recommend this locality to any entomologist who should visit Kabylia. In 1922 again they swarmed in a wood near the river Sebaou, close to the village of Aboubrou half-way between Azazga and Mékla at the end of May, June and July, 1922. I should be very pleased to direct any entomologist to these two localities should they wish to visit them.

They are the best I know for these species and undoubtedly an expert would discover interesting secrets in both these local spots. Also in Azazga forest. (L.M.F.)

Strymon (Thecla) ilicis.—Guelma, Souk Ahras.

Zephyrus quercus subsp. *iberica*.—Sebdou.

Cigaritis zohra.—Guelma.

C. siphax.—Teniett.

Thestor ballus.—Abundant each year in the valley of the Sebaou, Azazga, Mékla, Michelet, Aggribbes, Port Gueydon. (L.M.F.) Blida, Kantara, Lambèse, Bougie, Algeria, Constantine and Hammam.

T. mauretanicus.—Algiers, Lambèse, Mustapha Supérieur, Constantine.

Rumicia phlaeas.—Valley of the Sebaou. (L.M.F.) Lambèse, Constantine, Biskra, Blida, Oran, Tlemçen, Hamman. f. *eleus*.—Guelma.

Lampides boeticus and *Syntarucus telicanus*.—Both, I think, very abundant in the two localities mentioned with the "hairstreaks" with a lot of other blues, which I could not identify—as I had never seen specimens in Europe and I have never seen an Algerian collection. Very interesting localities to entomologists. (L.M.F.) I shall hope to re-visit these spots this year.

Tarucus theophrastus.—Teniett, Sebdou, Kantara, Souk-ahras.

Zizera lorquini.—Teniett, Blida, Tlemçen.

Plebeius martini.—Lambèse, Teniett, Cascade.

Scolitantides baton (= *vicerama*).—Kantara, Hamman.

Everes argiades.—Blida.

Aricia medon.—Lambèse, Michelet.

Polyommatus icarus.—Valley of the Sebaou, Michelet, Mékla, Azazga. (L.M.F.)

P. thetis (bellargus).—Sebdou.

Glaucopsyche vyllarns.—Hammam.

Lycanopsis argiolus.—Spring and summer, Valley of Sebaou, Ait Saâda, Michelet. (L.M.F.)

G. melanops.—Kantara, Blida, Lambèse, Philippeville, Michelet (com.).

Carcharodus lavatherae.

Spilothyrsus boeticus.—Guelma.

Erynnis alceae.—Sebdou, Tlemçen, Salda, Maglimi.

Powellia therapue.—Blida, Sebdou.

Hesperia alveus.—Sebdou, Tlemçen, Saïda.

H. onopordi.—Lambèse.

Sloperia proto subsp. *mohammed*.—Algiers, Teniett, Seb dou.

Powellia sertorius (*sao*).—Guelma, Michelet.

Thymelicus acteon.—Lallah, Magnia.

Adopaea lineola.—Teniett.

A. hamza.—Teniett.

A. flava (*thauimas*).—Lallah, Magnia.

Augiades sylvanus.—

Parnara nostradamus, *P. mathias*, and *P. zelleri*.—Seb dou.

In conclusion let me say that I fully realise how incomplete these notes are—and how much more ground needs yet to be covered in order to get an adequate knowledge of these localities. These notes are however intended to be merely preliminary to others and we hope year by year to add to them. The primary object has been to suggest localities for further research—and to encourage entomologists more expert than myself to come to Kabylia and discover more about the rich butterfly fauna produced in this beautiful land. A visit of several months from February to the end of June would well repay the eager searcher. Azazga, Tizi-Ouzou, Tizgirt and Michelet are certainly good centres from which to work. Probably Kerrata too at the foot of the famous Gorges du Chanet-es-Akra would also prove a good hunting-ground. Kabylia is opening up in all directions with a good communication of trains and motor-buses, etc., and the hotels are quite moderately comfortably. It is therefore with no hesitation that we affirm the *Djurjura Mts.* of Kabylia to hold secrets well worth unravelling—and secrets which have certainly remained for centuries absolutely hidden to the great majority of the inhabitants of Algeria.

Original Descriptions. By C. Mosley.

Below are the original descriptions of several aberrational forms which have appeared in more or less obscure journals or publications and therefore very difficult for the average worker to obtain.

I. The new forms announced by C. Mosley in the *Naturalist's Journal* more than 30 years ago.

Pieris napi ab. *aurea*, Mrly. *Nat. Jr. Sup.* p. 6 (1896). The name was given to a coloured figure on pl. 11. fig. 10. from an example in Capper's Coll. Yellow with nervures clouded with grey and the usual females markings on all wings; not the bright canary-yellow. S. of England.

Euchlōe cardamines ab. *minor*, Mrly. *Nat. Jr. Sup.* p. 6 (1896). "♂ and ♀ measuring 15 lines in expanse; fairly constant and recurring. It is in many collections: I have taken it at Arnside, and Mr. Barrett says (*E.M.M.* XXV. 81) it occurred regularly for some years in Surrey, a few days before the ordinary form."

Aricia medon (*agestis*), Mrly. *Nat. Jr. Sup.* p. 8 (1896). "Ground colour below brown. A form of the second brood."

Polyommatus thetis (*adonis*) ab. *pallida*, Mrly. *Nat. Jr.* p. 9 (1896). "The ♂ pale lilac, the ♀ pale brown." This form occurs on the Kentish coast.

Lycaena arion ab. *immaculata*, Mrly. *Nat. Jr.* p. 10 (1896). "With only disc spot," pl. IV. fig. 13.

Aglais urticae ab. *pallida*, Mrly. *Nat. Jr.* p. 14 (1896). "Ground straw-colour."

Melanargia galathea ab. *rubra*, Mrly. *Nat. Jr.* p. 16 (1896). "Black markings replaced by red-brown."

Pararge aegeria ab. *bipupillata*, Mrly. *Nat. Jr.* p. 16 (1896). "Tip spot on fore-wings with two white spots."

Pararge uegera ab. *bipupillata*, Mrly. *Nat. Jr.* p. 16 (1896). "Apical spot with two white dots."

Adopaea sylvanns ab. *pallida*, Mrly. *Nat. Jr.* p. 16 (1896). "The ground colour being of a yellowish bone-colour."

Adopaea comua ab. *pallida*, Mrly. *Nat. Jr.* p. 17 (1896) pale.

Adopaea lineola ab. *pallida*, Mrly. *Nat. Jr.* p. 17 (1896) pale.

George Crabbe 1754-1832.

This year is the centenary of the Poet Crabbe.

Everyone of course, has heard of him as a poet, but I should imagine that very few people know that he was an entomologist!

He was born at Aldborough, in Suffolk, on December 24th, 1754, and was brought up to be a doctor, but he soon gave up the medical profession, and took to literature, in which he became eventually distinguished.

In 1781 he qualified himself for holy orders, and became domestic chaplain to the Earl of Rutland. He had many distinguished friends including Dr. Johnson, Burke, Fox, etc. He was presented with a number of livings, including Muston, and Croxton Kerrial, in Leicestershire. It was in Leicestershire that he did much of his collecting, and he published an essay on "The Natural History of the Vale of Belvoir" which was written for "*Nichols's History of Leicestershire*" (1795). The part containing the Coleoptera in this paper was reviewed by the writer in the Transactions of the *Leicester Literary and Philosophical Society* 4 198-200 (1896). I came across this paper when taking notes for the Donisthorpe pedigree in Nichols's History.

Crabbe evidently had a very fair idea of Natural History and also a knowledge of the various works on Entomology then extant. In Thomas Marsham's "*Entomologia Britannica*" several beetles are given as "Ex mus D. Crabbe." It would be interesting if possible to find out what has become of this collection. To mention some of his Poems the best known are "The Candidate"; "The Village"; "The Borough," perhaps his best; "Tales in Verse"; and "Tales of the Hall."—HORACE DONISTHORPE.

NOTES ON COLLECTING, etc.

NOTES ON A FEW LEPIDOPTERA FROM SALONIKA.—It may be of interest to record a few insects I took in Salonika in 1918 and early 1919; as the box containing them was mislaid, until recently, there was no opportunity to do so before.

Epinephele jurtina and f. *hispulla*, *Polyommatus icarnus* (type), *Tarucus balkanica*, *Syntarucus telicamus*, *Coenonympa pauphilus* race *lyllus*, *Oecogygia parasita*, Hübn., *Euxoa spinifera*, Hübn., *Euxoa radius*, Haw., *Cucullia chamomillae*, *Zamacra flabellaria*, Heeger., *Cidaria obstipata*, Fabr., *Celama chlamitulalis*, Hübn.

These were identified by Capt. Riley and others at the Natural History Museum, S. Kensington, without whose kind assistance several species could not have been named.

O. parasita came freely to light in the army huts during the last few days of Dec. 1918 and first week of January 1919—at that time there was a severe frost, and snow was on the ground. *Cidaria obstipata* was out in February.—G. S. ROBERTSON, M.D., "Struan," Storrington. February 9th, 1932.

A NOTE ON *UHLUNGA TYPICA*, DIST., (PENTATOMIDAE).—Early in June of last year I found a number of Pentatomid egg-clusters on the leaves of a wild species of fig. (*Ficus ingens*, Miq.), growing in my garden at Barberton. The egg-clusters were more or less circular in form, and each consisted of a single layer of eggs varying from about thirty to fifty in number. In each case the female Pentatomid was observed resting on the eggs, remaining there, or in close proximity to the eggs, until hatching took place. The nymphs, on hatching, migrated to the fruits where they, as well as adults, were to be found in considerable numbers. The insect has since been determined as being *Uhlunga typica*, Dist., by Mr. B. P. Uvarov, of the Imperial Institute of Entomology. Dr. Imms in his *General Textbook of Entomology*, p. 346, under "*Pentatomidae*," quotes two similar cases with reference to other species.—J. SNEYD TAYLOR, (M.A., D.I.C., F.E.S.), Pretoria, Transvaal.

PROCRIS GLOBULARIAE AND *P. COGNATA*.—Dr. E. A. Cockayne in his paper on the early stages of *Procris globulariae*, Hb. and of *P. cognata*, H.S. in the February number of the *Ent. Record* states, p. 19, "None of the Sussex collectors, who have been breeding it from time to time for many years, seem to have noticed that the larva they found was quite unlike that described in all our books." I am afraid Dr. Cockayne hardly gives the credit to at least one Sussex collector that he deserves. If he will turn to *Entomologist* Vol. LIV. (1921) p. 240, he will find there a note by myself on this larva in which I state "I am indebted to the kindness of Mr. F. G. S. Bramwell of Brighton, for a supply of larvae of this extremely local moth, and also for pointing out that Buckler's figures and description do not agree with British examples of the larvae."

Dr. Cockayne says "I have found no published description or figure" of the larva. It is true in my short note I did not give a full description, but I did in it point out the differences, as I noted them, between the larvae supplied by Mr. Bramwell, and Buckler's description, and suggested that the difference is so great that I am inclined to think Buckler, who obtained his larvae from Continental sources, must have had some other species.—W. G. SHELDON (F.Z.S., F.E.S.), "West Watch," Oxted. March 4th, 1932.

MORE ABOUT *MANDUCA ATROPOS*.—Adverting to my note on a larva of this species, found on privet in this village on August 19th last and recorded on p. 157 of last volume, I think it will be desirable to give its further history. The larva duly pupated in about a fortnight after it went down in a pot of soil on the 21st and was left in the pot covered with the soil, but under a "tent" of cardboard to prevent the

soil from pressing on it. It was kept thus in a cold, but frost-proof, room with a north aspect and I decided to try the experiment of leaving it thus for at least several months, as I had no bellglass, or similar convenience, for forcing it in the recognised way. Every few weeks the pupa was inspected and touched, and it responded vigorously with tail turnings and twitchings until about the middle of December it occurred to me to try a little mild forcing on it. It was therefore established in an old breeding cage, made out of a "50" cigar box with perforated zinc sides, ends and lid. This was stood on end and fitted at the "bottom" with a small tin box containing damp earth on which several layers of newspaper were laid and finally a piece of tissue paper; on this the pupa rested quite exposed, and remained so (with occasional soakings of the earth with *warm* water, to prevent the pupa from being chilled) between the hot water cistern and the wall in our kitchen airing cupboard at a temperature varying between 65° and 80° Fahr., until a fine male of the intermediate form emerged in the evening of February 15th. Next day I took it in the box to show such of the villagers as were interested, and all were much impressed with its handsome, but uncanny, appearance and said they had never seen such a moth before. It was perfectly quiescent, probably on account of the prevailing chilly weather, and I could not induce it to squeak. I kept it alive, still in the box, until the 21st, when, as it had not moved and seemed torpid with the cold, I put it in the cyanide bottle.—C. NICHOLSON, Tresillian, Cornwall.

CRITICISM, CORROBORATION, ADDITIONS to "Recent additions to Irish Fauna and Flora" *Proc. Roy. Irish Ac.* XXIX. Sect. B. No. 1, pp. 19-20 (1929)—*Eucosmia cruciana*, L. (*angustana*, Hb.).—Among willows at Narin and Portnoo, Co. Donegal, August, 1930, but Meyrick says, "Britain to the Orkneys, Ireland, common," p. 546. Kane gives a long list of Irish localities. *Argyroploce semifasciana*, Hb.—Abundant at Inch, Kerry, July, 1905. *A. corticana*, Hb.—One in woods skirting Carrig Mt., Co. Wicklow. Meyrick, "Britain to Ross, local." June, 1925. *A. profundana*, Fb.—Rathdrum, Co. Wicklow, August, 1924. *A. micana*, Fröl.—One, Caragh, Co. Kerry, June, 1912.

Of the following I can find no previous records. *Eucosma crenana*, Hb.—Kilelief, Co. Down, August 17th, 1929 (Identification doubtful). Meyrick, "North of England, Perth." Therefore Co. Down, is a likely locality. *Penthina staintoniana*, Barr. (*grevillana*, Curt.).—One at Powerscourt, Co. Wicklow, June, 1924. Meyrick, "Perth to Sutherland, local. Not recorded elsewhere." *Simaethis pariana*, Clerck.—One at Donegal Town, August, 1931. Meyrick, "Britain to the Clyde, local." *Platyptilia calodactylus*, Schiff. (*zetterstedtii*, Zell.) (*taeniodactyla*, South).—One at Valentia, Kerry, on the road beside the old reservoir, June, 23rd, 1928. Meyrick, "Kent, Devon, Cornwall, local." *Tinea semifulvella*, Haw.—One Strangford, Co. Down, July, 4th, 1930. Meyrick, "Britain to Perth, rather common.

The only really remarkable record among the above is that of *P. staintoniana*, as it is a long hop from Perthshire mountains to Co. Wicklow. Mr. A. Stelfox says, however, in a letter on the subject, "Wicklow is full of Northern Hymenoptera so you need not be surprised to get a Scottish type of micro there." However, as regards the other four insects, the sea is the only gap, while with *staintoniana*

there is not only sea, but wide stretches of land, intervening. As regards *calodactylus*, for example, Kerry and Cornwall are closely connected botanically and zoologically, and *Gnophos myrtillata* (*obfuscaria*), *Entephria flavicinctata* and *Nyssia zonaria* show the same connection between N. Ireland and W. Scotland.—(REV. CANON) G. FOSTER (B.D.), Strangford, Co. Down.

CURRENT NOTES AND SHORT NOTICES.

A Meeting of the Entomological Club was held at "Caracas," Ditton Hill, Surbiton, on March 3rd, 1932, Mr. W. J. Kaye in the Chair. *Members Present* in addition to the Chairman:—Mr. Robt. Adkin, Mr. Jas. E. Collin, Mr. H. Donisthorpe, Dr. Harry Eltringham, Prof. E. B. Poulton, Mr. H. Willoughby-Ellis. *Visitors Present*:—Mr. J. A. Simes, Mr. G. C. Leman, Mr. C. H. Lankester, Dr. Karl Jordan, Mr. C. N. Hughes. The guests were received by Mr. and Mrs. Kaye, and Tea was dispensed by Mrs. Kaye. The comprehensive and interesting collections of Lepidoptera were on view throughout the evening. Supper was served at 8 o'clock. During the evening it was announced that Dr. Karl Jordan had been nominated a Fellow of the Royal Society. A very successful and most enjoyable evening was spent.—H. W.-E.

Our readers will no doubt have been surprised that the review on Dr. Joy's recently published *Hand Book of British Beetles* (antea p. 51) was written by our sub-editor for Orthoptera and not by myself. I may mention that my friend Dr. Burr asked me first if I minded if he wrote a general review on the above work, as he had half promised Dr. Joy he would do so, and I of course replied that I did not mind. The *Entomologist's Record* was not given a copy to review as were its two contemporaries, one of which does not now cater for the coleopterist while the *Ent. Record* does. In these difficult times the price of the book is almost, if not quite, prohibitive to most working coleopterists. Moreover the *Record* has as large a circulation abroad if not larger than either of its contemporaries. The publishers however know their own business best,⁶ it is the author that suffers generally in restricted issues. The chief point, however, is this—the whole object of the book is to enable beginners, and others, to easily identify their beetles with the use of its tables. No one could properly, or fairly, criticise this work until he, and others, have used the tables for some months, and not just dipped into it, here and there. If this object is attained then as my colleague says "Hats off to him"! but if on the other hand it is not, then the book is worthless, an unnecessary expense, and a woeful waste of time. I propose later to publish a critical review in our magazine, and shall be much obliged if any Coleopterist who has used the book will let me know what his experience is with regard to the tables.—H.D.

A List of the Butterflies and Moths of Folkestone (Macro-Lep.) by A. M. Morley, M.A., 1/- (Folkestone Natural History Society). No doubt the List will be found useful to those lepidopterists visiting this neighbourhood. It is a List only with scarcely any information beyond "local," "scarce," etc., an occasional localisation, and a very occasional line of real information. Some so-called English names are given. The real names are given from Seitz *Pal. Lepidoptera*.

Several errors have crept in partly owing to the printer and partly that it was not checked by one of our up to date lepidopterists. We note *meqaera*, *hyperanthus*, *corydon*, *astrarche*, *sibylla* which are modern unnecessary alterations in place of the originals *meqera*, *hyperantus*, *coridon*, *medon*, *sibilla*. We British always use *aegon* (as Seitz notes to be preferable). *Lubricipeda* should now be replaced by the prior *lntea*. *Chrysorrhoea* by *phaeorrhoea* the prior name. *Derasa* was shown a decade or more ago to be *pyritoides*, and Rothschild long before showed that *Macroglossa* should be the prior *Macroglossum*. Curtis spelled *litoralis* from Latin *litus*, a shore, and not from the Italian *littorale*. *Apamea nicitans* speaks for itself. *Cosymbia puppillaria* (*porata*) was funny; the *porata* intended was on the next page of Seitz. We rather think that all our modern British collectors use South's 3 Vols. and that the List would have been better based on them, in spite of the want of Indexes.

The *Supplement to Seitz Palaeartic Macrolepidoptera* is making steady progress; Parts 30 and 31 are recently to hand. Part 30 continues the additions to the Bombycids, the species found in Britain to which additions have been made are *Diaphora mendica*, *Diacrisia sannio* (14 names), *Arctia caja* (41 names), *A. rillica* (12 names), *Callimorpha dominula*, *C. quadripunctaria*, *Hipoerita jacobæae*, *Dasychira fascelina* (6 names), *Orgyia antiqua*, *Lymantria dispar* (13 names), *L. monacha* and *Euproctis chrysorrhoea*. Those working with the polymorphic species *A. caja* and *L. dispar* cannot dispense with the matter contained in this part, showing what an amount of study has been put into almost every species since our late editor initiated the intensive study of aberration and variation. Part 30 continues the additions to the Agrotids by Dr. A. Corti, with 2 plates containing no less than 111 very good figures of forms of various species of *Euwoa*. In the 4 pp. of text of this part the only species found in Britain is *tritici* of which the author notes the extreme variability and remarks that possibly some aberrations may turn out to be good species. The author says "Other denominations of aberrations by Tutt and other English authors appear to me absolutely unjustified as they only refer to quite unimportant colour and marking aberrations and cannot be clearly separated from one another." The var. *psendogothica*, P. Curt. is both described and figured as a local race of Britain.

In the *Int. Ent. Zeit.* for February 1st is an article on "Melanism in Butterflies" by Dr. Walther, and in the report of the Verein Apollo a summary of aberration in *Mimas tiliæ*.

Nomenclature.

Linneus in *Systema Nat.* Ed. X., p. 505 (1758), described under the name *lubricipeda* two forms which were subsequently proved to be two species. He numbered these (a) a white form and (b) a yellow form. Subsequently Hufnagel, *Berl. Mag.* II., p. 412 (1766), revised this and naturally named the (b) the yellow form, as *lntea*, properly restricting the name *lubricipeda* to the first form the white. This white form was redescribed by Esper as *menthastri*, *Schm. Abbild.* III. 334, pl. 66 (1786). Unfortunately this redundant name was copied

by most subsequent authors, in spite of periodical reminders. In Kirby, *Syn. Cat. Het.* 227, 228 (1892) the nomenclature is correct. It is much to be regretted that in our latest British authority this repeated correction is ignored.—Hy.J.T.

Nomenclature—Errors IV.

Coleophora lineolea, Haw.—In 1828 Haworth described a species under the name *lineolea*. The specimens still exist. The description, although possibly sufficient at that date, is very incomplete. Stephens in 1829 copied the description (translated from the Latin) but did not enlarge it, in his *Illustrations*. In 1850 Zeller from a single example introduced a species under the name *crocogrammos* with an adequate description, in the *Linn. Ent.* In 1854, Stainton, recognised *crocogrammos*, Zell. as the *lineolea*, Haw., in the *Ins. Brit. Tineina*, and in *Nat. Hist. Tin.* IV. verified his recognition by comparison of Zeller's species with Haworth's specimens in the Brit. Museum, 1859. Zeller was joint author of this last volume and must have fully agreed with the correctness of Stainton's judgment. In Meyrick's *Hand.* 1895, the name *lineola* is accepted but in the Revised edition, 1928, we get the mutilated name *crocogramma* for Haworth's *lineolea*. The larva of this species feed in rough irregular cases on *Ballota nigra* and *Stachys* sps.

In Stainton's *Annual*, 1858, is described another species of the genus *Coleophora* under the name *apicella*, the larvae of which feed in neat cylindrical cases on the stichwort seeds, and the species belongs to a different section of this large genus according to Heinemann, *Schm. Deutsch. und Schw.* In Meyrick *Revised* edn., the name has been substituted for Stainton's name *apicella*, a most strange and inexplicable muddle.

These species should stand *Revised Hand.* p. 761. No. 54 *C. apicella*, Stain. and 55 *C. lineolea*, Haw.

NOTE.—It has been pointed out by T. B. Fletcher, *Generic names Microl.*, 52, that *Eupista*, Hb. should be used for *Coleophora*, Hb. if the *Tentamen* of Hübner be rejected finally in the Entomological Rules of Nomenclature now being revised.

Aspilates citraria, Hb.—This should be **Aspitates**, Tr. (a case of wrong copying) *ochrearia*, Rossi (prior name). Corrected by Prout in Seitz; see *Ent. Record* List of British Geometers.

Ptychopoda bisetata, Rott. should be **P. biselata**, Hufn. The specific name was copied wrongly by Rottemberg. Corrected by Prout in Seitz.

Corydon, Fb. and *sibylla*, L. should be **coridon**, Poda, and **sibilla**, L. respectively.


Actaeon, Rott. is another strange spelling error or "rectification," Rottemberg wrote **acteon**.

REVIEWS AND NOTICES OF BOOKS.

THE BUTTERFLIES OF THE DISTRICT OF COLUMBIA AND VICINITY. By A. H. Clarke, Smithsonian Institute, U.S.A., 1932. 282 pp., 64 plates.—One of the first essentials of a work on a limited fauna is a map. Unfortunately this otherwise excellent work is spoiled by the

absence of this key to the understanding of the district and the species distribution. The distinguishing generic and specific characteristics are all carefully tabulated from the descriptions given by Scudder in his great work on the "Butterflies of the Eastern United States" and thus much repetition is precluded. Every species is figured and in the text under each species the whole account is restricted to biological facts, under headings:—Occurrence, History, Seasons, Habits, Spring forms, Sequence of forms, Notes and Remarks and occasional references to Broods, Caterpillar, Chrysalis, Local Variation, etc. Some 60 pp. are devoted to summaries of the facts; Racial Forms, Faunal Limits and Relation, Species Permanent in District, Immigrant Species, Typical species of various habitats, Day and Seasonal occurrence of Butterflies, Succession of Butterflies, Pressure of Population, Effects of Storms, Butterfly Migration, etc. A mass of well digested matter and full of interest rather for the entomologist than for the mere collector. There are some notes on the Odours of Butterflies, and pls. 59-64 deal with the curious and so far unexplained effects shown on a sensitive photographic plate when the wings of butterflies are placed on them in complete darkness.—HY.J.T.

THE BIOLOGY OF SPIDERS with Especial Reference to the Danish Fauna, by E. Nielson. Vols. I. II. 248 pp. XXXII plates (89 figs) + 724 pp. V. pls. (4 coloured), 465 figs. Messrs. Levin and Munksgard, Copenhagen 1932.—These two small quarto volumes are printed partly in English and partly in Danish. Vol. I wholly in English is a most interesting and full discussion of the Biology of these creatures, while Vol. II is the systematic portion and deals not only with species found in Denmark, but includes notes on species native of Sweden, the Tyrol and the Riesen-gebirge. Spiders are generally considered as outside the perview of the entomologist, but the biologies of spiders and insects are so closely interwoven that entomologists must often desire to gain a certain amount of knowledge of the former group. Although a number of figures of the creatures themselves is given, the bulk of the illustrations are of the snares, the retreats, cocoons, etc. with a few exhibiting special structures which have been evolved for functions which are specific rather than of general occurrence. The sections devoted to the "water spider," *Argyroneta aquatica*, the "garden" or "cross" spider, *Epeira diademata*, and *Atypus affinis*, the so-called "trap-door" spider of England, are most interesting and full. In fact the whole of the first volume is most attractive reading. The introductory portion is, perhaps, the most useful portion for a beginner dealing as it does with (1) Moulting; (2) Regeneration of limbs; (3) Sound producing organs; (4) Types of Webs; (5) Types of Snares; (6) Special Threads; (7) Uses of Claws; (8) Nests of spiders; (9) Copulation; (10) Egg-laying; (11) Cocoon; (12) Gossamer; and finally (13) The Spider as a Sky-pilot. A large number of references is given to each species both in the Text and in the List of Danish Spiders, a good Bibliography and two Indexes are also given. But one would like to have seen in the sections of Vol. I. reference to the sections of Vol. II. where more detailed information could be found without consulting the index of that volume. The get up of these volumes is everything that could be desired. It is rarely that one gets such a wealth of illustration as one finds in these two volumes.—HY.J.T.

 **BITUARY.****J. J. Joicey.**

We much regret to record the death of Mr. James J. Joicey from heart failure on March 10th at his residence, the Hill, Witley, Surrey. He was 61 years of age.

From boyhood he was interested in Lepidoptera, but it was not until a few years before the war that his interest in Exotic Lepidoptera led him to build up the vast collection which he has left. His purchase of the Grose-Smith Collection in 1910 and of the Druce Collection in 1912, served at once to make his own Collection one of the largest private Collections in existence. Since 1914, Mr. Joicey's Collection has steadily grown in size and in scientific importance. It was developed by the purchase of other private Collections, among which the most notable were those of Trimen and Elwes. At the same time, Mr. Joicey sent the brothers Pratt to S. America and to New Guinea, and later, the late T. A. Barns to little-known parts of Africa. These collectors sent home an immense amount of material, a great deal of which was new to science.

In 1921, Mr. Joicey published the first part of the *Bulletin of the Hill Museum*, of which four volumes have been completed. In addition to this, the work carried out at the Museum formed the subject of 87 papers in other journals. Mr. Joicey was also responsible for the publication of Talbot's "Monograph of the genus *Delias*" of which however only five parts have been issued. A Catalogue of the Type specimens of Rhopalocera in the Collection has been prepared and will be published shortly. He made very large gifts of specimens to the B.M., including the entire material of a number of families. Recently he had arranged to concentrate on African Lepidoptera, and arrangements were being made to extend this fauna very considerably, whilst reducing many other groups.

Mr. Joicey was a fellow of the Entomological, Zoological, Linnean, Royal Geographical and Royal Horticultural Societies.

[An interesting account of Mr. Joicey's gifts to the Natural History Museum appeared in the *Times* of March 16th.]

Richard South.

We much regret to announce the death of one whose name has been an oracle with all the budding lepidopterists of the last quarter of a century. Richard South died on March 28th, at the fine old age of 85. To the younger generation he was known as the author of that wonderful work on British Butterflies and Moths in 3 vols., a work that every older lepidopterist would have been only too glad to possess when he began his collecting career. To the older men he was known personally as an ever present member of the South London Entomological Society of which he had been a strong supporter during the whole of the active part of his life. He had been on the Council many times, had held the chair for two periods and shared in all the Society's activities until some twenty years ago. He had been a Fellow of the Entomological Society for many years and had served on the Council. A full Obituary of him was in the *Times* of March 31st.—Hy.J.T.

All MS. and EDITORIAL MATTER should be sent and all PROOFS returned to H. J. TURNER, "Latemar," West Drive, Cheam.

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

Reprints of articles may be obtained by authors at very reasonable cost if ordered at the time of sending in MS.

Articles that require ILLUSTRATIONS are inserted on condition that the AUTHOR defrays the cost of the illustrations.

EXCHANGES.

Subscribers may have Lists of Duplicates and Desiderata inserted free of charge. They should be sent to Mr. H. J. TURNER, "Latemar," West Drive, Cheam.

Duplicates.—*S. Andrenaeformis*, Bred 1928, well set on black pins, with data.

Desiderata.—Very numerous British Macro Lepidoptera.—*J. W. Woolhouse, Hill House, Frances Street, Chesham, Bucks.*

Desiderata.—Species of Dolerine and Nematine sawflies not in my collection; list sent.—*R. C. L. Perkins, 4, Thurlstone Road, Newton Abbot.*

Duplicates.—*Albimacula**, *sparganii**.

Desiderata.—Ova of *D.oo. pupae* of *X. gilvago*, *D. caesia*. *A. J. Wightman, "Aurago," Bromfields, Pulborough, Sussex.*

EXCHANGES.—Living Eggs of *Catocala fraxini* and *sponsa*, exchange for butterflies of British Isles.—*C. Zacher, Erfurt, Weimar, Street 13, Germany.*

Duplicates.—*Pyralina**, *Salicis*, *Ianthina**, *Orbicularia**, *Repandata* in variety, *Doubledayaria*, *Black rhomboidaria**, *Black virgularia** and others.

Desiderata.—*Hyale*, *Welsh aurinia*. *Polychloros*, *Tiphon Agathina*, *Lunigera*, *Lucerneae*, *Neglecta*, *Diffinis*, *Populeti*, *Gothica v. gothicina*, *White Leporina*, *Tridens Putrescens*, *Littoralis*, *Typhae v. fraterna*, *Rurea v. Combusta*, *Gilvago*, *Fulvago v. flavescens*, *Liturata v. nigrofulvata*. *Harold B. Williams, Woodcote, 36, Manorgate Road, Kingston Surrey.*

Duplicates.—A large number of species of European and Palaearctic Rhopalocera and Heterocera.

Desiderata.—All British species especially those illustrating characteristics of an island fauna. *Dr. Lor. Kolb, München 54, Dachauer-str. 409, Germany, and Franz Daniel, München, Bayer-str. 77, Germany.*

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Lepidoptera observed in and around the Ran-dan Woods,
Nr. Bromsgrove, 1927-1931.

By P. SIVITER SMITH.

The following list is an attempt to work out the insects occurring in the Ran-dan Woods, consisting of Oak (chiefly), Birch, with Ash and Poplar in very small numbers. The soil is sandy and very light. Honeysuckle is common, and there are odd little patches of Larch. I was at Bromsgrove School during this period 1927-1931, and as all my observations are made during the term, it will be grasped how inadequate the time allowed was for a thorough investigation. This accounts for the almost complete absence of the common *Noctuidae* and other night-fliers which almost certainly occur in large numbers. The locality is, I imagine, a very good one.

RHOPALOCERA.—*Pieris brassicae*, generally common in a large central clearing; less common elsewhere. *P. rapae*, common. *P. napi*, very common, especially on the south side of the woods. *Euchloë cardamines*, common, females scarce. [*Leptosia sinapis*, an intensive search was made for this elusive species, which used to occur here, but without result.] *Aglais urticae*, common. *Vanessa io*, common on the outskirts of the wood facing east. *Pararge wegeva*, occurs in small numbers. *Epinephele jurtina*, abundant. *Coenonympha pamphilus*, very common. *Rumicia (Chrysophanus) phlaeas*, common. *Polyommatus icarus*, common.

In the Report of the Bromsgrove School Natural History Society (September, 1930, to July, 1931) occur the following species, listed as occurring in these woods: *Dryas (Argynnis) paphia*, "1 specimen in 1931." *Argynnis adippe*, "probably of regular occurrence." A species whose presence has not been verified and which therefore should not be in the list. I doubt if it occurs there. *A. aglaia* is not listed. *Brenthis euphrosyne*, "common in some years." In the text of the Report it says that in the woods "several Small Pearl-bordered Fritillaries (*A. selene*) were seen," but *A. selene* is not in the district list so there is a mistake somewhere. Probably *B. euphrosyne* is the species meant in both cases. *Pararge aegeria* var. *egerides*, "Wood Ringlets were abundant in the Ran-dans in July." I am not clear if this is *P. egerides* or *Aphantopus hyperantus*, the Ringlet. In the list for the Ran-dans, *P. egerides* is not represented, while *A. hyperantus* is "common." *Lycaenopsis argiolus*, "not common." I have searched for this species as hard as I have for *L. sinapis* but have not turned it up. I don't know of any specimens being caught lately. *Adopuea flava (thauus)*, "fairly common." *Angiades sylvanus*, "fairly common."

HETEROCCERA.—*Polyphoca flavicornis*, I took one specimen, March 26th, 1931, just emerged. I imagine the species is quite common. *Cosmotriche potatoria*, larvae of course common. *Spilosoma menthastri*, larvae common. *Arctia caja*, larvae more abundant than I have ever met them in one locality. *Taeniocampa cruda*, I have found the wings of this species floating in ditches. *Brephos parthenias*, this species is most abundant, and flies around trees of all species all over the woods. I have not seen *B. notha*; there is no Aspen in the woods that I have seen. *Ortholitha chenopodiata (limitata)*, common everywhere. *Odezia*

atrata, occurs in one field about $1\frac{1}{2}$ miles from the wood, on the east side, but it is not common there. *Eulype hastata*, frequent but by no means common. *Euphyia* (*Camptogramma*) *bilineata*, common, but no nice forms. *Anticlea derivata* (*nigrofasciaria*), not uncommon; generally on Pine trees. *Eupithecia pusillata*, this is probably the most interesting insect that has been recorded in this district. South (*Moths Brit. Isles*. Vol. II.) says, "very local" and gives as localities Kent, Surrey, Hants, Devon, Wilts, and Suffolk. Meyrick (*Brit. Lep.* 1928) gives "Kent to Devon and Wilts, Derby, local." In the *Entomologist*, 1918, p. 187, *E. pusillata* is recorded from Cambridgeshire. I have one specimen taken on May 25th, 1931, resting on a Pine trunk on the outskirts of the wood. This would appear to be the first record of this insect in Worcestershire. Col. C. Donovan kindly confirmed the identification of the insect from a fine series he has taken in the Cotswolds. *Cabera pusaria*, not uncommon. *Selenia bilunaria*, a few specimens seen in 1931. *Erannis* (*Hybernia*) *leucophaearia*, common on oak trunks, ab. *merularia* in 1931 was about 18%, and ab. *marmorinaria* also about 18% of the whole number seen. *Erannis* (*Hybernia*) *marginaria*, I found one female on a small oak bush in 1930. *Phigalia pedaria*, a few, resting on tree trunks. *Ectropis* (*Tephrosia*) *bistortata* (spring form), one in 1930. *Lozogramma chlorosata* (*petraria*), abundant in the bracken.

The following species are mentioned in the School Report, and are insects I have not recorded in that list. *Phalera bncephala*, "not uncommon." *Tephrosia bistortata*, "1 specimen 1931." Date not given.

This list is, of course, absurdly small, but on the average I probably would not have visited the wood more than six times a year, and most of these visits would be in the spring which did not help the number of species observed. Possibly others have notes from this locality which would be of interest, as I have seen no references to it before except by the Rev. F. O. Morris.

Melitaea pacifica, a species hitherto confused with *M. britomartis* form *plotina*, Bremer.

By ROGER VERITY, M.D.

On closing the series of papers on the *Melitaea*, I have published during the last few years in this Journal, I must make an addition to what I have said about *plotina*, Bremer, in Vol. XLII, page 110. On the strength of Bremer's original figure I remarked that this name applied perfectly to the Asiatic form of *britomartis*, Assm., which somewhat recalls, in some respects, the look of *M. diamina*, Lang = *dictynna*, Esp., so that he was quite right in describing it as a variety of the former and in saying that, although it had a very distinct aspect, it was connected with it by transitions; in his description he does not mention the upperside, but it is to be observed that in the figure the whole of the black pattern is remarkably thick, so that, for instance, the inner one of the two premarginal bands of both forewing and hindwing is very broad, and the whole basal half of the hindwing is black, with only a few very small fulvous spaces; the wings are also elongated and rather pointed. All this corresponds exactly to my

diamina-like specimens of *britomartis* from high altitudes in the Altai and from Mondy in the Saján Mts. 2600m. Rühl describes all these features in his long description of *plotina*, page 414. Staudinger in the *Mém. Romanoff*, VI., p. 187, began to mix things up; he states that Bremer figures a specimen with a very broad dark pattern, whereas all the ones received from both eastern and western Siberia by himself had a thin one. Now, since writing my paper of 1930, I have received from Bang-Haas some specimens which have cleared up the situation. They are obviously what Staudinger called *plotina*, but they are distinctly different, notably on the upperside, from Bremer's and there is no sign of transition to the latter in any of them; they are frailer in build, the wings are less elongated, the fringes are shorter and less broadly white, the whole pattern on the upperside is very much thinner so that the inner premarginal band is even partly effaced in one or two of my specimens and the base of the hindwing is fulvous down to the root, with separate bands and streaks across it; there is a remarkable contrast with the underside black pattern, which, in some specimens, is thick on both the forewing and the hindwing and would correspond quite well, in a general way, to Bremer's description. Evidently this resemblance has been the cause of the confusion made by Staudinger and which has spread with his specimens. It is unfortunate, but there can be no doubt that a confusion has been made. The two insects are quite distinct and the fact there is no approach of one to the other, as stated by Staudinger and as shown by my specimens, in a genus such as this one, makes it quite clear. It is possible that Bremer's specimens from lower Ussuria belonged to the other species, but, anyhow, the one he figures must be taken as the "type" of *plotina* and this name used accordingly; it was, presumably, one of those collected by Radd in the Bureja Mts. and it was in this set he noticed the transition to the aspect of the European *britomartis*, which he mentions in his original description and which thus settles, together with the figure, the insect his name must apply to. As to the other, described above, Staudinger's misuse of *plotina* has left it, to this day, without a name and I propose giving it that of ***pacifica***, owing to its restricted eastern area, as compared with those of the other species, which stretch across the Palaearctic region. I select as "Holotype" one of my male specimens of July from Troiz Kossowsk, 800m., on the Tshikoi river, in the south-western Trans Baikal province; others from Sutshanski Rudnik, near Vladivostok, are very similar to them, but larger. The former are smaller than most *plotina* and agree very exactly, in every respect, with Seitz's figure of *plotina* on pl. 67c; two have the underside quite as intensely suffused with ochre-yellow as that figure, whereas this never occurs in the true *plotina*, as I remarked it in 1930, when I thought that tone of colour could only be a mistake in the plate; other *pacifica* have no signs of it and, as a matter of fact, have spaces of a very pure silvery white; these, whether white or yellow, are always separated into small roundish spots with a thick black edge, to a degree not seen in true *plotina*; also the russet spotting of the hindwing is more restricted than in the latter and replaced, in some cases, by a more yellow colour.

It seems highly probable that the single specimen from Ussuria, which Suschkin says he possessed under the name of *plotina* and whose genitalia are, according to his figure and description, extremely similar

to those of *niphona*, Butler, was a *pacifica*. If the genitalia of the latter actually are of this kind, its position would evidently be between *britomartis* and *niphona* and it would confirm my view that *athalia* and *niphona* have sprung, as parallel branches, from a common ancestor. As soon as I can, I will have my own specimens dissected in this connection. The large Vladivostok race of *pacifica* might be called *ussuriae*.

Aigle and the Rhone Valley, Switzerland, in May, 1931.

By LIEUT. E. B. ASHBY, F.E.S., F.Z.S.

(Concluded from page 58.)

May 18th.—After heavy rain in the night the only possible ground was Charpigny, which dries quicker than the low lying meadows around. On the ascent through the property from the St. Triphon station side the males and females of the bee *Andrena hattorfiana*, Fab., were flying numerously around a seat on the right hand side of the twisting path. The Charpigny property now belongs to a Frenchman, who lives in Paris. To-day I met his brother who manages the property for him, and we had a very pleasant chat. I could only box a number of *Polyommatus semiargus*, males, and *P. lyllas*, which latter were emerging this morning, and were found at the damp puddles in the Charpigny entrance road, near St. Triphon station. The coleoptera *Blaps mucronata*, Latr.; *Cryptocephalus aureolus*, Suf.; the Hymenoptera *Anmophila sabulosa*; *Proanthidium laterale*=*A. lobum*, Per.; *Diprion polytomus*, Hartig.; the Rhyncoia *Cornutus centrotus*, *Lygaens saxatilis*, *Stenodema laevigatum*, L.; etc., were noted.

After midday I went along to the banks of the river Gryonne to complete my good series of *P. thersites* which were all resting on the heads of *Onobrychis sativa*. I also took the beetle *Meloë brevicollis*, Panz., ♂; and *Melolontha vulgaris* ♂; and several specimens of *Larivus sternus*, Schaller; and the moth, so distinctive and so often overlooked, *Thyris fenestrella*, Scop.

May 19th.—To Vernayaz for the walk to Martigny, but a poor day taking only units of *P. podalirius*; *C. dorilis*; *S. orion*; and a few *M. cinxia*; the Rhyncotid *Rhaphigaster sagittifera*; the Hymenoptera *Chalicodoma muraria*, F.; *Bombus sylvarum*; *Arge euodis*; *Tenthredella temula*, Scop.; and the Coleoptera *Silpha thoracica*, L.; *Cryptocephalus aureolus*, Suf.; and the Neuropteron *Sialis fuliginosa*.

What is much worse, they are making a new road along under the cliffs, from Martigny up to Salvan, which will destroy most of this well known famous walk "under the cliffs" from Vernayaz to Martigny. I went in peril of my life to-day as they were blasting high up most of the way and frequently many rocks and stones were falling. The small piece left of the old walk is from the Vernayaz end. I did not reach quite as far as Martigny, as it was quite useless and I had to walk part of the way on very marshy ground.

May 20th.—Pouring with rain all day; frogs for the entree at dinner; and at night the moth *Euxoa cinerea*, Schiff., flew into my bedroom.

May 21th.—To the St. Triphon marshes, and along the bed of the canal which runs parallel to but a little distance south of, the railway

line. *Anthocharis simplonia* var. *flavidior*, Wh., are fresh out to-day and settle frequently along the canal bed on the yellow flowers of apparently a crucifer, which is abundant right along the canal bed on both sides.

M. parthenie and *Erebia medusa* are now more plentiful in the marshy meadows, and I took one ♂ ab. *procopiani*, Hormuzaki, of the latter. *A. sylvanus* was out quite fresh, and I took a fine *Hesperia malvae* var. *taras* in the marshy meadows, with the Hymenoptera *Ophion luteus*, L., *Tenthredopsis stigma*, the beautiful *Andrena hessae*, Panz., prominent on blossoms all along the canal bed; *Anoplus viaticus*, F. (= *Pompilus viaticus*, auctorum); also the Dipteron *Chrysotoxum festivum*, L.

May 22nd.—Along the canal bed south of the railway from Aigle towards St. Triphon. I completed my series of *A. simplonia* var. *flavidior*, which includes 3 fresh females; I completed also my series of *E. medusa* and *M. partheutic*. The Neuropteron *Sialis fuliginosa* was common along the canal bed; 2 more *Andrena hessae*, Panz., and *Psammocharis fuscus*, L., amongst the Hymenoptera.

To Charpigny for an hour when I found the moth *Z. achilleae* in full emergence; the Coleopteron *Silpha obscura*, L.; the Rhyncota *Eurydema oleraceum*, L., form *annulatum*, Fall.; the Neuropteron *Rhyacophila abbtindens*, McL. Today was extremely hot.

May 23rd.—To Branson. A few *S. orion*, var. and ab. *nigra*, Gerhard, were taken on the rocks between the Rhone Bridge and Branson Village. I had the pleasure of meeting, I think, Mr. C. W. Wyatt in the middle of Branson village. I went on and up further taking half a dozen *Everes argiades* ab. *polysperchon*, Brgstr., 3 ♂s and 3 ♀s. *P. apollo* and *A. crataegi*, were on the wing in units, and one specimen of *H. malvae*, ab. *taras*, Mg. I took also the Hymenoptera *Allantus bifasciatus*, Müll. and *Sphecodes gibbus*.

May 24th.—To St. Triphon Village station by the electric tramway; and then down towards Charpigny; then again down to and across the bridge over the railway line proper, and then down to the canal bed. Susa is hot in July, but that canal bed worked twice over to-day nearly boiled me. I took the largest ♂ of *P. machaon* I have ever taken and two more *A. simplonia* var. *flavidior*, Wh. one a ♂; *M. dictynna* was commencing to emerge and the moths *Diacrisia sanio* and *Tanagra atrata*, L., along the canal bed. Also the Hymenoptera *Allantus bifasciatus*, Mull.; *Andrena hessae*, Panz.; and *Tenthredella flavicornis*, Fabr. The Rhyncotid *Cercopis sanguinolenta*; and the Coleopteron *Cryptocephalus aureolus*, Suf.; and a female of the moth *Aphomia sociella*, L.

May 25th.—To-day to Martigny, whence by funicular to Marecottes on the Martigny-Chatelard line. I went too high for this date this spring only getting two fine *S. arion* var. and ab. *nigra* at Marecottes, and afterwards descending by road the 15 kilometers down to Vernayaz I took units of *Glaucopsyche cyllarus*; *M. cinxia*; *Callophrys rubi*; *I. argiolus*; and *M. dictynna* in the marshes at Vernayaz; with one *P. podalirius* on the road just by Vernayaz station. I feel sure I saw *P. mnemosyne* on the way down, but it was unreachable. One specimen of the Hymenopteron *Chrysis ignita*, and one specimen of the beetle *Dermestes lardarius*, L., were taken.

May 26th.—At Aigle to-day a single specimen of the Hymenopteron *Odynerus parietum*.

May 27th.—To Caux *via* Territet and Gliion. My best thanks to the Rev. G. Wheeler who directed me so well that I walked into the *Lowia amphidamas* spot. I was able to take 12 specimens, about 6 of each sex; and discarded two others as they were chipped; and in view of the late spring I think I was very fortunate. On the way back to Caux some nice *Cupido minimus* were boxed, but I was unable to take a selection of the Alpine moths, as a sudden thunderstorm broke.

May 28th.—To Villeneuve station to walk up the Val Tinière. I apparently missed the reservoirs mentioned in Mr. John Alderson's article in *Ent. Record*, Vol. XXII., No. 9, page 207, unless they have long since gone, but I followed the directions given by him and made straight, a long climb, for the place where the road crosses the stream over a wooden bridge, and taking a footpath to the left, which led to some favourable collecting, a large flowery field, on a steep hillside; here *Erebia medusa* were in great quantity; and *M. parthenie* in fair numbers; *H. dorilis*, *Powellia sertorius* (*sao*) and some *H. malvoides** but I could not find *Aricia eumedon*, nor *H. hippothoë*, though I was told yesterday on the railway between Caux and Gliion that "Large Coppers" had been seen in the near district. I also took the Hymenopteron *Ammophila hirsuta*, Scop. and the Neuroptera *Chrysopa perla*, L., and a specimen of a *Nemoura* species? After descending a little by the main road, and taking a path to the right leading to a small chalet-restaurant Folquier-Sequier, I succeeded in getting one fresh specimen of *Aricia eumedon*, the possibility of getting any others being dispelled by the advent of a thunderstorm, which had the after effects of attracting the Lycaenid blues of the district to the puddles and wet mud of the main road down to Villeneuve station. Two specimens to-day of the interesting Dipteron *Coelomyia ferruginia*, Scop., more of which are wanted for the South Kensington Natural History Museum. *Colias hyale* and *Pieris napi* var *bryoniae* males were frequently noticeable during the day, and one or two *C. palaemon*. I also took the Coleopteron *Mylabris variabilis*, Pall.

May 29th.—This morning I took the Coleopteron *Trichius fasciatus*, L., near the Grand Hotel, at Aigle. Beating for larvae in the same spot was useless. I left Aigle for London after dinner, at which I had the pleasure to meet Mr. Symmons, who had just arrived at the Hotel to collect in the district. Before concluding I must again thank those many Naturalists who have helped me to identify the more difficult species mentioned in this article.

The Spring of 1931 in Kabylia.

By Miss L. M. FISON.

There is perhaps nothing more beautiful than the early spring in North Africa, before the extreme heat of summer sets in, and after the often severe winter has done its worst, for contrary to what is popularly believed of sunny Africa, December, January, and February are often bitterly cold, and heavy falls of snow and torrential gales of hail, rain and wind are experienced. In Kabylia we have had falls of snow of about 3 feet deep.

* *H. malvoides*? So far only *H. malvae* has been found up to S. Maurice and is certainly very common in the Tinière Valley.—G.W.

There is a great charm in my mind in early collecting in Kabylia, for although there is no great profusion of insects, yet everything is fresh and there is the daily interest of seeing fresh species emerge, and the joy of feeling that one is escaping at least two months cold of England or of North and Central Europe.

During March, April and May the Djurjura Mountains are at their best, and the Genista, Lavender, Cistus and Asphodel covered slopes, the young green corn, etc., produce a brave show of brightness and colour. Long days out in the open air are a glorious delight in the brilliant sunshine, but oh! the heat later in July, August and September, during which months everything is parched and burnt up. Then indeed it may be said of North Africa that it is a thirsty land where no water is, where cattle, sheep and flocks die often in thousands for lack of sustenance, and where the sirocco blows for days on end, withering all before it in its burning blast.

For the last 12 years it has been my privilege and joy to carry the Gospel to the Kabyle tribes who inhabit little primitive villages perched amongst these mountains, and it is during the long walks or rides amongst these neglected tribes that we are learning more each year of the secrets of the butterfly fauna common to this range.

Our headquarters is Michelet, a mountain village and chef d'arrondissement de la Commune Mixte di Djurjura situated at a height of 3,000 feet above sea level.

In the plain of the Sebaou, and Mitidja, hundreds of feet lower down, and away in other low-lying regions on the Hauts Plateaux, Tell, and great Sahara, species emerge certainly earlier than those at Michelet, indeed certain species fly all the winter in parts of S. Algeria. We shall, however, write merely of an experience in the Djurjura range.

Our earliest entry for 1931 is that of *Pyrameis atalanta* (an undoubted case of hibernation), found near the Kabyle village of Aguemoun Izem, on January 21st, during a fine spell between falls of snow and sleet. Frequently at Michelet the snow is so deep that we are without communication of any sort for days. However, lately a service of a snow-tractor has been established, so we trust the Government Road at least will now be kept open during the snow.

We have no further entry between January 21st and March 4th; but on the latter date *Eugonia polychloros* (hibernated specimens) was common around the "Chêne-Zéen" trees (kind of Algerian oak) near the village of Tafraout. We captured 3 specimens.

On March 5th near Taka we again found *F. polychloros* and also saw 2 hibernated "Brimstones," *Gonepteryx rhamni*. On the 11th near Thaurirti *Euchloë eupheno* began to emerge, also *Pieris brassicae* and *P. rapae*.

From March 11th-24th we spent at a little sea-side port called Port Gueydon, and at Les Aggribbes in the mountains the other side of the Valley of the Sebaou towards the coast.

March 18th.—Between Tizi-Ouzou and Aggribbes we observed the following species flying in the Sebaou Valley, *Pieris brassicae*, *P. rapae*, *Gonepteryx rhamni*, *Anthocharis belia* (*ausonia*) and *Euchloë eupheno*. Whilst at Aggribbes we caught several *A. belia* (*ausonia*) and *Anthocharis belemia*.

March 19th.—*Pyrameis cardui* appeared, also *Thestor ballus*.

Whilst at Port Gueydon we discovered a sheltered ravine which proved to be a good butterfly corner, and here we saw or captured *Euchloë eupheno*, *Gonepteryx rhamni*, *Pararge aegeria*, *Colias croceus* (*edusa*), *P. brassicae*, *Thestor ballus*, *P. rapae*, and *Zerynthia* (*Thais*) *rumina*. On a beautiful piece of the cornice road by the side of the Mediterranean between Bizarga and Port Gueydon we saw or took *Pararge aegeria*, *G. rhamni*, *P. brassicae*, *P. rapae*, *E. eupheno*, *T. ballus* and *A. belia* (*ausonia*).

March 20th.—At Aggribbes we took 2 *Z. rumina*, *T. ballus* and *A. belia* (*ausonia*).

March 30th.—After our return to Michelet we found the following species had emerged near the Kabyle village of Tril Igonlmimen.—*P. brassicae*, *P. rapae*, *A. belia* (*ausonia*), *E. eupheno*, *T. ballus*, *G. rhamni*, *G. cleopatra* and *Eugonia polychloros*.

April 2nd.—Near Agoni-Gsaad produced *Callophrys rubi* and *C. aris* (?), *Pyrameis cardui*, *E. polychloros*, *P. brassicae*, *P. rapae* and *Euchloë eupheno* ♂ and ♀; also *Polyommatus icarus*, *Powellia sertorius* (*sao*) and *T. ballus*.

April 3rd.—We took *Anthocharis belemia* for the first time near Michelet.

On Easter Monday we discovered a good butterfly corner near the village of Agoni-Taslent and had a good day. We captured 3 *Papilio podalirius*, *Rumiccia phlaeas*, *Pieris napi* very fine and fresh, *P. rapae*, *P. brassicae*, *T. ballus*, *P. icarus*, *P. sertorius* (*sao*), *Eugonia polychloros*, *E. eupheno* particularly common and also *A. belia* (*ausonia*). We also came across *Libythea celtis*, and this is the only locality where I have as yet seen it in Kabylia. There are a good many "Micocoulier" (*Celtis*) trees in the district.

(To be concluded.)

NOTES ON COLLECTING, etc.

NORTHERN INSECTS IN CO. WICKLOW, IRELAND.—In the April number of this Journal, p. 63, Canon Foster refers to the presence of northern insects in Co. Wicklow and quotes from a somewhat hastily written letter of mine. He had expressed surprise that he had captured in Wicklow a micro-lepidopteron not previously recorded as British except from Scotland, but knowing this district this did not surprise me. Although situated on the eastern seaboard of Ireland, Wicklow has in its fauna and flora many species characteristic of the western counties of Kerry, Mayo and Donegal, some of which have southern and some northern affinities. When I wrote Canon Foster I had in my mind some of the latter of which I will give two good examples. Both are ichneumon flies and possibly parasitic on lepidoptera, though so far as I am aware their hosts have not yet been ascertained. One, *Cryptopimpla anomala*, Holgrn., is reported by Morley (*Brit. Ichn.* III. 184) from near Currie in Midlothian, Scotland, and doubtfully by Bridgman from "Wickham" (*loc. cit.*). This species I have found in

an oak wood, with much hazel, holly, etc., in the Gold Mines Valley, Co. Wicklow, where it appears to be not uncommon towards the end of March. Both sexes have occurred to me as early as the 25th of that month. This locality is one of the mildest in Wicklow and not more than a hundred feet above sea level.

Farther north, in Co. Dublin, I have taken males at 1,000 to 1,200 feet alt. in Glenasmole on May 25th. Dr. A. Roman of Stockholm seems to regard this as a species typical of the northern parts of Sweden, and on receipt of specimens expressed his surprise at my getting it so far south, adding that "Thomson does not mention this species, evidently because he never met with it, he living in the southernmost part of Sweden, and *C. anomala* not going so far south."*

The second species I wish to refer to is *Lissonota magdalenae*, Pfankuch of which I took a single female on the elevated plateau near the source of the R. Liffey, at 1,700 feet alt., on June 7th, 1929. This was kindly identified for me by Dr. Roman, to whom I had sent it as possibly a new species. So far as I know it has not previously been reported from the British Isles. When returning my specimen, Dr. Roman remarked:—"Your first specimen astonished me, for I recognised in it a species from my own country. It is a regular spring species which I in 1924 (*Arkiv. för Zoologi*, Band 17a, No. 4, p. 24, 1924), described as *L. vernalis*, but before my paper appeared in print I discovered that Pfankuch had already (*Krancher's Ent. Jahr.*, 1921, p. 125) described it from his region as *L. magdalenae*." In passing I may mention that on the central plateau of Wicklow the northern water-beetle *Agabus arcticus* occurs in extraordinary abundance in the shallow "pans" which stud the moor.

I hope that my reason for not being surprised at Canon Foster's capture of *Penthina staintoniana* in Wicklow will now be more obvious.—A. W. STELFOX, (M.R.I.A.), 14, Clareville Road, Dublin.

A NOTE.—The following two footnotes should have appeared in the last number on pages 58 and 59 respectively with the article on Algerian Butterflies by Miss L. M. Fison.

(1) "*Argynnis adippe*." "Probably subspecies *avesiana*."

"As I pointed out at a meeting of the Entomological Society of London some years ago when I exhibited the first specimen (I believe) of *A. avesiana* seen in England, this is not a form of *cydippe* = *adippe*, the andreconia being quite different and is much more nearly related to *A. niobe*."—G. WHEELER.

(2) "*Powellia therapne*."

"Is this *P. therapne* or *P. sertorius* (*sao*)? The former is usually supposed to be confined to Corsica and Sardinia. The latter mention of *P. sertorius* (*sao*) would however seem to point to both species occurring in Algeria."—G. WHEELER.

* It may be well to point out that Schmiedeknecht's description of the ♂ of his *anomala* (*Opuscula Ichn.* p. 1251) is not taken from the ♂ of this species, which has no yellow markings as there described by him. Dr. Roman agrees and tells me that the Wicklow ♂ is identical with one in the Swedish National Museum.

CURRENT NOTES AND SHORT NOTICES.

Mr. W. G. Sheldon has again asked us to call attention to the "Wicken Fen Fund" of which he is Treasurer. May we remind subscribers that now is the time to renew their annual contribution. No doubt they have all had a copy of the Ann. Report of the Fund so that they are aware of the work that has to be done annually, and which needs keeping up to preserve the wonderful local fauna and flora of the district from the destruction of neglect and deprecation. We hope that all who have helped in the past will continue to do so, despite the devastating attacks that the activities of world financiers have caused upon pockets of late.

Our colleague Dr. Burr has made use of his intimate knowledge of the Russian language to translate the MS. of P. S. Nazarov, *Hunted through Central Asia*. The author relates his adventures among the Sarts and Kirghiz for two years as a geologist and naturalist, his forged credentials holding him in good stead until he could escape across the Tian Shan Mts. into Kashgar where he lived for four more years before passing on into Thibet. The book not only relates the incidents of his adventure as a fugitive, but contains interesting descriptions of the countries visited, the people in whose encampments he often lived, the plants and animals, and the results of his keenness for scientific research such as his discovery of tin ore in Central Asia. Dr. Burr's translation well reproduces the vigour and humour of the author; the book has a map which aid no book should be without. The price, too, is low.

We much regret to report the death of another young and able entomologist, J. C. Robbins, F.E.S., of the staff of the Imperial Bureau of Entomology. Like the late Dr. Withycombe, he had the keenness, the skill and the basic acquirements which would, in the future, have led him to eminence.

The Fifth International Congress of Entomology takes place in July when the Centenary of the founding of the Société Entomologique de France takes place. The Itinerary already arranged is a long one embracing the period from Friday, July 15th to Sunday, July 31st. The French Government has made a considerable grant towards the Congress expenses and there will be a 50% reduction of railway fares during the period of the meeting for all those taking part. Papers will be read each day from Monday, July 18th till Saturday, July 23rd, and various entomological questions of international concern will be discussed. We are wondering what will be done over Nomenclature. Our British National Committee is the only active one, if not the only one existing, and of that we have heard nothing of its activity since the last Congress. Each day Excursions will take place at very reasonable costs; two different itineraries for Paris, Forest of Fontainebleau, Versailles, Chantilly, a visit to the tomb of Latreille, to the Museum of Natural History, etc. At the finish of the Congress there will be an organised excursion to the Pyrenees, in course of which visits will be paid to Lourdes, Gavarnie, San Sauveur, Luchon Lac d'Oo, Tarascon, Carcassonne, Toulouse, etc., largely by autocar. The permanent Secretary of the Congress is Dr. Karl Jordan of Tring, and Dr. H. Eltringham is one of the executive Committee. The travelling arrangements and hotel accommodation is in the hands of

Messrs. Thos. Cook & Son. The meeting should prove a most interesting and enjoyable one to all those who take part; we hope that every success will attend it.

Nos. 1-3, Vol. IV. *Revista Soc. Ent. Argentina*, are to hand and contain a long and complete Memoir, "The Lepidoptera of the Argentine. Family *Nymphalidae*," by our friend and correspondent Capt. K. J. Hayward, F.Z.S., F.E.S., F.R.G.S. After some five or six years of collecting in various areas of the country, the author has put his notes and observations together, compared his results with all the chief collections, public and private, in the state, and written this admirable contribution to our science. It is comprised in about 200 quarto pages and 21 black and white plates, with a few text figures. The life histories as far as known are given with descriptions, habitats and the principal references. Subspecies and forms are dealt with, the newly described being also given in English. The author has ably used his long experience of entomological matters in the Eastern Hemisphere to bring the Argentine material up to date not only for the use of the scientist but also for the beginner. Introductory matter gives a map showing the relative positions of the various provinces, the terms as the author uses them, the limits of venation, what he understands as subspecies, form, aberration, etc., a list of the species in their systematic grouping. At the end is a list of foodplants of the Nymphalids, the legends of the plates, a good bibliography of works dealing with the group as found in the Argentine and an Index. We must congratulate the author on the success of his work and compliment Messrs. Breyer, the two great patrons of natural history especially entomology in the state, for the great assistance they have rendered Capt. Hayward in every way so that this admirable piece of work could be accomplished.

In the *Int. Ent. Zeit.* for December 22nd, there is a summary of what is known of the *Palluperina nickerlii* forms (of which our British *guenéei* is one). There is a view of the ground on which the species is taken at Halle, a figure of the egg, one of the position of the batch when laid on a stem of grass, and figures of the valves of the genitalia. On the accompanying plate there are 17 good figures of representatives from Halle (dark generally), from Meissen (lighter with conspicuous reniform), from Eschwege (generally still lighter), and from Lancashire (the very light form *guenéei*). This is a very useful article, but one would like to have seen the French forms included.

The illustrated supplement to *Lambillionea* for December contains figures of 8 aberrations of *Melitaea aurinia* and 2 of *Aglais urticae*. This completes another set of 12 plates, year 1931. These illustrations will be found most useful in illuminating the descriptions of the many newly described forms to commonly occurring species by the contributors to this most useful periodical.

In the January number of *Lambillionea* is commenced a new set of plates of aberrations, the present one containing 8 figures of *Chrysophanus (Heodes) dispar* including race *batavus*, subspecies *rutilus* (with gen. vern. *burdigalensis* and gen. est. *aestivalis*). The text deals in detail with the various races and forms of this species by Dr. Mezger.

In his Annual Address to the Entomological Society of London, the President, Dr. Eltringham, dealt with Entomology (1) as a subject

of great interest for itself, and (2) as something having a bearing on human progress.

In the recently issued *Memories Soc. Ent. Italiana*, X. 1, Signor Rocci deals intensively with the forms of variation exhibited in *Melitaea athalia* and illustrates his remarks with 2 plates of 40 figures. He makes two types of forms. A: examples of small size, always less than B, but variable, and in two diverse generations each in three recognisable forms. B: examples of larger size, always larger than A, some larger still. The former group comparable to *aurelia* and *dictynna*, the latter comparable to *athalia* true and *helvetica*.

May we again remind our readers to look out for early spring immigrants now that there is a break in the cold drought spell which has lasted so phenomenally long.

The recently received Vol. LXXXI. pts. 1-4, *Verh. Zoo. Bot. Gesell. Wien.* has an important article "Critical and Synonymic Notes on Diptera" by F. Hendel. There are notes by M. Kitt on the "Lepidoptera of the Oeztale," and another article on the material taken during a trip to Algeria with a long list of the captures, some 300 species of Macro-lepidoptera. F. Preissecker also contributed an interesting account of the Lepidoptera occurring in Lower Austria, particularly referring to the most notable micro-lepidoptera.

REVIEWS AND NOTICES OF BOOKS.

MEDICAL ENTOMOLOGY.—A Survey of Insects and Allied Forms which affect the Health of Man and Animals. By W. A. Riley, Ph.D., Sc.D., and O. A. Johannsen, Ph.D. McGraw-Hill Publishing Co. Ltd., pp. xii.+476, figs. 184. Large 8vo., 1932.—This is really a revision of a book published some years ago, now re-arranged, enlarged and brought up to date. It is not a record of original investigation but a compilation and classification of all that is known of the Relation of Insects to Man. After two or three short introductory chapters containing a few historical facts on transmission of disease, the ways in which the health of man can be affected (1) by poison, (2) by parasites, (3) by transmission of disease, and the classes of the Arthropoda, the following chapters deal with the attacks by Arachnida, Ticks, Myriapods, etc. An introduction to the metamorphoses of Hexapoda (Insects) and their external and internal anatomy, upon which the remainder of the information relies, follows. The next thirteen or fourteen chapters deal with the various orders of Insects, nine chapters, more than half the volume, discuss fully the relations of the Diptera to Man. Most of the illustrations are taken from well known and reliable sources and are adequate for their purpose. A most valuable addition is given in the exhaustive Bibliography of 26 pages containing quite 600 references. The book should prove of outstanding use to students of medical practice, health committees, and all interested in the well-being of man and animals. The printers and publishers have done their part admirably. Every library should hold a copy not only for the information it contains but for the wonderful list of references.—Hy.J.T.

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be sent to Mr. HY. J. TURNER, "Latemar," West Drive, Cheam.

Duplicates.—*S. Andrenaeformis*, Bred 1928, well set on black pins, with data.

Desiderata.—Very numerous British Macro Lepidoptera.—*J. W. Woolhouse, Hill
House, Frances Street, Chesham, Bucks.*

Desiderata.—Species of Dolerine and Nematine sawflies not in my collection; list
sent.—*R. C. L. Perkins, 4, Thurlstone Road, Newton Abbot.*

Duplicates.—*Albimacula**, *sparganii**.

Desiderata.—Ova of *D.oo. pupae* of *X. gilvago*, *D. caesia*. *A. J. Wightman, "Aurago,"
Bromfields, Pulborough, Sussex.*

EXCHANGES.—Living Eggs of *Catocala fraxini* and *sponsa*, exchange for butterflies of
British Isles.—*C. Zacher, Erfurt, Weimar, Street 13, Germany.*

Duplicates.—*Pyralina**, *Salicis*, *Ianthina**, *Orbicularia**, *Repandata* in variety,
Doubledayaria, *Black rhomboidaria**, *Black virgularia** and others.

Desiderata.—*Hyale*, *Welsh aurinia*, *Polychloros*, *Tiphon Agathina*, *Lunigera*,
Lucerneae, *Neglecta*, *Diffinis*, *Populeti*, *Gothica v. gothicina*, *White Leporina*, *Tridens*
Putrescens, *Littoralis*, *Typhae v. fraterna*, *Rurea v. Combusta*, *Gilvago*, *Fulvago v.*
flavescens, *Liturata v. nigrofulvata*. *Harold B. Williams, Woodcote, 36, Manorgate Road,
Kingston Surrey.*

Duplicates.—A large number of species of European and Palaearctic *Rhopalocera*
and *Heterocera*.

Desiderata.—All British species especially those illustrating characteristics of an
island fauna. *Dr. Lor. Kolb, München 54, Dachauer-str. 409, Germany, and Franz
Daniel, München, Bayer-str. 77, Germany.*

MEETINGS OF SOCIETIES.

Entomological Society of London.—41, Queen's Gate, South Kensington, S.W. 7.
8 p.m. May 4th.

The South London Entomological and Natural History Society, Hibernia
Chambers, London Bridge. Second and Fourth Thursdays in the month, at 7 p.m.
April 28th, May 12th.—*Hon. Secretary, S. N. A. Jacobs, "Ditchling," Hayes Lane,
Bromley, Kent.*

The London Natural History Society.—Meetings first four Tuesdays in the
month at 6.30 p.m. at the London School of Hygiene and Tropical Medicine, Keppel
Street, Gower Street, W.C.1. Visitors admitted by ticket which may be obtained through
Members, or from the Hon. Sec. A. B. Hornblower, 91, Queen's Road, Buckhurst Hill,
Essex.

Entomological Society of the South of England, 102 High Street, Southampton.

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TO ENTOMOLOGICAL SOCIETIES and MUSEUMS.

BACK VOLUMES OF
The Entomologist's Record
and Journal of Variation.
(Vols. I-XXXVI.)

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 *anrelia*—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.

CONTENTS OF VOL. II.

MELANISM AND MELANOCROISM—Bibliography—Notes on Collecting—Articles on VARIATION (many)—How to breed *Agrotis lunigera*, *Sesia sphegiformis*, *Taeniocampa opima*—Collecting on the Norfolk Broads—Wing development—Hybridising *Amphidasys prodromaria* and *A. betularia*—Melanism and Temperature—Differentiation of *Dianthacis*—Disuse of wings—Fauna of Dulwich, Sidmouth, S. London—Generic nomenclature and the *Acronyctidae*—A fortnight at Rannoch—Heredity in Lepidoptera—Notes on Genus *ZYGÆNA* (*Anthrocera*)—Hybrids—Hymenoptera—Lifehistory of *Gonophora derasa*, etc., etc., 312 pp.

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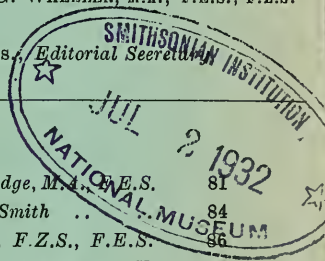
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Lepidoptera at Dieulefit (Drôme) in April, 1930 and 1931.

By Wm. FASSNIDGE, M.A., F.E.S.

(Concluded from page 55.)

It is hardly to be expected that in the month of April there will be many butterflies flying in this locality, and the total of 42 species seems quite a respectable one. *Anthocharis euphenoides*, Stgr., was everywhere common from the beginning of our stay, and could be found at sunset and on dull days resting on the flowers of *Bisectella laevigata*, L., sometimes several on a plant. In bright sunshine the larva of the Mantid *Empusa pauperata*, Latr., would lie in wait for this species and catch one male after another as they settled on the flowers, devouring their bodies with incredible speed. *A. tagis* var. *bellezina*, Boisd., appeared in the middle of the month, and was not uncommon on several stony hillsides where its foodplant *Iberis pinnata*, L., grows. As always they were very difficult to catch, except on days when occasional big clouds obscured the sun, and it was possible to take them resting on grass stems during the recurrent short periods of dullness. *Pieris mami*, Mayer, occurs here on the hillside as one might expect, and *Polygonia egea*, Cram., was a regular visitor in the morning to the flowers of laurel on the terrace of the pension. I searched long for the foodplant of *P. egea*, *Parietaria officinalis*, L., hoping to find larvae of this species, but could only find a few scattered plants. The Spring blues, *Scolitantides (Polyommatus) baton*, Bergs., *Glanopsyche melanops*, Bdv., and *G. cyllarns*, Rott., were very scarce in 1930 but were all fairly common in 1931, the specimens of the last-named being much smaller than any I have seen before. At the very end of our stay *Cupido sebrus*, Boisd., began to emerge, but we could not wait to see it plentiful. Of butterfly larvae worthy of note, we found *Melitaea deione*, Hb., in countless numbers on every wall where the ivy leaved toadflax grew, especially abundant on the walls of the terraces of the pension. They fed also on what I thought was a species of thistle growing as a weed in the garden, and mostly pupated by the end of April. Larvae of *M. aurinia*, Rott., were abundant, feeding indifferently on scabious or honeysuckle, this being the first time I have seen them feeding in nature on the latter plant. In the stony torrent beds and on bare hillsides the small larvae of *M. pseudathalia*, Reverdin, were locally common feeding in groups on young plants of *Digitalis ambigua*. At home they fed up fairly well on narrow-leaved plantain. I probably should not have noticed these larvae had not my attention been attracted by the curious appearance of some of last year's stems of this rather local plant. They had been gnawed off a few inches above the ground in the same manner as other stems are gnawed off by the larvae of certain longicorn beetles, for example, as larvae of *Agapanthia cardui*, L., gnaw off the stems of *Salvia pratensis*, L., and *A. asphodeli*, Latr., those of Asphodel. The stumps had been neatly stopped with gnawed and stringy particles of stem, reminding one forcibly of the work of *Encosma foenella*, L., in stems of *Artemisia vulgaris*. I brought home a number of these tenanted roots, finding incidentally the larvae of *M. pseudathalia* feeding on the new leaves, and forced out in May and June a good series of *Argyroploce lapideana*, H.-S.

Of Bombyces 28 species were observed, among them *Eucharia festiva*, Hufn. (*hebe*, L.) of which males came fairly freely to the town lamps; *Diacrisia cesarea*, Goeze, one male at light; *Cymbalophora pudica*, Esp., larvae common after dark on grasses; *Hyphoraia testudinaria*, Fourc., a few larvae in 1930, and one male at light in 1931; *Euprepia striata*, L., larvae fairly common on low plants after dark; *Celama thymula*, Mill., local and not common; *Saturnia pyri*, Schiff., imagines at light and cocoons under copings; *Notodonta anceps*, Goeze (*trepida*, Esp.), *Pheosia tremula*, Cl., and *Drymonia chaonia*, Hb., all fairly common at light; *Eriogaster catax*, L. a few nests of larvae on hawthorn, imagines from which emerged in November, although the majority of the pupae are lying over. Searching by day yielded a fair number of larvae of *Zygaena rhadamanthus*, Esp., nearly full grown on *Doryenium suffruticosum*. I was obliged to bring a good supply of the foodplant home with me and fortunately managed to rear a good series. A most interesting sight was noted one Sunday morning in the park of the neighbouring chateau, where by far the longest procession of the larvae of the pine processionary (*Thaumtopoea pityocampa*, Schiff.) that I have ever seen was observed crawling slowly along a hard gravel path and laboriously digging itself in for pupation. When we came across them a seething mass of larvae showed that many had already disappeared, but there still remained head to tail in single file no less than one hundred and eighteen. We amused ourselves for about half an hour by watching them and repeatedly timing their rate of progress, arriving each time at the figure of about ten inches or five lengths every two minutes. The whole long string resembled nothing so much as a long thin yellow and black speckled snake, and I am bound to confess that when I suddenly saw it right at my feet, I jumped backwards in alarm. Perhaps I may be allowed here to state what has been my experience with regard to the urticating properties of these larvae. For years I handled larvae and nests with complete impunity, even going so far one August as to make exhaustive search for beetles in every old larval nest that I could find and reach. Yet in 1930 at Dieulefit, having decided to breed the species once more, after picking up a procession of some forty larvae on their way to pupation, I found next morning that I had every symptom of a violent cold in the head, with great irritation of the eyes and lips and of the mucous membrane of the nose. Small blisters appeared all over the face and altogether for about 24 hours I felt and looked a very sorry object. My wife a day or two later had almost exactly the same experience through carelessly handling and shaking the bag which had contained these larvae. It may be that the period of wandering that immediately precedes pupation is the time of greatest danger, possibly owing to the fact that the urticating hairs then break more easily into short pieces, which are carried in the air to any tender part of the skin.

Of Noctuae about 40 species were observed, mostly at the catkins of various species of *Salix* growing by every stream and in every torrent bed. Even on cold nights moths are swarming at these "sallows": *Panolis flammea*, Schiff. (*piniperda*, Panz.), *Monima mimososa*, Schiff., a dark purple form of *Triphaena rubricosa*, Fb., *Melauchra conspiciilaris*, L. typical and varieties, *Xantholenca croceago*, Schiff., very different from our bright form, *Polyploca ridens*, Fb., hardly

recognisable at first sight, *Conistra staudingeri*, de Gras., etc. At the town lamps we took *Valeria jaspidea*, Vill. odd specimens, *Luperina leucophaea*, Schiff., *Euxoa turatii*, Standfuss, among other less interesting species. Noctuid larvae were abundant after dark, but except for a single specimen of *Rhizotype flammea*, Esp., only common species were bred, such as *Sideridis vitellina*, Hb., *Leucania albipuncta*, Fb., *Triphaena fimbria*, L., *Agrotis comes*, Tr., *A. pronuba*, L. Sugar yielded very little and was soon abandoned. Beating for larvae on oaks whose young leaves were just appearing yielded small brown larvae of *Hylophila bicolorana*, Fuess., not uncommonly, and from them I bred one nice variety with the lines on the forewings quite close together.

Of the 25 species of Geometers observed those perhaps worthy of record are *Hydriomena polygrammata*, Bkh., *Scodiona lentiscaria*, Donz. at light, *Aleucis pictaria*, Curt. fairly common on low blackthorns by night, and *Selenia lunaria*, Schiff. From larvae were bred *Eupithecia oxycedrata*, Rbr. and *Synopsis sociara*, Hb. At the end of April a Pyralid turned up that was new to me, disturbed from herbage by day, but unfortunately it has not yet been indentified. Larvae of *Adaina microdactyla*, Hb., were found in old stems of *Eupatorium cannabinum* by the stream; in the grounds of the Château among spruce a few larvae of *Dioryctria abietella*, Fb., were found spun up for pupation in or on fallen cones, and larvae of *Cateremna terebrella*, Zinck., were fairly common in small aborted cones at the same time and place. The Tortrices were represented by 14 species. Larvae of *Laspeyresia strobilella*, L., were very abundant in newly fallen spruce cones; *L. dorsana*, Fb. flew in bright sunshine near to patches of its foodplant; *Pammene splendidulana*, Guen. swarmed around the tops of young oaks; *Eucosma pauperana*, Dup., rewarded in fair numbers much hard work among old bushes of *Rosa canina*; *Chlidonia banmanniana*, Schiff., was locally fairly common among white scabious; galls of *Evetria resinella*, L., were not scarce on the hillside Scots pines; and *E. duplana*, Hb. flew sparingly among young pines and heather. Tineids were naturally not much in evidence at this early date. Larvae of *Metzneria carlinella*, Stt. occurred high up on St. Maurice and probably elsewhere; cases of *Coleophora onosmella*, Brahm. were quite abundant on *Echium*, on which plant a few larvae of *Ethmia pustella*, Röm. were also found. *Psychidae* were very scarce; *Epischnopteryx pulla*, Esp. flew by day, and one male of *Psyche constancellata*, Bruand was bred from cases found on a roadside bank.

One unusual observation was made at Dieulefit. A number of cats were kept about the place in the usual half-starved condition which the French consider necessary if the animals are to catch any mice. One of these cats was observed repeatedly lying in wait among the flowering double stocks until a *Pieris brassicae* or *Gonepteryx rhamni* came to alight upon them, when it would dexterously catch the insect in its forepaws and eat it wings and all. The same cat used every night to haunt the window ledge outside the salon and catch and eat every moth that fluttered to the glass attracted by the light.

Of course it can hardly be expected that a locality no further south than Dieulefit will yield very much so early in the season as the month of April, but enough has been said to give some idea of the possibilities of the place, which would undoubtedly pay for working

throughout the Spring and Summer. If only future visitors to France do not confine their attentions to the Rhopalocera, or to the genera usually included among the Macro-lepidoptera, but will collect also the so-called "micros." they will almost certainly discover species hitherto unknown, and will at all events add largely to our knowledge of distribution and of life-histories, where so much still remains to be done.

A List of Lepidoptera on and around Breakback Hill, Bromsgrove, Worcs., 1927-1931.

By P. SIVITER-SMITH.

The soil on the Hill appears to be a fairly stiff clay, with considerable outcrops of sandstone on its southern extremities (Rock Hill), well timbered, elm and oak being about equal in numbers, with smaller quantities of sycamore, horse-chestnut, etc. There are one or two little marshes near Grafton Manor, the chief one, Longpool, being between Grafton and Breakback. Alderley and Cobbler's Coppices consist chiefly of oak, on the western side of the Hill. The northern and eastern boundary is Battlefield Brook running through Whitford Mill by the Rifle Range.

The Rhopalocera of the district are not particularly interesting, being the usual species to be found in well-grazed pasture land, so mention will only be made of two species.

Brenthis (Argynnis) euphrosyne, L.—"Common in some years" (on the Rifle Range). [Report of B'gve School Nat. Hist. Soc., Vol. I., part 2, 1931.] I have not observed this species, but it is apparently common.

Melitaea aurinia, Rott.—Mentioned by the Rev. F. O. Morris as occurring "behind Grafton" and at "Whitford Mill" but searches in both places failed to disclose them. Longpool is undoubtedly meant by "behind Grafton."

In the Heterocera, the list of *Noctuidae* is very small owing to the fact that sugaring, etc., could not be indulged in.

Mimas (Dilina) tiliae, L.—I found a female drying its wings at the base of a large elm between Whitford Mill and the Parish Church in 1927. This is really outside the district, but I mention it as it is the only record that has come to my notice.

Cosmotriche potatoaria, L.—The larva is comparatively common, but should be worked for along roadsides.

Spilosoma lubricipeda, L. (*menthastri*, Esp.).—Larvae common.

Diaphora mendica, Cl.—I found one pair in the grass by Whitford Mill in 1929.

Arctia caja, L.—Larvae not as common as in the Ran-dans.

Hipocrita jacobaeae, L.—Commonly observed near the Gas Works and on the way up to the Hill by that route.

Acrionicta leporina, L.—I found one specimen (var. *bradiporina*, Treits.) of this uncommon species on an elm tree on The Hill, June 22nd, 1930. I also have another poor specimen, found by a boy the previous year, but where exactly I do not know.

Aconicta psi, L.—To be found resting on tree-trunks.

A. megacephala, F.—Not uncommon on tree-trunks; pupae may be found under bark on willow trees.

A. rumicis, L.—Found with the two previous species.

Diloba caeruleocephala, L.—The larvae can be found on the longer shoots of hawthorn hedges that are kept in good order.

Amphipyra pyramidea, L.—I have found young larvae of this species near Grafton Manor and at Alderley Coppice.

Taenioctampa gothica, L.—A very dark imago hatched from a pupa I dug from under an oak tree in 1930.

Heliaca tenebrata, Sc.—Common in suitable waste patches on the Hill and near Grafton.

Plusia gamma, L.—Common.

Euclidia mi, Cl.—Common all over the district.

F. glyphica, L.—As last, and in company with it.

Ortholitha chenopodiata, L. (*limitata*, Sc.)—Common.

Lobophora halterata, Hufn.—This local species is confined to Longpool, where, if carefully approached, it may be boxed from Poplar trunks. It is very little use climbing for them as they are so easily scared. I have caught var. *zonata*, Thnbg. there too.

Euphyia (Cidaria) corylata, Thnb.—Found at Longpool and Alderley, but not commonly.

Xanthorhoë montanata, Bkh.—Common.

X. fluctuata, L.—Not uncommon on the Hill.

X. alternata, Müll. (*sociata*, Bkh.)—Common.

Camptogramma bilineata, L.—Very common.

Coenotephria (Anticlea) derivata, Schiff. (*nigrofasciaria*, Gz.)—Can be found in some numbers around Grafton Pond and in a neighbouring orchard.

Empithecia centaureata, Schiff. (*oblongata*, Thnb.)—Not uncommon on tree-trunks.

Cabera pusaria, L.—Quite common.

Campaea (Metrocampa) margaritaria, L.—I have found one or two resting on nettles on the Hill at various times.

Plagodis (Eurymene) dolabraria, L.—On June 8th, 1930, I found two, both freshly emerged, on the Hill. Both were on fruit trees.

Opisthograptis luteolata, L.—Quite common.

Biston (Pachys) strataria, Hufn.—On March 25th, 1930, I found a dead specimen, and a boy caught one in 1931, both on Rock Hill.

Zygaena lonicerae, Esp.—To be found on a waste patch of the Hill facing the town, and all around Grafton.

Z. filipendulae, L.—With the last mentioned species.

Ascita (Ino) statices, L.—There is a colony on the waste patch of the Hill mentioned above. June 22nd is a good date for them.

Hepialus humuli, L.—Fairly common. I took the largest female on the Hill that I have ever seen.

H. lupulina, L.—Fairly common. Sometimes to be found at rest on nettles.

Some species of Parasitic Hymenoptera found with Ants.

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

Mons. Ferrière has been good enough to name for me a certain number of Parasitic Hymenoptera, which I had found with ants and put on one side, as I was unable to get them identified here-to-fore.

As they are not mentioned in my book "*The Guests of British Ants*," it is well to place them on record now. I believe most of them are parasitic on Diptera and may have no, or at any rate no direct, connection with ants; but never-the-less they were all taken with ants, or bred out of ants nests:—

CHALCIDIDAE.—*Ecrizotes filicornis*, Th., bred out of an observation nest of *Formica rufa*, L., from Oxshott, 19.iv.04. This is a new genus and species to Britain; it belongs to the *Pireninae*.

Lamprotatus tarsalis, Walk., bred out of an observation nest of *Formica rufa*, L., from Weybridge, 31.iii.08.

Arthrotylus maculipennis, Walk., taken in a nest of *Acanthomyops* (*Chthonolasius*) *flavus*, F., at Whitsand Bay, Cornwall, 14.iv.09.

Micromelus pyrrhogaster, Walker, taken with the above.

Tetrastichus roesellae, Nees., taken in a nest of *Acanthomyops* (*Dendrolasius*) *fuliginosus*, Latr., at Cothill, 30.vi.09.

Pleurotropis epigonus, Walk., bred out of an observation nest of *Formica fusca*, L., from Porlock, 23.v.07.

Micromelus pyrrhogaster, Walk., bred out of the above nest, 30.v.07.

Microterys clavellatus, Dl., 3 specimens bred out of an observation nest of *Formica rufa*, L., from Nethy Bridge, 12.vi.13.

Halticoptera sp. ? bred out of the above nest, 14.vi.12.

Habrocytus sp. ?, taken in a nest of *F. fusca*, L., at Kingswear, 23.iv.08.

Aprostocetus sp. ?, bred out of *F. rufa* observation nest from Oxshott, 12.v.04.

CYNIPIDAE.—*Alloxyta perplexa*, Cam., taken in a nest of *F. fusca* var. *glebaria*, Nyl., in the New Forest, 22.vii.18.

ICHNEUMONIDAE.—*Gelis* (*Pezomachus*) *corruptor*, Först., taken with *A. (D.) fuliginosus* at Weybridge, 8.ix.14.

Gelis (*Pezomachus*) *instabilis*, Först., running in company with ♀ of *A. (D.) niger* in Windsor Forest, 3.vii.31.

On the "Illustrations of Varieties of British Lepidoptera," by S. L. Mosley (1878-1885?).

My attention was recently called to an article on this subject which appeared in your issue of November, 1931, and which I have since perused with much interest. Mr. Griffin has done well to tabulate for a generation nearly fifty years afterwards, the magnificent contents of this unique work. As he has said, the work is very rare, and so far as I know, nothing has ever been attempted on the same lines either before or since. I was two years old when my father began this work, consequently could not have had much personal interest in it at the time! In fact I had never been so fortunate as ever to see a copy

until a few months ago, when I purchased a complete set in parts from a second-hand bookseller—incidentally having to pay a very stiff figure for it.

Mr. Griffin's tabulation, valuable though it is, does not convey anything of the exquisite delicacy and beauty of the drawings. Although perhaps I ought not to wax eulogistic, owing to my personal relationship, S. L. Mosley was an artist, who has possibly not had an equal in his own particular line, and I venture to suggest that his earlier works show him to much better advantage than do his later ones, when he rather tended to mass production and consequently his sketches lost much of the individual delicacy which he put into every sketch before-time.

Simultaneously with his *Varieties of British Lepidoptera*, my father was issuing *Illustrations of European Butterflies*, which was upon an even more magnificent scale. Of this too, I had never seen anything but very occasional unfinished plates; I have now become possessed of a perfect complete and clean set, for which I had to pay dearly, but which I would not re-sell for ten times what I gave for it.

During the whole of his life, S. L. Mosley was the producer of voluminous literary and artistic works, and knowing him so well, as I ultimately was privileged to do as his son, I saw in him certain peculiar traits, which are manifest even in these early works, but which a casual observer might never detect. He always started off a new project with impetuous enthusiasm, which however failed to be sustained for any great period. It was not, however, that his interest abated, but rather because his fertile mind was conceiving other fields to explore and in his eagerness to be there he tended to neglect the unfinished task already in hand.

The fourteen parts which Mr. Griffin has so ably analysed, were not the only *Illustrations of Varieties* which my father produced, although probably it was his best, and if the Editor of the *Record* cares to have it, I shall be glad to contribute thereto an article dealing with such other works of that character as I have knowledge of.—CHARLES MOSLEY, M.B.O.U., The City Museum and Art Gallery, Wakefield. May 21st, 1932.

What is the meaning of a pupa?

By NORMAN H. JOY, M.R.C.S., F.E.S., M.B.O.U.

I am writing another book now on quite different lines from my *Practical Hand-book of British Beetles*, and I want to refer to this subject. The average entomologist has never given it a thought, as he is a mere collector of Lepidoptera. There are some who realise there are other orders of insects, and there are even a few now who realise that an insect is a living thing, and not a mere specimen. This is referred to very well by Mr. W. Fassnidge in his Presidential Address to the Entomological Society of the South of England, 1931. In my coming book I shall go into the question "What is a species?" from what I think is quite a new light, which will be ignored by the average entomologist, because it is new!

One of the greatest strongholds of the truth of evolution is the study of Embryology. We profess to know now that the bird first came

into this world in water, because the examination of a bird's egg on the fourth day of incubation, reveals what almost exactly resembles a tadpole, having no wings or legs, but gills and a tadpole like tail. The embryo of man has gills, cleft-palate and hare-lip, signifying what our very ancient ancestors were like, and where they lived.

Let us try to trace back the life-history of an insect. The one I particularly want to know is a Dipteron, as for instance the common house-fly. On the same lines presumably this was once like its larva, the "maggot," with the same nervous system, intestinal tract, and breathing apparatus, a very simple organism. This pupates, and this, by analogy, traces up the rest of its life-history. I understand (I want to know if correctly) that its epidermis is altered, so as to form the pupal case, and it is the contents of this which we must examine. I have spoken to several who ought to know, and they declare that the whole of the internal structure of the "maggot" is completely broken up, except the central nervous system. Out of this pupa there comes, I think I am right in stating, in less than a fortnight, a fully developed fly, with its very elaborate head, thorax, abdomen, wings and legs. Nothing whatever is known about how these are formed, and I believe no one has really seriously troubled to try to find out, because it would be a very difficult thing to do.

We can of course trace up the life-history of a chicken in the egg, but here we have a blank between the larva and the imago. Examination of the pupae of the Lepidoptera does not help us. Here we have no gradual growth of the wings, antennae and legs, as we have in the wings and legs of the chicken, but their sudden appearance, but not quite fully developed. Think of the complete change there is between the larva and imago of the Dipteron; what was the insect like in the world between these times? Why this apparent sudden jump from one to the other? It is a question which has probably been brought up at some time before the Entomological Society. It, at any rate, most certainly ought to have been. I have an idea myself to account for it, but I want the opinions of others.

On some forms of *Pieris brassicae*, L.

By T. J. LEMPKE, Amsterdam.

In 1929-1930 (*Entom. Record*, Vols. XLI. and XLII.) Messrs. G. S. and W. Graham-Smith published their excellent study of *Pieris brassicae*, L. As a number of forms, described by Rocci in 1919 (*Atti Soc. Lig.*, Vol. XXX., No. 1), are not cited by the authors and as these forms are neither to be found in the *Supplement of Seitz* nor in the *Novitates* of Bang-Haas, I think it very useful to give an account of Rocci's forms and to discuss the synonymy of one or two of them. As special spring forms Rocci described:

1. ab. *nigrovirescens*, Rocci, p. 16. "Specimens in which the underside of the hindwings is of a greenish colour, extraordinarily suffused with black scales, assuming an obscure green tint." To this name *anthrax*, Gr.-Smith, certainly falls as a synonym.

2. ab. *flavopicta*, Rocci, p. 16. "The ground colour of the underside of the hindwings of a yellowish colour, very little suffused with black." ab. *pallida*, Gr.-Smith, seems to be an extreme form of

this aberration. It must be observed, that Rocci used as much as possible the names proposed by Verity for the genus *Pieris*. Of course this is well done, but it is wrong to consider Verity as the author, as Rocci did. Verity has never described a *Pieris brassicae* ab. *flavopicta*. The first who did this was Rocci himself. I think it necessary to point out this mistake especially, as such kinds of errors are often made at present.

3. ab. *emigrisea*, Rocci, p. 17. "The apical blotch is completely pale greyish (as in *rapae-metra*), but the other spots (of the ♀♀) remain of a deep black." A synonym of ab. *vazquezi*, Oberthür, 1913.

4. ab. *parvomaculata*, Rocci, p. 17. "Some ♀♀ of the preceding form have the spots much reduced, not much larger than in *rapae-metra*."

Further Rocci described :

5. ab. *trimaculata*, Rocci, p. 20. "With an extra dot between the two normal ones on the forewings of the female. Rare and exclusively in the second generation."

6. ab. *nana*, Rocci, p. 20. "Very small examples of the first generation." A synonym of *minor*, Ksienschopolsky, 1911.

7. ab. *griseopicta*, Rocci, p. 20. "The markings of the forewings are strongly suffused with white; a further grade of the modification shown by *emigrisea* and which is only found in specimens of the first generation." It differs from *vazquezi*, Ob., that *all* the markings are greyish.

8. ab. *striata*, Rocci, p. 20. "The discoidal spot is united to the apical one by one or two lines. Examples of the second and third generation." ab. *biligata*, Cabeau (1925), is a synonym of this form.

9. f. *meridionalis*, Rocci, p. 18, is called the second generation of the Italian Riviera. It is very large (♀♀ 65-70mm.), has strongly developed black markings, the discoidal spot is often united to the apical blotch. Intermediate between *lepidii* and *catoleuca*.

Another form, not dealt with in the article on *Pieris brassicae* is :

ab. *separata*, Pionneau, *L'Echange, Revue Linnéenne*, January, 1928. "Differs from the type by the second spot of the forewings on the undersides, which is divided into two very distinct parts."

I must further add, that the synonymy of the ab. *fasciata*, Kiefer, as stated by Messrs. Graham-Smith, is not quite right. Ab. *maria*, Van Mellaerts (*Lambillionea*, 1926, p. 84) is the only good name for the form in which the two discal spots are united by a suffusion of black scales, while ab. *fasciata*, Kiefer (*Zeitschr. Oesterr. Ent. Ver.*, vol. III., p. 122, with figures) is the form, in which not only the two spots are united to each other, but the upper one also by two black lines to the apical blotch, as the original description of Kiefer ("connected to each other and to the hind margin of the forewings") and his figure clearly show. So ab. *maria* is not a synonym of *fasciata*, but ab. *alligata*, Cabeau (*Revue Mens. Nam.*, 1924, p. 25). The result is that we have : ab. *maria*, Van Mellaerts, with the two sub-forms abs. *supra-* and *infra-fasciata*, Gr. Smith, and ab. *fasciata*, Kiefer (=ab. *alligata*, Cabeau). It is a real pity that Van Mellaerts' name must be re-established. One should never name an aberration after a person, be it one's wife, or a kind cousin, or "the dear hand which made my net," as a German author writes. In the Supplement of Seitz Chr. Bollow has rightly treated the synonymy of these two forms.

Of course this little correction has not in the least, the intention to diminish the great value of Messrs. Graham-Smith's study. Such articles are published only too little. It would be for continental (and British) entomologists of very much value, to know the range of variation of the common British lepidoptera and the great riches of the collections in the British museums. And therefore it would be very interesting to study for instance *Pieris rapae*, L., and *P. napi*, L., *Epinephele jurtina*, L. and *E. tithonus*, L., *Satyrus semele*, L., *Pararge aegeria*, L. and *P. megera*, L., *Aphantopus hyperantus*, L., and *Coenonympha pamphilus*, L. (to take only the common Rhopalocera) as seriously as Messrs. Graham-Smith did for *Pieris brassicae*. Such work costs a great deal of time and trouble, but the value of it is far greater.

The Spring of 1931 in Kabylia.

By Miss L. M. FISON.

(Concluded from page 76.)

April 11th.—We went to a distant village about four hours from Michelet and in a deep ravine we saw *G. rhamni*, *A. belia*, *E. eupheno*, the "whites" and *Papilio podalirius*. *Melitaea didyma* appeared for the first time, also the "blue" *Glaucopsyche melanops*, we saw too *Pararge aegeria*, *T. ballus* and *Rumicia phlaeas*, also some "skippers" which we failed to capture.

April 15th.—We went to a village called Ait Ailem and found the following butterflies *P. podalirius*, the three "whites," *G. melanops*, *P. aegeria*, *Pyrameis cardui*, *E. polychloros* (1), *Polygonia egea* (worn), *Anthocharis belia* (*ausonia*) and *E. eupheno*, also *Coenonympha pamphilus* and *C. arcanoides*.

April 16th.—We had a very good day near Ait Saïda and found the following insects, *P. podalirius*, *A. belia* (*ausonia*), *E. eupheno*, *Lycaenopsis* (*Cyaniris*) *argiolus*, (singly) and *Agriades thersites* (?) also *C. rubi*, *C. avis* (?), *Rumicia phlaeas*, *T. ballus*, *C. croceus* (*edusa*), *P. cardui*, *C. pamphilus* and *E. polychloros*.

April 17th.—On a lavender-covered slope near Michelet we found *Glaucopsyche melanops* abundant and fresh, flying with *Rumicia phlaeas*, and the two "Whites," we also took *P. podalirius*, *E. eupheno*, and *T. ballus*.

April 18th.—We saw the same species near the villages of Tassaft Ongoumoun, together with *G. cleopatra*, *C. avis*, *C. rubi*, and *Pararge megera*.

April 28th.—We took the early bus and spent a day in the low-lying Oued Aissi and found *Anthocharis belemia* flying fine and fresh over fields of fresh corn, with *P. rapae*, and I rather think *P. manni*. We also took *C. pamphilus*, *R. phlaeas*, *P. aegeria*, *P. cardui* and *E. eupheno* (going over.)

April 29th.—Near Agoni-Taslent we found *Melitaea didyma* fine and fresh, also *R. phlaeas*, *P. sertorius* (*sao*), *P. icarus* ♂ and ♀, *C. arcanoides*, *P. cardui*, *E. eupheno*, *P. podalirius*, *T. ballus* (going over), and *G. melanops*.

May 10th.—Near Ait Moraou we took *C. rubi* and *C. avis*, *C. arcanoides*, *G. melanops*, *P. icarus*, *P. megera* and *P. aegeria*, *C. pamphilus*,

P. podalirius, *P. brassicae*, *A. belia* (*ausonia*), *E. eupheno*, *P. cardui*, *E. polychloros*, *Powellia sertorius* (*sao*).

May 17th.—We went to Tagnemout and Abdoun, and came across 6 *M. didyma*, *P. aegeria*, *P. megera*, *T. ballus*, *G. melanops*, the "whites" *C. arcanoides*, *C. pamphilus*, *P. cardui*, *E. eupheno* (going over), *C. avis* (?) and *R. phlaeas*.

May 15th.—Near the Oued Djemaâ we took *M. didyma*, *P. cardui*, *L. argiolus*, *P. icarus*, *Aricia medon*, *C. arcanoides*, *Euchloë eupheno*, the "whites," *P. sertorius* (*sao*), *C. pamphilus* and *Euchloë belia* (*ausonia*).

May 21st.—At Michelet we saw *P. atalanta*, *P. megera*, *Colias croceus*, *G. melanops*, (going over), *E. belia* (*ausonia*) *P. cardui*, and some "whites."

At the end of May we left Kabylia until mid-September. So we must wait for another year to describe the summer months around Michelet. After our return we found several *Dryas pandora* (worn) on a slope above Michelet—and the following butterflies have been quite common locally around Michelet until about December 8th, *Colias croceus*, *Pyrameis cardui*, *Rumicia phlaeas*, *Pararge aegeria*, *Pararge megera*, *Anthocharis belia* (*ausonia*), *Coenonympha pamphilus*, *Gonepteryx rhamni*, *Engonia polychloros*, *Pyrameis atalanta* and we have also come across *Polyommatus icarus* and *Aricia medon*. However since this date we have had very wintry weather with heavy falls of snow (67-70 centimetres) so this will probably be the last date now until the spring of 1932. May 1932 enable us to discover much more of interest—and many more of the secrets which still remain unravelled of the butterfly fauna of this fascinating region of Kabylia.

In conclusion it may be of interest to add a little about the habits and variation observed in some of the above mentioned species.

Papilio podalirius.—Common locally around Michelet, *i.e.* Agonit-Taslent, 6.iv.; Michelet, 9-10.iv.; Tamjoat, 15.iv.; Ait Saâda, 16.iv.; Iril Ouammas, 11.iv.; Ait Ailem, 15.iv.; Ait Moraou, 6.v.

Podalirius was particularly common at one spot close to Michelet so much so that we named this spot "Swallow-Tail corner." For several weeks each time we passed there we found one or several settled on a thorn-bush in the same spot—in spite of our capturing several specimens from there. I have not yet come across *P. machaon* near Michelet. Our specimens of *podalirius* vary in size—also in some specimens there is a decided whitening of the ground colour—still none can really be referred to the var. *feisthamelii*. In one or two specimens I note on the upperside hindwing that the long black streak is divided by a bright orange line—so I refer these to the ab. *ornata*, Wh.

Zerynthia (Thais) rumina.—Port Gueydon, 19.iii.; Aggribbes, 26.iii.; Michelet, 10.iv. I can refer two of my specimens to the ab. *canteneri*, one specimen was taken at Aggribbes and the other at Michelet, *rumina* seems fond of settling on stones near flowers.

Pieris napi.—Very fine and fresh near Michelet at Easter-time.

Pontia daphidice.—I fancy I saw a specimen near Bou-Messaoud in early November, but cannot be sure as I failed to catch it.

Anthocharis belemia.—Very fine and large in Oued Aissi on 28.iv. It varies somewhat in size; also taken at Michelet on 3.iv. and at Fréha, 20.iv.

Euchloë belia (*ausonia*).—One of the commonest of butterflies, well-

distributed over the region. It varies vary greatly in size, also in the markings of the upperside, especially in the size and depth of costal spot. I rather fancy I have two specimens of *Euchloë tagis*.

Euchloë enpheno.—This pretty little southern "Orange-tip" is the commonest of spring butterflies, and may be seen everywhere fluttering gaily over the spring flowers. Both ♂ and ♀ vary very much in size. In the ♂ I have one or two specimens without the black discoidal spot; and in other specimens this spot is elongated into a long, black, sometimes wavy streak.

Gonepteryx rhamni.—Undoubtedly hibernates in Kabylia.

Colias croceus (edusa).—First observed on March 9th, at Port Gueydon, last seen near Michelet on December 7th.

Pararge aegeria.—Locally to be found, but never really common. Usually seen singly. I have a very small specimen from Port Gueydon. The size of eye-spots upperside hindwing vary very distinctly.

Coenonympha arcanoides.—Locally common in the region. It varies considerably in depth and breadth of dark suffusion on upperside, also in size and colouring of costal spots underside upperwing, and in position of spots on undersides hindwing.

Pyrameis atalanta.—Never abundant, but found locally. Apparently some specimens succeed in hibernating.

Pyrameis cardui.—Perhaps the commonest butterfly in Kabylia, often in immense numbers. Last seen on December 7th.

Engonia polychloros.—Frequents places where the "chêne-zéen" grows. Varies considerably in size.

Polygonia egea.—Occurs locally.

Melitaea didyma.—Very fine and bright orange, around Michelet, i.e. Taguemount and Tafraout, 7.v.; Oued Djemaâ, 15.v.; Agoni-Taslent, 29.iv. Dr. Verity reports it from Yakouren, another part of Kabylia. *Didyma* varies somewhat in depth of ground-colouring.

Dryas pandora.—Several specimens found on high sandy slope at the back of our house at Michelet in mid-September, very worn.

Libythea celtis.—Agoni-Taslent, Easter Monday, so far the only locality I know of.

Callophrys avis.—In several places, I think, around Michelet. Seems to frequent spots where the *Cistus* grows. Several of my specimens of *C. rubi* may I think be referred to the var. *ferrida*.

Thestor ballus.—One of the commonest of the spring butterflies all over the region. Varies somewhat in size, also in depth and suffusion of ground colour upperside. In one specimen a blue suffusion around the spots under-side front wing is very marked.

Eumecia phlaeas.—Flourishes all over the region. Especially common in the autumn. Varies somewhat in ground colour and in spots on upperside, also in size. A fine race, and strong on the wing.

Polyommatus icarus.—Found locally all around Michelet, never in numbers. I have a fine ♀ ab. *caerulea* from Ait Meraou, 6.v.

Agriades thersites.—Met with locally.

Lycaenopsis argiolus.—Local, never more than two together. Ait Saâda, 16.iv.

Aricia medon.—Local, but fine and well-marked.

Glaucopsyche melanops.—Well distributed locally in the region. Particularly abundant on sandy lavender slopes near Michelet (also

locally elsewhere) iv., v. Varies very greatly in size. I have one tiny specimen with black suffusion on front wings. The spots on underwings vary greatly too, in size and in number.

Coenonympha pamphilus.—Well distributed in the region, varies somewhat in size.

Pararge megera.—To be found locally, never really abundant.

Hesperia sertorius (sao).—I wonder if my specimens should be referred to the race *mahommedani*?

NOTES ON COLLECTING, etc.

BYTURUS FUMATUS, F., IN BUTTERCUPS.—On May 10th, 1893, I took two specimens of *Byturus fumatus*, F., in Windsor Forest, and on looking up my register for that year I find that they were taken by beating hawthorn blossoms in company with *B. tomentosus*, F.

Up to this year I had never found it again in Windsor Forest, although *B. tomentosus* has turned up freely, by beating hawthorn and sweeping wild raspberry canes.

Last year having given the two Windsor specimens from my cabinet to Oxford for the Windsor collection, I was anxious to replace them, and I went down to Harpenden on May 21st, as Mr. Williams had told me it could be taken in a lane there, by beating hawthorn blossom: No blossoms were found, but eventually I swept four specimens off butter-cups. On May 18th, this year, we observed *B. fumatus* sitting in the butter-cup *Ranunculus auricomus*, L. ("Wood Crowfoot") growing in a lime tree avenue in Windsor Forest, and on sweeping these a series of the beetle was quickly secured.

Reitter and Ganglbauer give the flowers of dandelions; but *B. fumatus*, F. (the species with the large eyes) is evidently associated with butter-cups.—HORACE DONISTHORPE.

EARLY APPEARANCE OF THE "RED ADMIRAL" (*PYRAMEIS ATALANTA*).—On April 26th, this year, when collecting in a willow swamp in Windsor Forest, a specimen of the "Red Admiral" was observed flitting about among the willows. On getting close to it, it was seen to be in very fine plumage, the colours being very bright.

When at this same locality on May 10th, this, or another specimen was again seen. It flew rapidly out of the swamp and across some fields, returning again after a short absence. It repeated this performance several times whilst we were there.—HORACE DONISTHORPE.

PSILOTA ANTHRACINA, Mg., A RARE DIPTERON TAKEN IN WINDSOR FOREST.—On May 10th last when beating hawthorn blossoms for Coleoptera in Windsor Forest I captured a specimen of *Psilota anthracina*, Mg. Mr. Edwards, who kindly named it for me, tells me that it has only been taken in the New Forest in Britain heretofore, where some six specimens were taken by the late Colonel Yerbury, also off hawthorn blossoms. There were only two specimens in the National Collection of British Diptera.—HORACE DONISTHORPE.

CURRENT NOTES AND SHORT NOTICES.

We have received samples of long Stainless Steel Entomological Pins from Messrs. Taylor & Co., Ltd., whom we all know as Entomological Pin Makers. They have been and still are experimenting in this direction. So far only one guage of pin has been attempted, one that would only be useful for the larger and average sized butterflies and moths, and other insects, and we think it an excellent pin at the start. Of course the real test will be how it will stand a course of years in the body of a moth in the presence of the body acids. Stainless steel is high priced, but this guage they estimate will be on sale at 7/6 per 1000 in packets of 100. We are anxious to know if stainless steel wire of guage suitable for the smaller Geometers and Tortrices can be produced at a reasonable cost. This guage pin is firm and appears not to have that flexibility which the well-known continental pins have, a good characteristic.

A while ago a small local publication came to our table, *Proc. Coventry N.H. & Sci. Socy.*, containing a short record of the doings of the Society in giving its members local information on various matters of Natural History of a local nature. An average of 44 at its meetings proves that considerable interest has been aroused. The meetings are held twice a month and in summer consist of country rambles. Much matter has been got into the 16 pages, and besides local notes, records of plants, etc., an account of the Tile Hill Nature Reserve, and two original articles. One of these last is from the pen of our sometime correspondent J. W. Saunt, A.L.S., on "*Trypetidae* (Dip.) in Warwickshire," giving an account of the species of this family he had met with during the last two seasons and a photograph of 5 species admirably reproduced and quite effective in giving five very clear figures of typical species of five different genera. In fact just the kind of paper which we wish our British dipterist readers would send us.

We should be very pleased to have notes on the Noctuid species we are about to deal with. *Miana literosa*, *Phothedes captivneula*, *Celaena haworthii*, the *Mamestra* sps. *abjecta*, *sordida*, *furva*, *albicolon*, *brassicae* and *persicariae*. Among the queries are What is the *haworthii* of Graslin? and Where is the description of it? Of *M. sordida* (*inceps*) the reference and description of *intacta*, Peterson, and *obscura*, Th. Miegen. Of *M. brassicae*, Moore, the reference and original description. It often occurs that in local faunal lists aberrations are noted, described and named in Proceedings, Annuals, etc., with very limited circulation, causing additional and unnecessary synonymy both directly and indirectly. A month or two ago we published such a list of descriptions and names recorded by S. Mosley. Workers find the greatest trouble to dig them out. There are such publications as the *Zoological Record*, Staudinger and Bang Haas *Noritates Macrolep. Katalog*, etc., which endeavour to record all such names, but even then the publications themselves are unobtainable to the average student, even in large libraries. e.g., subsp. *albivna* of *fasciuncula*, described by Kozhantshikov in *Jahrbuch Martjanow Minussinsk*. Siberia in 1929, is probably unattainable in this country except in the Brit. Mus. Library (Nat. Hist.)

In the *Verh. Ent. Ver. Hamburg-Altona* Herr Warnecke has been contributing a series of notes on the Lepidoptera of Hamburg. Part

V. dealing with the *Noctuidae* has recently been received, and contains the observations of the author with those of his fellow members of the Society. More than a hundred species are dealt with and there are descriptions of two new forms *Acronicta auricoma*, new f. *basistriata* and *Mamestra advena*, new f. *purpurisata* and a new subspecies *rubrifera* of *Agrotis subrosea*. More than 100 species are recorded with considerable notes on their larval variation and occurrence. There is a full account of *Agrotis subrosea* and its local forms. The species probably occurs by no means rarely on all the suitable marshy land in the area. *Agrotis ripae* is found on all the sea-coast lands suitable for the growth of saltloving plants. The author accepts *Miana latruncula* as a good-species.

REVIEWS AND NOTICES OF BOOKS.

K. T. SCHÜTZE, DIE BIOLOGIE DER KLEINSCHMETTERLINGE, published by the Internationaler Entomologischer Verein at Frankfurt am Main; Price, cardboard covers 20 Reich Mark, half linen 23 RM: 235 pages; 1931.—This eagerly awaited work, whose sub-title further explains its scope, is from the pen of a veteran worker, well-known for his life-long researches in the field. As was expected the chief stress is laid on foodplants, times of appearance, life-histories, while descriptions of larvae are given when the information is new or not readily accessible. All the writings of previous authors such as Disqué, Hering, Kaltenbach, Kennel, Sorbågen, Stainton, Stange, have been utilised, and many errors that have been long in circulation are here corrected. The arrangement is botanical, the plants with their hosts being given in the order of the *Illustrierte Deutsche Flora* of H. Wagner. This method is of course a very convenient one, for every microlepidopterist must also be a good botanist. Both generic and specific names are those of the Staudinger-Rebel *Catalog*, and only those families placed in Part II. of this Catalogue are dealt with, so that the *Aegeriidae*, *Cossidae*, *Hepialidae* and others now generally included among the "micros" receive no mention. Good indexes of both plants and insects—specific names only—make reference an easy task. It is a great pity that it was found necessary to use such a large number of contractions—it would hardly be an exaggeration to say that nearly every word of the text is contracted—but it will be found that these offer no difficulty to anyone having an ordinary knowledge of German, and their use alone made the production of the work possible by reducing its price to one that is already high enough for the English student at the present rate of exchange. No field lepidopterist can afford to be without this work, which contains a vast wealth of original observations compressed into a small space, and which marks a great advance in our knowledge, besides indicating where gaps still exist and where statements require confirmation. May we hope with the author that his labours may lead more entomologists to devote themselves to the study of the "micros," of whose life-histories we know after all so little, and especially that all those who style themselves lepidopterists may be stimulated to study in its entirety the order in which they profess to be interested.—W.F.

The Presidential Address to the Entomological Society of the South of England for 1931 by Wm. Fassnidge, M.A., F.E.S. has come to our table. It is entitled "Entomology and Ethics," and deals from all points of view with the ethical attitude of the serious student of entomology towards the objects of his study, with the rights and duties of the real entomologist, who finds intellectual pleasure in the study of insects. The author collects the opinions of those well-known in entomological science from Kirby and Spence to Darwin. The subjects "mere collectors" and "dealers" are fully discussed; the mania for "vars." and "abs.," the exchange and sale columns of our magazines, the "illegitimate use" of butterflies wings as ornaments and in schools. In this last connection we are urged to quote the remarks of the late Edward Step when writing of the Orchids. "In our own time, the war against Orchids has been intensified, paradoxically, by those who proclaim themselves lovers of the beautiful and curious. Possession and present gratification count with these persons more than the conservation of the species admired. The members of Botanical Exchange Clubs, too, when they come across a good thing, take a liberal helping to improve their powers of barter for a species they have not found—a distinctly commercial consideration, though not so regarded. Nature-study classes, and prizes for wild flower collections at local flower-shows, add to the waste and decimation." (*Wayside and Woodland Blossoms*, III. 81). We were once induced to take a nature-study class of grown-ups for a ramble to Oxshott; among the objects noted were dragonflies in the teneral state, and the students were asked to leave them. They were annexed by several who lagged behind. The worst case of this kind we know was that which occurred to a well-known S. London naturalist, who took a party of school-teachers to the far-famed bank where Darwin's study of orchids was carried on for many years. The visitors were asked not to dig any of the plants from this sacred spot and they did not. But the following week members of the party returned and *cleared the bank of orchids*. No doubt true lovers of nature could illustrate the dangers of species extinction by numerous further examples. We would ask all entomologists to peruse this admirable address, containing as it does so much food for thought on ethical and other aspects of our beloved study.—HY.J.T.

Corrections, etc.

On page 60 of the current volume, April number, the important word has dropped. It should read *Aricia medon (agestis) ab. aestiva*, Msly., line 7 from the bottom.

A correspondent has kindly pointed out that in the last volume, 1931, there are several printer's errors in the article on Mosley's *Illus. Varieties Brit. Lep.*, viz., p. 162, line 2 from bottom for Pt. XIII. substitute Pt. XII., on p. 163, line 5, for Pt. XIII. substitute Pt. XII., p. 165 *Fidonia* plt. 2 was issued with part VI. *Abraxas* plate 1 was issued with part I. We are indebted to C. Mosley the Curator of the Wakefield City Museum and Art Gallery the son of the late S. Mosley for the above information.

We understand that owing to the Whitsun holiday there was some delay in the distribution of copies of the magazine. Our own copies came to hand on May 17th.

All MS. and EDITORIAL MATTER should be sent and all PROOFS returned to
HY. J. TURNER, "Latemar," West Drive, Cheam.

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

Reprints of articles may be obtained by authors at very reasonable cost if ordered at
the time of sending in MS.

Articles that require ILLUSTRATIONS are inserted on condition that the AUTHOR
defrays the cost of the illustrations.

EXCHANGES.

Subscribers may have Lists of Duplicates and Desiderata inserted free of charge. They should
be sent to Mr. HY. J. TURNER, "Latemar," West Drive, Cheam.

Duplicates.—S. Andrenaeformis, Bred 1928, well set on black pins, with data.

Desiderata.—Very numerous British Macro Lepidoptera.—J. W. Woolhouse, Hill
House, Frances Street, Chesham, Bucks.

Desiderata.—Species of Dolerine and Nematine sawflies not in my collection; list
sent.—R. C. L. Perkins, 4, Thurlstone Road, Newton Abbot.

Duplicates.—Albimacula*, sparganii*.

Desiderata.—Ova of D.oo. pupae of X. gilvago, D. caesia. A. J. Wightman, "Aurago,"
Bromfields, Pulborough, Sussex.

EXCHANGES.—Living Eggs of Catocala fraxini and sponsa, exchange for butterflies of
British Isles.—C. Zacher, Erfurt, Weimar, Street 13, Germany.

Duplicates.—Pyrulina*, Salicis, Ianthina*, Orbicularia*, Repandata in variety,
Doubledayaria, Black rhomboidaria*, Black virgularia* and others.

Desiderata.—Hyale, Welsh aurinia, Polychloros, Tiphon Agathina, Lunigera,
Lucerneae, Neglecta, Diffinis, Populeti, Gothica v. gothicina, White Leporina, Tridens
Putrescens, Littoralis, Typhae v. fraterna, Rurea v. Combusta, Gilvago, Fulvago v.
flavescens, Liturata v. nigrofulvata. Harold B. Williams, Woodcote, 36, Manorgate Road,
Kingston Surrey.

Duplicates.—A large number of species of European and Palaearctic Rhopalocera
and Heterocera.

Desiderata.—All British species especially those illustrating characteristics of an
island fauna. Dr. Lor. Kolb, München 54, Dachauer-str. 409, Germany, and Franz
Daniel, München, Bayer-str. 77, Germany.

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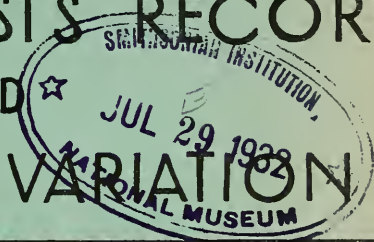
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The Entomologist's Record.
del C. R. N. Burrows.
MALE GENITALIA OF ACENTRA VESTALIS.

A New Genus of Psychides. (With Plate I.)

By REV. C. R. N. BURROWS, F.E.S.

In my "Notes on the Psychides" in the *Ent. Record*, XXXV. p. 9, 1923, I placed the species *vestalis* tentatively under a separate heading as, although agreeing generally with the genus *Bijugis*, in which it had hitherto been placed, it has no trace of a spur on the anterior tibia. This species has been distributed under the name *Psychidea vestalis*. In the British Museum collection there were, when I went through them, four male specimens in the Hoffmann collection, but I have seen no others, except such as have subsequently come into my hands. In my possession there appear to be four distinct species, which are spurless; some were sent to me as *nudella*, to which they bear a close resemblance, but can readily be separated by the short spur in *nudella*. These specimens are markedly smaller than any species included in either the genus *Psychidea* or in the genus *Bijugis*. The wings are inclined to be on the narrow side and not so broad in proportion as the well known *casta*, nor have they the curved costa of the latter species. In colour the wings are grey to white. The fringes are pale, and in a strong light conspicuously white. The antennae are well pectinated and pointed, the pectinations being of medium length throughout, only diminishing near the point. To this genus I assign the name **Acentra** from the Greek *a*, without, and *kentron*, point or spur, the absence of the anterior tibial spur being the chief point of differentiation from allied genera.

1. *Acentra vestalis*.—The form to which I restrict the specific name *vestalis* and of which I have three specimens, is the smallest species of this genus I have met with. No. 951 type of genus. The wing measurement 10mm. The colour of these three is pure white without admixture of grey; all are from Hungary. Case slender, long, cylindrical.

2. *Acentra* sp. ?—The two largest specimens I have, both obtained from Vienna through the kindness of Dr. Zerny, of which the colour is light grey and without markings. The wing measurement 17mm. Case, stouter, not much longer.

3. *Acentra* sp. ?—One specimen, intermediate in size between No. 1 and No. 2 is of a very pale grey colour and markingless. It is also from the Vienna neighbourhood. The wing measurement 12mm.

4. *Acentra* sp. ?—Two specimens (one, body gummed on and therefore doubtful) slightly larger than No. 1 and of the pure coloration of number 1. The reliable example is from Digne. The wing measurement 11mm. Case, very short, somewhat stout, but sharply pointed.

The differentiation of these four suggested species is supported by the evidence of the genitalia. But the material at present is quite insufficient to justify bestowing a specific name. These all belong to the "*Fumea* form" group in my Resumé in the *Ent. Record*, XXXV., p. 133, the sacculus is V-shaped and not hooked, the 7th emarginate.

Brachypterous Earwigs. A Problem for Field Workers.

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

A short time ago Mr. E. E. Green sent me a few earwigs which he had taken under boulders at Kyrenia in Cyprus. They were *Forficula lurida*, Fisch., and the sight of them recalled old memories, more particularly of one nice problem still waiting to be solved, which I will put forward now once more, in the hope that entomologists in the field may solve it during the summer. I called attention to the point in the *Ent. Mo. Mag.* twenty-five years ago, but without result.

The common earwig, *F. auricularia*, L., has the pronotum rounded at the hinder angle, which is correlated with the development of wings. In brachypterous forms the pronotum is rectangular. The forceps of the male are broadened near the base and this dilated part ends in a strong tooth. It ranges all over Europe and Africa and half way across Asia.

In the Mediterranean area it is replaced by very closely related species in which the tooth at the end of the dilated part of the male forceps is absent. This seems but a trifling feature, yet is very constant, and I have never known this tooth absent from any other area. It really does seem to be a permanent specific character. In the eastern portion of the Mediterranean, the species is normally fully winged; this is *F. lurida*, the species sent me from Cyprus by Mr. Green. In the western half, it is normally brachypterous, and is then known as *F. decipiens*, Gén . This form reaches the Levant, though the *lurida* form seems dominant there.

Now in Calabria there is another form, brachypterous like *F. decipiens*, but with a marked tooth on the forceps, like *F. auricularia*. In fact, it differs from *F. auricularia* only in having the wings shortened with the pronotum more square, and the hinder border of the elytra rounded, both features correlative with the shortening of the wings. It is in fact, to my mind, not a distinct species but a brachypterous *F. auricularia*, just as *F. decipiens* is a brachypterous *F. lurida*. As in the true Orthoptera and many Rynchota, brachypterous and macroppterous forms of a single species are by no means rare.

Now we are coming to the point. In 1903, collecting on the south coast of the Isle of Wight, I casually turned over a cowpat. In channels in it I caught sight of two earwigs. There was something odd about their appearance that made me look a second time. They were brachypterous! To my mind that cowpat became classical. It stimulated me into quotation, as Mr. Donisthorpe may remember,

“Thou odoriferous stench! Sound rottenness!”

King John, Act III. Scene 4.

They were nothing like *F. lesnei*, common enough along the south coast, which is normally if not always brachypterous, but indistinguishable from the common or garden earwig, *F. auricularia*, a brachypterous form of which had not hitherto been recorded.

Now comes the fly in the ointment. They were both females. That means, that there were no means of saying whether they are *F. decipiens*, hitherto regarded as a purely Mediterranean form, or brachypterous specimens of true *F. auricularia*. I hunted in vain, but did not find a brachypterous male.

It seems very probable that they were brachypterous *F. auricularia*, and perhaps their own brothers and sisters were as macropterous as any normal earwig, but it is very desirable that the male be found.

It is a strange thing that the only ones recorded previously were from Calabria, to which two specific names have been given, *F. targionii*, Br., and *F. silana*, Costa, neither of which can stand, in my opinion, as they are nothing more or less than brachypterous specimens of *F. auricularia*. Brachypterism in this common and abundant species, therefore, is so very rare that it has been recorded only in these instances.

Everybody knows where earwigs are to be found, so I hope all friends in the field, especially Coleopterists, will have a second look at any earwigs they may see, and save them if they come across any brachypterous specimens.

A Holiday at Braemar.

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

I decided to spend my holiday in 1931 at Braemar to try to find the larvae of some species I have not yet seen, especially that of *Zygaena exulans*. Mr. Russell James very kindly marked my maps for me and gave me many useful hints derived from his experiences in 1911 and 1912. I arrived on June 3rd, and found that there had been a heavy fall of snow on the hills during the night and there was another on June 6th, which covered the *exulans* ground. During the first part of my stay clouds enveloped the hill tops almost continuously and the weather was cold as well as wet, so that I had only one opportunity of looking for larvae of *exulans* and that was a failure. On June 16th however I found a few young larvae before I was caught in a heavy thunderstorm and on the next day saw about eighty larvae and a few cocoons, and two full grown larvae. I was unlucky because in several of the cocoons there were larvae, which had not pupated. Later I climbed the mountain three or four times and found more larvae and cocoons, and as very little has been written about the habits of the insect in its early stages in Scotland I will give a general account of my observations. The larvae seen were, I think, in four different instars; two in the last were a rich velvety black with rather large yellow lateral spots; the great majority were about half the size of the full grown ones, with a uniform ground colour of a less intense black and with a lateral row of smaller yellow spots, but if one may judge by the size of their heads two instars were represented amongst them.

A number of much smaller larvae were found, 6mm. long, and the ground colour of these was greyish green, the green tint being due to the green fat under the skin. On each somite above and in front of the yellow lateral spot was a smaller black spot. In a blown larva it can be seen that this black spot is still present even in the last instar, but in the living larva the blackness of the ground colour hides it. A few larvae still smaller, 3.5 to 4mm. long, were found, and in these

the ground colour was paler greenish grey and the lateral yellow and black spots were more conspicuous. An attempt was made to blow larvae in each instar, but with the smallest it failed, though in one case it disclosed the presence of a parasite almost completely filling the larval skin. Other small larvae however had no parasites and their size was not due to this cause.

Larvae were found on two widely separated parts of the mountain summits so far apart that they have received different names on the ordnance survey map. Almost all were on the barer patches covered with lichen, a short growth of crowberry, *Empetrum nigrum*, and scattered plants of other species including heather, but the patches of longer heather round them were avoided. Larvae were seen feeding and moving about actively in the sunshine, eating the terminal buds of crowberry and in one case an unripe berry, which was hollowed out. Two were seen eating *Vaccinium vitis-idaea*, one *Vaccinium myrtillus*, and one heather. There was no *Loiseleuria procumbens*, the azalea, on the part where they were most plentiful, and in the other place I saw no larvae on the azalea, though doubtless the statement that it is one of their food-plants is correct. Of more than two hundred larvae seen all except the four already mentioned were on crowberry, and there is no doubt that this is the staple food at Braemar.

On June 26th larvae were very much scarcer and most of those I was keeping had stopped feeding. I suspected that they were beginning to hibernate. To confirm this I examined some of each instar and found that their intestines were empty and they contained little but rich emerald green fat and orange blood. This applied equally to the larger black and the smaller greyer larvae. After resting for a time they changed skin, and some I sent to Mr. C. N. Hawkins remained inactive and without feeding until winter had come, and one of them lived until the spring. This larva, one of the larger grey ones, changed skin at the end of May, but was very little bigger than before. I think that the two larger sizes of black larvae, which were so common, really represent larvae of two different years, and probably the two sizes of greyer larvae also represent two different years. If so the insect passes at least five winters in the larval state, and only feeds for a short time each spring. It seems most remarkable that it should spend the warmest part of the year, July, August and September, in a state of suspended animation and feed at a time when snow may fall any night and cover the ground it lives on.

The larvae are by no means easy to see even when they are resting fully exposed, for the black ground colour blends well with the dark foliage of the crowberry and the yellow spots closely simulate the pale tips of the small fleshy leaves.

Of cocoons containing either a larva or a pupa I found about a hundred and sixty and about twenty with a hole in the side, and either empty or with a pupa, of which the abdomen and thorax had been partly eaten. Possibly the enemy was *Carabus violaceus*, which was rather common. Most of the pupae were well concealed and almost always attached to the underside of a stem of crowberry or less often a bit of dead heather or reindeer moss. A few were very conspicuously placed on a long piece of living or dead heather at the edge of one of the barer patches on which they had fed. I discovered that it was

much easier to find cocoons by passing my hand lightly over the crowberry and listening for the dry rustling sound made when I touched one than by looking for them, though a rather similar sound was made by a dry blackish lichen. The cocoons are very fragile and so loosely attached that they fall off at a touch. There were seldom more than one or two on a plant or group of plants, though once I found one fastened on to the top of another.

Almost all the moths emerged between July 1st and 6th and the few remaining ones appeared between the 6th and 10th. Emergence took place at any hour from early morning to late at night, though most of them emerged during the hours of day light.

Beating for larvae of *Gnophos myrtillata* produced a single dead one, which had been sucked by a bug, and searching for them at night gave little better success, though I did find two, both sitting with the body almost at right angles to the food-plant rigid and motionless. The larva is remarkably short and stout for a geometer and of a soft grey colour. Larvae of *Plusia interrogationis* were widely spread over the moors and I found one or two, nearly every day, but never more than six. They were always resting high up on a sprig of heather, both by day and by night, in rain or in sunshine. A high percentage were however parasitized by a species of *Apanteles* which killed them before they were more than three-quarters grown. Beating nettles gave me sixteen larvae of *Plusia pulchrina*, but these were parasitized by another *Apanteles*, which killed them, when they were full-fed.

Larvae of *Lygria pyraliata* were common and were easy to see by day at rest on *Galium verum* growing on the banks along the roadside or between the fields. Those of *Lygria populata* were abundant in a birch wood on the bilberry, but green forms were rare. The moths were very variable, from typical ones to the darkest chocolate forms, and one female had a white instead of a yellow ground colour.

Larvae of *Noctua castanea* were common and the moths bred were very variable, grey, pink, red of several shades, and dark brown. Larvae and cocoons of *Dasychira fascelina* were widely distributed on the low ground, and there were many small larvae all of which were parasitized. The parasite spins its cocoon under the abdomen of the larvae, so that it is almost impossible to distinguish a dead larva from a living one. On the junipers larvae of *Thera simulata* and *Eupithecia sobrinata* were abundant, and the imagines of the latter emerged from July 6th to 21st. On *Pinus sylvestris* there were a few larvae of *Thera obeliscata*, but those of *T. firmata* were much commoner. Unfortunately the larvae of all the *Theras* were heavily parasitized by a Proctotrypid.

On a series of low rock-capped hills some miles down the valley there is an abundant growth of bearberry and a visit on one of the few sunny days, June 13th, was very successful. *Isturgia carbonaria* was common but worn, and males were flying freely between 11.30 and 1.30 summer time. Females were found at rest or disturbed from the bearberry and eggs were obtained and the larvae brought to maturity later in the season. *Anarta cordigera* was still on the wing here and in Glen Callater.

Carbonaria was also seen on Meall an t-Slugain. A single female of *Epirrhoë tristata* was taken between the pine wood and the burn

that rises on Meikle Elrick, and from the ova obtained larvae were brought to full growth, but died of some infectious disease.

Calostigia salicata was first found on June 5th, but was much commoner later on the large lime stone rocks up Glen Callater. Eggs were laid on the tips of moss and the larvae fed up well on *Galium*.

Anarta melanopa, though in poor condition remained fairly common up to the end of my visit, June 30th, but all my friends failed to rear larvae, though they were sleeved on sawflies out of doors or fed on growing plants. Mr. Lees, who did better than anyone else, kindly let me have the full-fed larva for preservation, but failed to get a single pupa. We have had the same experience with this larva before and it seems to be very delicate, when it is removed from its natural habitat.

Two nights' sugaring produced a nice series of *Hadena rectilinea* and I distributed eggs to a few friends. The moth comes very punctually at 11.45 p.m. summer time.

I had hoped to get eggs of *Psodos trepidaria*, but the moth was late, and I only took two males just before I left Braemar.

The weather was cold and wet almost every day, but whatever the weather may be at Braemar the sight of interesting local plants such as *Cornus suecicus*, *Betula nana*, and *Thalictrum alpinum* and the beauty of the scene from the hill-tops, from which one sees mountain crest upon mountain crest, many with huge snow-drifts under the higher ledges and in the deep gullies, compensates one for one's failures.

On the "Illustrations of European Butterflies" by S. L. Mosley (1879-1894).

By CHARLES MOSLEY, M.B.O.U.

(Curator of The City of Wakefield Museum and Art Gallery.)

Following the example of Mr. Francis J. Griffin, who, in the 'Entomologist's Record' of November last, itemised the contents of the "Illustrations of Varieties of British Lepidoptera," it may be of equal interest to treat similarly another of the early works by the same author, whose son I have the honour to be.

These works are probably unique, both in their inception and in their production. Until quite recently I had never seen complete copies of either of them; my father did not even keep one for himself, hence it was a delight to be able to pick up perfect copies from a second-hand bookseller even though incomplete.

The "Illustrations of European Butterflies" was issued "for private circulation to subscribers only," this fact being inscribed in the author's handwriting on the covers of the earlier parts; later it was printed thereon. The copy at present under review was subscribed for by a "Mr. Sidebotham" from whose library it came into the market, probably at his death. It is evident that a stock of covers were printed and used for the several parts as issued until exhausted, certain details filled in in ink as may be appropriate in each case. The script and printing on the front cover is as follows:

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| | 10. <i>Parnassius phoebus</i> , Hub. 1795; <i>delius</i> , Esp. 1800. One figure. |
| Third plate : | 14. <i>Pieris brassicae</i> , Linn. Four figures (male and under side, female, and larva) on spray of <i>Tropaeolum</i> . |
| Fourth plate : | 15. <i>Pieris krueperi</i> , Stg. Two figures (upper and under sides). |

- Part III., March, 1879. Containing 4 Plates (13 figures). Representing 4 Species.
- First plate : 16. *Pieris rapae*, Linn. Five figures (male and under side, female, larva, and pupa), on sprays of Mignonette and grass.
- Second plate : 18. *Pieris callidice*, Esp. Three figures (male and under side, and female).
- Third plate : 20. *Pieris chloridice*, Hub. Three figures (male and under side, and female), with spray of Hairbell.
- Fourth plate : 21. *Anthocharis belemia*, Esp. Two figures (upper and under sides).
- Part IV., April, 1879. Containing 4 Plates (12 Figures). Representing 4 Species.
- First plate : 22. *Anthocharis belia*, Esp. Two figures (upper and under sides).
- Second plate : 23. *Anthocharis tagis*, Hub. Two figures (upper and under sides).
- Third plate : 24. *Anthocharis cardamines*, Linn. Five figures (male and under side, female, larva, and pupa) and sprig of Lady's Smock.
- Fourth plate : 25. *Anthocharis gruneri*, H.S. Three figures (male and under side, and female).
- Part V., May, 1879. Containing 4 Plates (12 Figures). Representing 4 Species.
- First plate : 19. *Pieris daphidice*, Linn. Five figures (male and under side, female, larva, and pupa) with plant of Mignonette.
- Second plate : 27. *Anthocharis eupheno*, Linn. Three figures (male, female and under side).
- Third plate : 29. *Zegris eupheme*, Esp. Two figures (upper and under sides).
- Fourth plate : 31. *Leucophasia lathyri*, Hub. Two figures (upper and under sides) with spray of Vetch.
- Part VI., June, 1879. Containing 4 plates (14 Figures). Representing 4 species.
- First plate : 32. *Colias palaeno*, Linn. Three figures (male and under side, and female).
- Second plate : 33. *Colias phicomone*, Esp. Three figures (male and under side, and female).
- Third plate : 33a. *Colias nastes*, Boisds., variety *phicomone*? Three figures (male, female and under side).
- Fourth plate : 40. *Colias edusa*, Fab. Five figures (male and under side, female, larva, and pupa), on spray of Clover leaves.
- Part VII., July, 1879. Containing 4 Plates (11 Figures). Representing 4 Species.
- First plate : 35. *Colias erate*, Esp. Three figures (male, female and under side).

- Second plate : 39. *Colias myruidoue*, Esp. Three figures (male and under side, and female).
- Third plate : 42. *Colias aurorina*, H.S. Three figures (male and under side. and female) with spray of Speedwell.
- Fourth plate : 44. *Gonepteryx cleopatra*, Linn. Two figures (male and female).
- Part VIII., August, 1879. Containing 5 Plates (11 Figures). Representing 5 Species.
- First plate : 26. *Anthocharis damone*, Boisd. Three figures (male and under side, and female).
- Second plate : 28. *Zeyris pyrothoe*, Esp. Two figures (upper and under sides).
- Third plate : 36. *Colias chrysotheme*, Esp. Two figures (male and female).
- Fourth plate : 37. *Colias hecla*, Le.; *boothii*, Bd. Two figures (male and female).
- Fifth plate : 41. *Colias heldreichi*, St. Two figures (male and female).
- Part IX., September, 1879. Containing 6 Plates (12 Figures). Representing 6 Species.
- First plate : 36a. *Colias boothii*, Curt. Two figures (male and female).
- Second plate : 84. *Argynnis leodice*, Ps. Two figures (upper and under sides).
- Third plate : 92. *Vanessa v-album*, W.V., 1776; *l-album*, Esp., 1780. Two figures (upper and under sides).
- Fourth plate : 99. *Neptis aceris*, Fab. Two figures (upper and under sides).
- Fifth plate : 100. *Neptis lucilla*, W.V. Two figures (upper and under sides).
- Sixth plate : 108. *Melitaea lachesis*, Hub. Two figures (upper and under sides).
- Part X., October, 1879. Containing 4 plates (16 Figures). Representing 4 Species.
- First plate : 34. *Colias hyale*, Linn. Four figures (male and under side, pale form of female, and larva) with bunch of Dutch Clover and grass.
- Second plate : 43. *Gonepteryx rhamni*, Linn. Four figures (male, female, larva, and pupa) with sprig of Buckthorn.
- Third plate : 51. *Melitaea cinxia*, Linn. Four figures (upper and under sides, larva, and pupa) with Ribwort Plantain.
- Fourth plate : 93. *Vanessa urticae*, Linn. Four figures (upper and under sides, larva, and pupa) on Nettle.
- Part XI., November, 1879. Containing 4 Plates (9 Figures). Representing 4 Species.
- First plate : 45. *Danais chrysippus*, Linn. Two figures (upper and under sides).

- Second plate : 102. *Limenitis camilla*, W.V. Two figures (upper and under sides).
- Third plate : 105. *Apatura ilia*, W.V. Three figures (upper and under sides, and variety *clytie*, Hub.).
- Fourth plate : 106. *Charaxes jasius*, Fab. Two figures (upper and under sides).
- Part XII., December 1879. Containing 7 Plates (14 Figures).
Representing 7 Species.
- First plate : 113. *Melitaea syllius*, Hbst., 1794 ; *psyche*, Hub. 1825. Two figures (upper and under sides).
- Second plate : 116. *Melitaea thetis*, Hub., 1795 ? *ines*, Hoff., 1804. Two figures (upper and under sides).
- Third plate : 123. *Lasiommata dejanira*, Linn. Two figures (upper and under sides).
- Fourth plate : 126. *Satyrus aleyone*, W.V. Two figures (upper and under sides).
- Fifth plate : 127. *Satyrus briseis*, Linn. Two figures (upper and under sides).
- Sixth plate : 128. *Satyrus anthe*, Boisd. Two figures (upper and under sides).
- Seventh plate : 138. *Satyrus fidia*, Linn. Two figures (upper and under sides).
- Part XIII., January, 1880. Containing 4 Plates (12 Figures). Representing 4 Species.
- First plate : 119. *Lasiommata maera*, Linn. Three figures (male and under side, and female).
- Second plate : 139. *Satyrus dryas*, Sc., 1763 ; *phaedra*, Linn., 1764. Three figures (male, female and under side).
- Third plate : 140. *Satyrus cordula*, Fab., variety of *actaea* ? Three figures (male under side, female and under side).
- Fourth plate : 148. *Satyrus ida*, Stg. Three figures (male, female and under side).
- Part XIV., February, 1880. Containing 5 Plates (11 Figures). Representing 5 Species.
- First plate : 48. *Melitaea maturna*, Linn. Two figures (upper and under sides).
- Second plate : 53. *Melitaea phoebe*, Fab. Two figures (upper and under sides).
- Third plate : 55. *Melitaea trivialis*, W.V. Two figures (upper and under sides).
- Fourth plate : 76. *Argynnis hecate*, W.V. Two figures (upper and under sides).
- Fifth plate : 82. *Argynnis niobe*, Linn. Three figures (upper and under sides, and under side of variety *eris*, Meig.).
- Part XV., March, 1880. Containing 5 Plates (11 Figures). Representing 5 Species.
- First plate : 185. *Erebia medusa*, W.V. Two figures (upper and under sides).

- Second plate : 190. *Erebia alecto*, Hub. Three figures (male and under side, female under side).
- Third plate : 192. *Erebia stygne*, Hub.; *epistygne*, Bd. Two figures (upper and under sides).
- Fourth plate : 193. *Erebia afra*, Esp. Two figures (upper and under sides).
- Fifth plate : 203. *Erebia neoridas*, Bdv. Two figures (upper and under sides).
- Part XVI., April, 1880. Containing 5 Plates (11 Figures). Representing 5 Species.
- First plate : 177. *Erebia melampus*, Fuessly. Two figures (upper and under sides).
- Second plate : 182. *Erebia pyrrha*, W.V., 1776; *manto*, Esp., 1781? Three figures (male and under side, female under side).
- Third plate : 183. *Erebia ceto*, Hub. Two figures (upper and under sides).
- Fourth plate : 188. *Erebia erias*, Lefe. Two figures (upper and under sides).
- Fifth plate : 195. *Erebia manto*, W.V., 1776; *lappona*, Thunb., 1791. Two figures (upper and under sides).
- Part XVII., May 1880. Containing 4 plates (10 figures). Representing 4 Species.
- First plate : 135. *Satyrus iolans*, Bonelli; *neomiris*, Bdv. Two figures (upper and under sides).
- Second Plate : 136. *Satyrus arctusa*, W.V. Three figures (upper and under sides, and under side of variety *erythia*, Hub.).
- Third plate : 209. *Libythea celtis*, Fuessly. Two figures (upper and under sides) with tiny spray of Speedwell.
- Fourth plate : 221. *Thestor ballus*, Fab. Three figures (male, female and under side) with spray of Vetch.
- Part XVIII., June, 1880. Containing 4 plates (12 figures). Representing 4 Species.
- First plate : 234. *Lycaena baeticus*, Linn. Three figures (male, female and under side).
- Second Plate : 268. *Lycaena dorylas*, W.V. Three figures (male and under side, and female).
- Third plate : 270. *Lycaena admetus*, Esp. Three figures (male and under side, and female).
- Fourth plate : 284. *Lycaena cyllarus*, Rottg. Three figures (male, female and under side).
- Part XIX., July, 1880. Containing 4 plates (12 figures). Representing 4 Species.
- First plate : 225. *Polygonmatius thersamon*, Esp. Three figures (male, female and under side).
- Second plate : 226. *Polygonmatius hippothoe*, W.V. Three figures (male, female and under side) with spray of Sorrel.

Third plate: 227. *Polyommatus hippothoe*, Linn., 1761; *eurydice*, Rott., 1775; *chryseis*, W.V., 1776. Three figures (male and under side, and female) with small spray of Sorrel.

Fourth plate: 228. *Polyommatus alciphron*, Rott. Three figures (male, female and under side) with spray of Sorrel.

At this period the author changes his address, and subsequent parts are issued from Woodside Road, Beaumont Park, Huddersfield, instead of Primrose Hill.

Part XX., August, 1880. Containing 4 plates (19 figures). Representing 4 Species.

First plate: 94. *Vannessa io*, Linn. Four figures (upper and under sides, larva and pupa) on Nettle.

Second plate: 122. *Satyrus aegeria*, Linn. Five figures (upper and under side, variety *meone*, Hb., larva, and pupa) on tuft of grass.

Third plate: 130. *Satyrus semele*, Linn. Five figures (male and under side, female, larva, and pupa) on tuft of grass.

Fourth plate: 149. *Satyrus tithonus*, Linn. Five figures (male, female and under side, larva, and pupa) on grass stems.

Part XXI., September 1880. Containing 4 plates (15 figures). Representing 4 Species.

First plate: 77. *Argynnis lathonia*, Linn. Two figures (upper and under sides).

Second plate: 96. *Pyrameis atalanta*, Linn. Four figures (upper and under sides, larva, and pupa) on Nettle.

Third plate: 145. *Satyrus janira*, Linn. Five figures (male, female and under side, larva, and pupa) on tuft of grass.

Fourth plate: 204. *Erebia medea*, W.V., 1776; *blandina*, Fab., 1787. Four figures (sexes not marked, presumable male and under side, female under side, and larva) on grass stems.

Part 22, October, 1880. Containing 4 Plates (22 Figures). Representing 8 Species.

First plate: 312. *Hesperia thaumas*, Hufn., 1775; *linea*, W.V., 1776. Three figures (male and under side, and female.)

313. *Hesperia lineola*, Och. Three figures (male and under side, and female).

Second plate: 314. *Hesperia actaeon*, Rott. Four figures (male and under side, female, and larva) on tuft of grass.

Third plate: 315. *Hesperia sylvanus*, Esp. Three figures (male, female and under side).

316. *Hesperia comma*, Linn. Three figures (male female and under side) with spray of grass.

- Fourth plate : 319. *Cyclopides morpheus*, Pall., 1776 ; *sterepes*, W.V., 1776. Two figures (upper and under sides).
320. *Cyclopides palaemon*, Pall., 1771 ; *paniscus*, Fab., 1775. Two figures (upper and under sides).
321. *Cyclopides sylvius*, Knoch. Two figures (upper and under sides).
- Part XXIII., November, 1880. Containing 4 Plates (12 Figures).
Representing 4 Species.
- First plate : 253. *Lycaena pheretes*, Hub. Three figures (male and under side, and female).
- Second plate : 254. *Lycaena orbitulus*, Stg. Three figures (male and under side, and female).
- Third plate : 262. *Lycaena chiron*, Rott., 1775 ; *eumedon*, Esp., 1760. Three figures (male and under side, and female).
- Fourth plate : 281. *Lycaena semiargus*, Rott., 1775 ; *acis*, W.V., 1776. Three figures (male and under side, and female).
- Part XXIV., 1881. Containing 4 Plates (16 Figures). Representing 4 Species.
- First plate : 13. *Aporia crataegi*, Linn. Three figures (upper side, larva, and pupa) on sprig of Hawthorn.
- Second plate : 89. *Grapta c-album*, Linn. Six figures (upper and under sides of the ordinary form and spring brood, larva, and pupa) on sprig of Red Currant in fruit.
- Third plate : 95. *Vanessa antiopa*, Linn. Three figures (upper and under sides, and larva) on sprig of Willow.
- Fourth plate : 232. *Polyommatus phlaeas*, Linn. Four figures (upper and under sides, larva, and pupa) on plant of Sheep's Sorrel.
- Part XXV., 1882. Containing 4 Plates (13 Figures). Representing 4 Species.
- First plate : 30. *Leucophasia sinapis*, Linn. Three figures (two upper sides—male and female?—and larva) on plant of Vetch.
- Second plate : 65. *Argynnis euphrosyne*, Linn. Three figures (upper and under sides, and larva) on plant of Dog Violet.
- Third plate : 85. *Argynnis paphia*, Linn. Four figures (male, female, and an under side, and larva) on Dog Violet.
- Fourth plate : 107. *Melanargia* (surely intended for *Melanarge* ?) *galathea*, Linn. Three figures (upper side, and two forms of the larva) on grass stems.

Part 26, 1882. Containing 5 Plates (13 Figures). Representing 5 Species.

- First plate: 12. *Parnassius mnemosyne*, Linn. One figure.
 Second plate: 161. *Coenonympha dorus*, Esp. Three figures (male, female, and an under side).
 Third plate: 248. *Lycaena baton*, Bg.; *hylas*, Hub. Three figures (male, female, and an under side).
 Fourth plate: 285. *Lycaena melanops*, Bdv. Three figures (male, female, and an under side).
 Fifth plate: 286. *Lycaena iolas*, Och. Three figures (male, female, and an under side).

Part XXVII., 1882. Containing 4 plates (11 Figures). Representing 5 Species.

- First plate: 64. *Argynnis selene*, W.V. Two figures (upper and under sides) with plant of Dog Violet.
 Second plate: 117. *Lasiommata roxelana*, Cr. Two figures (upper and under sides).
 Third plate: 288. *Lycaena diomedes*, Rg.; *euphemus*, Hb. Three figures (male, female, and an under side).
 Fourth plate: 294. *Pyrgus proto*, Esp. Two figures (upper and under sides).
 308. *Pyrgus sao*, Hub. Two figures (upper and under sides).

(To be concluded.)

The Geographical Variations of *Boloria euphrosyne*, L.

By ROGER VERITY, M.D.

To discuss generic names and to come to definite conclusions about their proper use, according to Nomenclatorial Rules, seems nearly to be a hopeless undertaking, because the old names have been erected and subsequently used, in some cases, so vaguely and so differently from what modern rules require that their position can be viewed from different standpoints and different results reached. Nothing but a final verdict by an international commission can in such circumstances fix their use by a formal act, to be accepted without further discussion.

In the present one Frühstorfer has well summarised the unfortunate history of the names *Brenthis*, Hüb., and *Boloria*, Moore, in Seitz's *Fauna Indo-Australica*, p. 512, and his conclusion is that the first is nothing but a synonym of *Argynnis* and the second must be used for the sharply defined genus, with only one subcostal nervule rising before the apex of the cell of the forewing, whereas in the *Argynnis* two are invariably given forth. According to this definition, out of the species included by Staudinger in his *Catalog* of 1901, those numbered 202 to 220 are *Boloria* and to these are to be added *eugenia*, Er., which is wrongly placed there after *A. daphne*, and the purely Indian *jerdoni*, Lang, as well as several American species.

I thus use the name of *Boloria* for *euphrosyne*. It will be seen at the end of this paper that the distribution of this species all over Asia

Minor, as far as Armenia, and other facts, such as the two extremely different aspects it exhibits, corresponding to those of other species in their Northern and Central exerge, seem to show the way *euphrosyne* reached Europe a first time with the Miocene migration by the Hyrcanian isthmus and the Central route and a second time, after the Glacial Epoch, by the Northern, Siberian, one. It also appears that the first of these stocks spread northward, after this Epoch, to central Europe and England, together with species purely Mediterranean in origin, such as *N. statilinus*, *H. briseis*, *A. coridon*. What, apparently shows it is that in central Europe and in England one meets, locally and individually, with a remarkable extent of variation, distinctly covering the features of both the Northern and the Central exerges of *euphrosyne*, although it does not reach their culminating degrees, in either case.

The Central exerge, which should be called *apennina*, Stdgr., as this is the first race described and it also happens to be the most highly characterised one, exhibits the following features when taken as a whole: Size larger in some cases than it ever is in the Northern exerge, but often quite as small; tone of fulvous brighter, clearer and warmer; underside of hindwings of a bright, clear, orange colour and very much more uniform, in that darker shadings are scarcely perceptible; black pattern of both surfaces very reduced and sharp in outline: thus, there is no basal shading or it is very limited and not very dark; the two outer rows of spots are notably small and the marginal one is often reduced, especially in race *apennina*, to mere specks; some of these spots are often entirely missing on the underside, towards the apex of the forewing, and the others, on these wings, are small and pale.

The Northern exerge, to which belongs the specimen labelled by Linneus, preserved at Burlington House, and those I have received from Southern Sweden, and which should, hence, be called *euphrosyne*, L., is characterised as follows: Constantly small size; tone of colour dull and pale, but in some of the more extreme northern and alpine races, occasionally, of a rich chestnut tinge; underside of hindwing more or less extensively shaded and patched with russet, which may be of a bright tone or, in extreme northern and alpine races, considerably deep in tone; the black pattern is much more extensive on both surfaces than in the preceding exerge, including a broad and deep black basal suffusion, more prominent in the female than in the male; the sexual dimorphism is more accentuated here than in the other exerge also in other respects, such as by the more variegated and variable tone of fulvous of the female.

Frühstorfer has already remarked that race *neston*, described by him from Mt. Generoso in southern Tessin, is a near approach to *apennina*. I can confirm this on the strength of the large series I have collected at Pian Quaggiè, 900m., above Intra, on Lake Maggiore, at the beginning of June, and higher up, at the Passo di Colle, 1450m., at the end of that month. The few specimens I have from Oulx, at 1000 to 1200m. in the Cottian Alps, seem to belong to the same race and thus agree with other species, which very much resemble, there, the races of the Apennines, as I have already pointed out. Also my series from the Baths of Valdieri, 1500m., in the Maritime Alps, comes very close to *neston*, although they may point more than the Oulx ones to race

densoi, Frühst.; the latter is described from Champéry (Dent du Midi) as being similar to *neston*, but larger, with more elongated wings and with a remarkably broad yellow band across the underside of the hindwing. I take *neston* to be the broadspread race in the more dry and warm valleys of the Alps, whereas, on the northern watershed, the Central exerge loses, in some localities, its vivid colouring and acquires the pale, washed-out appearance described on both surfaces of race *cynosoma*, Frühst., from the Salève, near Geneva, and compared by its author with *luciflua* of *M. athalia* and with *leonina* of *B. dia* of the same region.

As a rule, however, the Central exerge, spreading northward, has in no way become debilitated, evidently owing to the fact that also in the Central Zone it keeps to the mountains and it is one of the very first species to emerge there, in the spring, so that the difference of constitution between the two exerges seems due to transformation and debilitation of the Northern one, as the result of the extremely cold and damp regions and epochs it has lived in, since it has separated, very anciently, from the Central stock in Asia; this agrees with the general rule of the origin of palaeartic exerges and species from tropical ones.

As a matter of fact, there is a broadspread form, often showing no signs of intermixture with the Northern exerge, locally, and thus constituting a distinct race from it, which spreads from Berlin and England to the rest of Germany and to the whole of France (I possess it from as far west as Amboise and the Gironde, at Saint Laurent d'Arce) and which differs, on the whole, in no way from my series of specimens of race *neston* from the Tessin, so that this name should be extended to it. Exceptions are afforded here and there, by an increase in the range of individual variation, evidently due to crossings with the Northern exerge, precisely as in the case of *M. didyma* in about the same broad area of Central Europe. Sometimes an exception occurs also in connection with the tone of colour, which is much paler and more yellowish than in true *neston*, and Frühstorfer remarks, in the *Int. Entom. Zeit.*, 1907, p. 164, that it is a racial feature in the neighbourhood of Berlin: it may be useful to designate it by the name of **nestonclara**.

Finally, I must note that Calberla and Staudinger give: "*minor*," as a characteristic of race *apennina*, Stdgr., but that this is not correct, if it be compared with nominotypical *euphrosyne* of Sweden; on the other hand, they are both small if compared with *neston* and the other lowland races of Central Europe, but the average *apennina* is not as small as the Swedish examples; this point must be made clear and it must, furthermore, be added that in some localities of the Apennines, such as Vallombrosa, in the province of Florence, *apennina* is larger than usual and quite the size of *neston* and that on the northern, Po, watershed of the northern Apennines there exists at low altitudes a strikingly large race, some specimens of which from Mount Gibbio 400 m., in the province of Modena, are actually the largest *euphrosyne* I have seen from any locality; the length of the forewing, from base to tip, reaches 25 mm. in both sexes, against the 20 to 22 of the largest *neston* of Central Europe. This race is rendered truly magnificent also by its extremely vivid, warm and clear fulvous tinge and by its bright orange underside; the black markings are as reduced as in *apennina*

and even more so, the marginal ones of the forewing often being entirely obliterated; it is well worthy of the name, I suggest for it, of **padimira**.

Passing, now, to the races of the northern exerge, as defined above, we first find one, which, by its large size and general appearance, gives one the impression of being somewhat intermediate between the two exerges and, possibly, a synexerge produced by the crossing of the two strains: in size it is similar to the largest *neston* (20 to 22 mm.) and a few individuals recall the latter also by the orange tone of the underside of the hindwing, but, as a rule, this colour is replaced by the darker and redder russet one, which characterises the northern exerge, and also the black markings of both surfaces are, as in the latter, very extensive, including, on the upperside, a broad and dark basal suffusion and a broad marginal band or large spots, only just falling short of blending together; the fulvous is usually duller than in *neston*. My series of examples of this form is from G edre, in the Hautes Pyr en es, and from the Caralps of Catalonia, at 1400 m.; one can presume it reached the Pyrenees from the Alps and that it had got there amongst the early alpine, species, which came, along the outskirts of the ice-sheet, from Siberia, when the glacial period was coming to an end; as a matter of fact, a single specimen I possess from the Ural Mountains is perfectly identical with some of my Pyrenean ones. This very distinct form and race I propose calling, by a descriptive name **eminens** for this reason and also because H ubner gives (figs. 28-30) excellent figures of a couple, which, according to all probabilities, was German, so that it will, no doubt, turn out to exist in many localities of Central Europe and Russia, where the climate has been more favourable to the Northern exerge than to the Central one and *eminens* has had the upperhand on *neston*.

The next race to consider is the nominotypical one, I have already mentioned, decidedly smaller (male: 18 to 20 and female occasionally 21mm.) and duller in colour than *eminens* and *neston*; it is well, though roughly, figured by Esper on plate 18, and it contrasts with his *neston*, from the south of France, of plate 72. This form is probably the only one found in southern Sweden and thence it spreads over the northern part of the area of *neston* (Northern Germany, Northern France and England), with which it is often found locally or individually, producing races which are evidently synexerges; for instance, I have a specimen amongst my *nestonclara* of Berlin and I have it from the Seine department. Further south it disappears in the lowlands and it becomes the characteristic mountain race: I have, myself, collected it at Sappada, 1300m., in the Carnic Alps, in the cool, woody ravines of the Anzasca Valley, as low as 700m., and in the Cottian Alps, at Cesana, 1300m., and at Clavi eres, 1700m., and Sestri eres, 2100m.; all these series are perfectly identical with the Swedish one from Scania, and correspond to the Linnean specimen. If anything, they tend to differ from them by being, on the whole, a little more melanic and the description of Fr uhstorfer of race *calynda* from Fusio, Val Piora, 1250m., in Tessin, sounds as though it applied to a further degree of variation in that direction: both surfaces are described as more melanic than in any other race he possessed, the basal suffusion being broad on the hindwing, the markings prominent, the underside of a dark reddish brown, the marginal silver spaces very large; the average size of the race is said to be markedly larger than Geneva examples.

The same cannot be said of a pretty set I have from Birtley, in Durham: it is the smallest *euphrosyne* I have seen, the forewing of the males measuring from 16 to 19mm. and the females 18 to 20, and also being rather narrower from costa to tornus than in other races; the fulvous is rather brighter and clearer than in the Scania examples and the black pattern rather less pronounced, so that, on the upperside, it varies in the direction opposite to that of race *finjal*; on the underside, there is, on the contrary, an approach to the latter in the rich, red tone of the russet patches, but the chief peculiarity of this race is the way in which, on the hindwing, these patches stand out sharply on others of a pure yellow colour; in nominotypical *euphrosyne* these two colours blend much more into each other and in *finjal* the red covers nearly the entire space between the central yellow band and the premarginal lunules; here, instead, this space is strikingly variegated, and chequered, somewhat recalling its aspect in *selene* for which this race might, at first sight, be mistaken also on account of its small size and of the shape of the wings, mentioned above. I name it **varianana**.

Frühstorfer (*l.c.*), in connection with the nominotypical normal race from Sweden and Norway, says that "the small, pale specimens from Norway, with large black spots can be designated by the name of *answina*, if that of *finjal* does not cover them." It is difficult to settle this point without seeing his specimens and it is to be regretted he has not done so himself, before erecting a new name. The only remark one can make is that it does not seem to be equivalent to *finjal*, because it is "paler" whereas the latter is, on the contrary, of a much richer and redder tone of fulvous than nominotypical *euphrosyne*. It thus seems as though *answina* must be an extreme degenerate form of the Northern exerge, found in unfavourable local conditions, whereas *finjal*, Herbst, must be something more than an ordinary race and must possess a particular hereditary constitution, one might consider as that of an Arctic exerge, which thrives in the arctic region and on the outskirts of glaciers much better than does the Northern exerge in less glacial conditions. Its size is small (length of forewing about 20mm. in both sexes), and the shape of the wings is rounder at the apex, especially in the female; the colours are not bright, but strikingly more saturated than in any other *euphrosyne* and the underside is of a rich red tone; the black markings are much larger and the extreme form, in which they blend and blacken the greater part of the wings has been named *obscurior* by Seitz, who, figures it from Kuusamo, in Finland.

This insect has, by its peculiar aspect, struck entomologists from the outset: Esper thought it was a *dia* and named it *lapponica*, figuring it on pl. 108, but he had already applied this name to a specimen of *freijsa* on pl. 97, so that Herbst was right in erecting his name of *finjal*. Herrich-Schäffer, instead, overlooks it entirely, as he was apt to do, and figures it under the synonymum of *nephele*, as a fully characterised specimen, which, in his description in the Supplement, p. 5, he says was from Lapland; Seitz is thus quite wrong in calling *nephele* a transitional race from Esthonia. I fear Ebert has only introduced a third synonym in nomenclature by naming *alpina* in the *Iris*, 40, p. 133, the race of the Alps of Algau from 1000

to 1600m. of altitude, for I can detect no difference between *tingal* and either his description or the specimens I have collected at Sulden, 1800m. in the moraines of the great Ortler glaciers and it is well known that such races are often exactly similar to those of the arctic region. The name *alpina* would, besides, be a homonym of the *B. dia* called in the same way by Elwes in 1899.

(To be concluded.)

CURRENT NOTES AND SHORT NOTICES.

Again we wish to mention the travel and hotel arrangements for the forthcoming International Congress of Entomology to be held from July 16th to 23rd are in the hands of Messrs. Cook & Son, Ltd., Berkeley Street, London, W.C. The arrangements for the Post-Congress Tour to the Pyrenees July 24th to 30th, are also in the hands of Messrs. Cook & Son, Ltd.

May we again ask our readers to look out for immigrant species.

So far as we can hear Nomenclature is in the background altogether at the forthcoming Congress. The British Committee is apparently inactive, and one hears of no other national committee either functioning or even having been formed. We believe certain action was attempted at the Zoological Congress at Vienna, but complete ignorance on the matter prevails, and whether intentional or otherwise no report of what occurred (if anything) has been distributed. The lethargy, delay, procrastination on this most needed regulation is astounding. We are all left still to our own individual actions on nomenclatorial questions, and to the domination of jelly fish and stuffed elephants. Apropos of this question may we refer readers to the short note and the enlivening sketch accompanying it in the *Bull. Brook. Ent. Socy.* for February last, by our industrious correspondent J. D. Gunder of Pasadena, Calif., on "Kow-towing to the General Zoologist." In this Dr. E. N. TOM OLOGY is represented as doing homage to a chubby crowned kid labelled "zoologist" holding a book of "Rules from jelly-fish to Elephants" having a toy elephant by his side and a "committee wand" in his hand.

Our note on stainless steel pins for insects in the last number (June) has elicited a letter from the well-known firm Watkins and Doncaster of 36 Strand, in which they write, "It may interest you to know that we have for some considerable time been carrying large stocks of stainless steel pins continental length in all gauges. We also stock stainless steel pins in varying gauges and lengths for microlepidoptera. As regards your remarks re the test of time, we have every confidence in recommending these pins as they have been subjected to every test that it has been possible to apply to them." The samples sent, so far as we can see, are quite good, and we note particularly no. 0124 for Tortrices and the average Tineid as being a most efficient pin. We might suggest that the very particular collector might cut the long pins to his own length with sharp pliers. No. 0 long makes an admirable micro pin when cut.

The *Supplement* to Vol. I of *Seitz Macrolepidoptera of the World. Palaearctic Rhopalocera*, has now been completed, and consists, including Index, etc., of more than 400 large quarto pages and 16 plates containing a very large number of supplementary figures. In the present

volume all the names of abnormal specimens, omitted from the main volume, such as those given by Tutt, have been included. In fact the Index contains the huge number of more than 9000 supplementary names in the Rhopalocera alone. The remarks on Nomenclature in the Preface are quite interesting. One reads "It is open to doubt whether such denominations as for instance a form *croceo-semi-virgatus-caerulescens* can be held to be valid for forms in accordance with Linné's nomenclature." Such as these are "abbreviated diagnoses." Of the 9000 names only 39 are entirely new. Reference is made to Courvoisier's attempt to introduce some consistency in the terms of denomination, e.g., *privata* for all forms with reduced markings or *decorata* for all forms with increased marking and so forth. Dr. Seitz, however, although he does not favour these schemes of nomenclature takes no stand on the question and leaves each reader to act on his own as to the use of such and other names. Although "race," as apart from "subspecies," is referred to, the author has declined to enter into any definite pronouncement on the question.

Progress is also being made in the *Supplement to Volume II.* of *Seitz Pal. Lepid.* (Bombyces, etc.) this having reached 16 sheets and several additional plates. In the last part published, the British species included are *Malacosoma neustria* and *M. castrensis*, *Lasiocampa quercus* and *L. trifolii*, *Macrothylacia rubi*, *Gastropacha quercifolia*, etc.

Of the main volumes of *Seitz*, that on the American Fauna of the Bombycid Section is in a very forward state. At present the sheets 116-118 are reached and plates 90-95 are issued. These latter contain more than 100 excellent figures of *Sphingidae* of which the letterpress has already appeared.

The corresponding volume of the Indo-australica Fauna is also in a forward state having reached part 188 and plate 89 of the Bombyces section. It is very gratifying to note that in the present depressed state of world economics it has been possible to continue the publication and great praise and thanks are due to the publishers for the assiduity with which they have continued their project. The parts have appeared without intermission for 26 years, the first part having appeared in 1906.—HY. J. T.

We have received a *Catalogue of the Type Specimens of Lepidoptera Rhopalocera in the Hill Museum*, which has been compiled by Mr. A. G. Gabriel of the British Museum. This Catalogue was undertaken at the request of the late Mr. J. J. Joicey and is a lasting memorial of the amazing amount of material which had been amassed at the Hill Museum. It is important for all systematic workers to be able readily to find out where the type of a species is and where particulars about it can be found. This list furnishes full details as to name and present (1932) classification, the reference for the original description, date of the same and locality of origin. Some 2000 types are dealt with all of which either have been or are destined to be placed in the British Museum Collections. A most useful piece of work well done.

"What is the meaning of a pupa?" If your contributor, Mr. Norman H. Joy, will read the chapter in Imms "Text-book of Entomology" on Post-embryonic Development he will find the clue to practically all that is known upon the subject he raises, a difficult subject admittedly, but one which a number of workers have investigated, as he will find on perusing the extensive literature quoted by Imms.—N. D. RILEY (F.Z.S., F.E.S.).

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Desiderata.—Very numerous British Macro Lepidoptera.—*J. W. Woolhouse, Hill House, Frances Street, Chesham, Bucks.*

Desiderata.—Species of Dolerine and Nematine sawflies not in my collection; list sent.—*R. C. L. Perkins, 4, Thurlestone Road, Newton Abbot.*

Duplicates.—*Albimacula**, *sparganii**.

Desiderata.—Ova of *D.oo. pupae of X. gilvago, D. caesia.* *A. J. Wightman, "Aurago," Bromfields, Pulborough, Sussex.*

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Duplicates.—*Pyrulina**, *Salicis*, *Ianthina**, *Orbicularia**, *Repandata* in variety, *Doubledayaria*, *Black rhomboidaria**, *Black virgularia** and others.

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MEETINGS OF SOCIETIES.

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

The South London Entomological and Natural History Society, Hibernia Chambers, London Bridge. Second and Fourth Thursdays in the month, at 7 p.m. July 28th, August 11th, 25th, September 8th, 22nd.—*Hon. Secretary*, S. N. A. Jacobs, "Ditchling," Hayes Lane, Bromley, Kent.

The London Natural History Society.—Meetings first four Tuesdays in the month at 6.30 p.m. at the London School of Hygiene and Tropical Medicine, Keppel Street, Gower Street, W.C.1. Visitors admitted by ticket which may be obtained through Members, or from the *Hon. Sec. A. B. Hornblower*, 91, Queen's Road, Buckhurst Hill, Essex.

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Notes on the Psychidae.

By Rev. C. R. N. BURROWS, F.E.S.

When my last contribution to this journal upon the subject was published on February 15th, 1925, I found that I had reached an impasse. I had gathered a huge mass of material, some 2000 specimens or more, mostly prepared for the microscope, I realised that I could get very little further, until I was more certain as to the identity of species. Being no longer able to undertake the journey to London,* on account of failing strength and sight, it became impossible to compare my specimens with those in the British Museum. My library is quite insufficient to help me, being confined to Staudinger and Rebel's *Catalog*, 1901; Seitz *Macrolepidoptera of the World*, Vol. II.; a reproduction of plates and names of Bruand's *Monograph*; and lastly Tutt's *Brit. Lepid.*, Vol. II., 1900. To this last I have been greatly indebted, and have continuously referred. I find this last book is very rare now, and feel obliged to quote it now and then, in case my readers should not be able to obtain a copy.

At the point at which I was compelled to hold up my work, I had planned to begin again at the commencement of the series, and examine, systematically, the preparations which I had made. This primary investigation did not however, reach very far.

Passing over the earlier species (those possessing winged females), I dealt first with the SOLENOBIA. I can add nothing to what I have already said, about the uncertainty of some of the named species.

Of the Genus BANKESIA I have already recorded all the information I could find. Later, owing to the kindness of the Abbé J. de Joannis, I have been able to clear up a problem set by Tutt, as to the occurrence of some species on the Continent, especially in the neighbourhood of Paris. Tutt's enquiry (*Brit. Lepid.* Vol. 2, p. 212) reads:

"On p. 206 *ante*, in the synonyms of *B. vernella*, Const., there is a reference to the *conspurcatella* of Chrétien (*Le Nat.* 1893, pp. 103-05), and we are informed (*in lit.*), by Constant, that Chrétien is responsible for the specimens from Fontainebleau, that he notes as being sent out as *conspurcatella*, and which he fails to distinguish from the *vernella*, Const. of the Alpes Maritimes. On reference to *Le Naturaliste* as quoted, we find in reality, no mention of the moths obtained at Fontainebleau, but Chrétien states that he obtained 200 cases from the Isle of Jersey, where they were in great numbers, on the rocks. The account of the egg, larva, pupa, case, and life-history, that he gives of these, agrees well with that of *B. staintoni*, but he gives no description of the imago. He then adds that *conspurcatella* is certainly French, since it is not rare on the rocks in the Forest of Fontainebleau. The Jersey locality suggests strongly the possibility of the insect obtained there being the same species as that taken at Southampton. There is no doubt that *vernella*, Const., *conspurcatella*, Chrétien, from Fontainebleau, and *conspurcatella*, Chrétien, from Jersey, require to be very critically compared, before their relationship can be finally determined."

Of course the name *conspurcatella* was applied by Chrétien (as by so many more), in ignorance of the separation of this insect under the name *staintoni*, Walsingham (*Ent. Rec.* Vol. II., p. 257). The Jersey

species is certainly *Luffia lapidella*, and not *Bankesia staintoni* of Southampton Water. It may be well to repeat that the unique specimen of *conspurcatella*, now in the Zeller collection at the British Museum, is distinguished by the great length of the cilia of the antennae. The specimens submitted to me by Abbé de Joannis assured me that both *B. staintoni*, Walsm. and *L. lapidella*, Goeze, occur, or have occurred, in the environs of Paris. Two of his specimens however, which came from a different locality agree well with *B. vernella*, Const., of which I possess one of Constant's labelled specimens. Both specimens of this very delicate insect were in somewhat poor condition, and that which I used for dissection, had suffered much, yet was just sufficiently preserved to enable me to compare it with my type.

The following is a copy of my determinations as to his specimens kindly sent to me by the Abbé de Joannis with their localities.

Luffia lapidella, Jersey, Vannes, Athis (11 miles from Paris).

Bankesia staintoni, Vannes, Janville, Paris. (Chrétien).

Bankesia vernella, (almost certainly), Lannemerzan. Hautes Pyrenees.

I am always in doubt. For instance Chapman handed over to me two sets of *B. alpestrilla*, one large from Fusio, the other small. He was quite uncertain which is this species, and what the other might be. So am I. One of the smaller specimens was examined by Durrant, and I have his note to the effect that it is indistinguishable from Zeller's *conspurcatella*. But it lacks the decisive feature of the long cilia on the antennae.

There are three species ascribed to this genus, and uncertain.

B. douglasella, Stainton, unique. 1 specimen in B.M.

B. conspurcatella, Z., unique. 1 specimen in B.M.

B. montanella, Walsm. 26 specimens were taken. All in B.M.

There remains *defoliella*, Const. of which I know nothing.

Of TALEPORA, I found that, as far as I could perceive, the second so-called species, *politella*, agrees exactly with the common *tubulosa*, the presence of wing-speckling in *tubulosa* and its absence in *politella* (of which I possess three specimens), are the only differences I can detect.

Coming to the FUMEIDEA I may add to my former remarks, that I have grave doubts, still, as to the validity of most of the new species named by Chapman and Tutt. So far as the Tibial Spur ratio serves, I am convinced, that though this may afford some generic evidence of interest, it is possible to carry it too far. I have stated previously the reason for this conviction. I can accept its indication of the genus *Bruandia* from internal evidence, with which the "spur" evidence seems to agree, but my scanty supply of material prevents me from saying whether I have found more than one species.

MASONIA has a certain claim to recognition, but there appears to be no fine line of distinction, to be drawn between it, and FUMEA.

The position of these suggested new species, to my mind, stands thus—of 426 mixed specimens of *Bruandia*, *Masonia*, and *Fumea*, mostly received from Chapman, I have measurements of all available tibial spurs, and compared these with Chapman's. The result is far from convincing, thus—

M. Edwardsella C's. figure .71. Limits .65-.72. I have 94 specimens within these.

**M. mitfordella* C's figure .70. Limits .70-.76. I have 63 specimens within these.

†*M. hibernicella* C's. figure .67. Limits .76-.77. I have 29 specimens within these.

F. bowerella C's figure .77-.80. Limits .77-.80. I have 145 specimens within these.

F. scotica C's figure .78-.81. Limits .78-.81. I have 171 specimens within these.

‡*F. germanica* C's. figure .86-.88. Limits .81-.88. I have 166 specimens within these.

*I have Chapman's type specimen, and two mounts of legs. 23 of my measured specimens are actually ascribed to Mitford as captor.

†There is evidently some error here, for Chapman places the Ratio at .67 ("Entom. Rec., 1900, p. 123") while the measurement of his own specimens is .76-.77, which comes well within the usual position of *Fumea casta*.

‡I have his own specimen without body, labelled in his own writing var. *germanica*, and his mount of a leg. I have no British *Masonia*, and imagine that the only evidence of the genus in this country is the pairing of a foreign male, with a British female recorded by Chapman. Probably this female was *Fumea casta*. I record a similar occurrence, between a male of *L. lapidella* from the Channel Islands and a female *L. ferchantella* from Mucking. All these Tibial Spur measurements fall between .65-.88, Tutt gives .65-.71 to *Masonia*, and from .72-.88 to *Fumea*. It is evident that the figures for these new species overlap, and are entirely indefinite.

I have no *Fumea* with ratio .88. The most frequent measurement for the genus is .80 which covers the three new species. For *Masonia* it is .70-.71 which embraces *edwardsella* and *mitfordella*.

(To be continued.)

The Geographical Variations of *Boloria euphrosyne*, L.

By ROGER VERITY, M.D.

To end with a few words about the eastern races of *euphrosyne*, it must first be noted, in a general way, that this species has no representative in America, whereas most of its congeners exist there (*aphirape*, *selenis*, *chariclea*, *pales*, *freiija*, *polaris*, *frigga*). The fact that the other broadspread western species, *selene*, does not exist there either and that the very interesting *hegemone*, Stdgr., restricted to the mountains of Central Asia, exhibits a mixture of the features of both those species and also seems to connect them with *aphirape*, which it resembles to an extraordinary degree, gives one the impression that the development and the history of this genus would be well worth working out, as I have attempted to do it in the case of the *Melitaea*.

Here, however, I must limit myself to remarking that the Central exerge of *euphrosyne* only exists to the west of Central Asia, as though it had developed when this species joined the great western migration, during the Miocene, whilst the stock which remained further north, in Siberia, became the Northern exerge and culminated into *singal* where it

underwent more glacial conditions and particularly during the Glacial Epoch. In other words, the development of *euphrosyne*, of *selene* and of *hegemone* seems to have been a later (from the end of the Cretaceous to that of the Oligocene) repetition, on a smaller scale, in Asia, of the process which had in previous geological Epochs originated, in the great Polar Continent, *aphirape*, *selenis* and the more extreme glacial species, mentioned above, which have subsequently spread southward in America as well as in the Palaearctic region. There unquestionably must have been general causes which have affected many generic groups in this same way and made them develop according to certain rules. The very similar distribution of *Melitaea saxatilis* and of the recently separated species *ala* to that of *B. hegemone*, not to speak of their resemblance to it in some features, compared with the broadspread *didyma* and *trivia* in the first case and to *euphrosyne* and *selene* in the second, cannot be a mere coincidence, if one bears in mind there are several other cases of the same kind, such as that of *Parnassius discobolus* compared with *apollo*. I have pointed out in other papers how the origin and the migrations of this western species can only be accounted for, in a way exactly contemporary and parallel to that described above in *euphrosyne*, by the late repetition in Asia of the process which had produced *nomion* and *phoebus* (= *delius*) from *bremeri*- and *eversmanni*-like ancestors in the Polar Continent.

Thus, *P. apollo* and *B. euphrosyne* must have reached the Mediterranean region, following the Elburz chain of mountains, during the Miocene cold period, when they were driven down by the climate from the mountains of Central Asia. From this stock has presumably descended the Central exerge of *euphrosyne*, as I have already mentioned, and a long time after, when the Glacial Epochs had come and gone, it evidently spread northward, into southern Russia, at the same time as it did in Central Europe. At Saratoff there exists, in fact, with many Mediterranean species, a race of *euphrosyne*, which is highly characteristic of the central exerge and recalls the *nestonclara* of Berlin; it has been named *rusalka* by Frühstorfer; race *dagestanica*, Sowinsky, described from the Dagestan Territory, is, apparently, more like *cygnosoma* of Geneva; race *phaëna*, Jachontov, of Borzhom in Transcaucasia, seems to belong to the same group, but I find no absolute evidence of it in the original Latin diagnosis: "*Supra paullo fulvior, subtus lituris ad apicem alarum anticarum saturatus flavis, alis posticis maculis argenteis splendidissimis, antemarginalibus autem majoribus, area postmediana latius ferrugineo-nebulosa, fascia media saturatus flava.*" There can be no question, on the contrary, concerning the race of Amasia, which Rühl describes, p. 423, as "larger and more lightly coloured on both surfaces," and which, in fact, might well be called **magnaclara**. It is interesting to note how also the small mountain race of the Caucasus, *anka*, Frühst., has small black markings on both surfaces and is delicately coloured, so that it certainly is a mountain race of the Central exerge and this species falls in with the general rule that none of the alpine species or exerges of Siberia have reached the Caucasus.

Vice-versa, as I have already stated, in Siberia and in China there is nowhere any trace of the central exerge, such as one finds it in many other species originating in those regions. The three races which have been described belong markedly to the Northern exerge and all exhibit very constantly the noteworthy peculiarity, as compared with those of

the west, of a greater accentuation of the marginal and premarginal row of black markings in proportion to those of the basal half of the wing; they thus stand still further from the central exerge: Race *orphanus*, Frhst. of the Siberian Amur (no exact locality) is said to be as pale in colour on both surfaces as *answina* of Norway, but with large black markings, as in *finjal*; the underside is more uniform in colour than the European examples and the marginal spots of the hindwing are larger. This description applies perfectly to the specimens of both sexes from Chulugaischa, 2600 m., near Mondy, in the eastern Sajan mountains and from Tunkun in the same region. Two years later than Fröhstorfer's description Seitz described and figured from the Sajan under the name of *umbra* a peculiar "form" (he does not state in the least it is racial) which "bears, on the hindwing beneath, between the distal margin and the median band, dark brown clouds, which render the outerhalf of the hindwing similar to that of *selene*"; the figure completes the description by exhibiting an abnormal dark chocolate brown tone, instead of the usual russet one. It would thus be quite a mistake to apply the name of *umbra*, which is an aberration more than an extreme individual form, to the race of the Sajan, as Bang-Haas did when he sent me the specimens. Let us not start one of these fatal mistakes, which get carried on for ever, and let us call the race of that locality by the racial name of *orphanus*, unless it is discovered that it is different from Fröhstorfer's and a new one is required, but, anyhow, it must not be *umbra*.

Another large series sent to me by Bang-Haas too, and which is from the same region, but evidently caught in a different year and in a different place, because the printed label is worded differently and the altitude is stated to be 3100m., has quite another aspect. In this set of specimens, still less than in the preceding, does there exist in any of them the dark underside shade, which has suggested the name of *umbra* to Seitz. Apart from their much larger size, about equivalent to the average one of *neston*, the European race they resemble most by markings and colours is the dwarf *varianana* from Durham. The former, in fact, are much less extensive than in *orphanus* and the latter are of a much brighter and richer tone on both surfaces; the russet red is an approach to that of *finjal* and in some specimens it is also nearly as uniformly spread on the hindwing, whilst in others it is broken up into patches by clear yellow spaces and it recalls the chequered appearance of *varianana*. I think this race should be named **orientisvivax**.

Finally there is the very distinct race *kamtschadalis* of Staudinger's price-list, which Seitz describes quite inadequately, but figures recognisably. As some of Staudinger's cotypes labelled: "Kamchatka," are in my possession, I can add that the colours are very dull and pale on both surfaces and the black markings remarkably thin for an eastern race and rather like those of *apennina*, except, of course, that the marginal and the two premarginal rows of spots are not more reduced than the rest, as they are in the Central exerge, and the marginal silver ones of the underside are particularly large; the russet of this surface is brownish, but thin and dull, so that it does not stand out.

Diptera in 1931.

By H. W. ANDREWS, F.E.S.

A long succession of wet week-ends in the spring and early summer and a general absence of sun made 1931 a disappointing year as regards weather, and told against one, who like myself, is not free to devote all his time to his hobby and thus unable to take full advantage of fine weather when it occurs; but the following extracts from my diary may be of sufficient interest to justify their existence in print.

A late spring and poor weather made sallow-collecting a blank as far as I was concerned, but on April 11th, I got a series of the Helomyzid *Neoleria ruficauda*, Ztt. ♂♂, off the contents of a game-keeper's larder in the Bexley Woods. I have taken this species in similar situations in other localities of N. Kent. On May 9th in Farningham Woods I got two or three *Ernestia neilsemi*, Vill., and one ♀ *Platypeza infumata*, Hall: this latter is the second specimen only that I have taken in N. Kent, the first being at Dartford in October many years ago. On the 22nd I visited the *Hylephila* locality at Hextable. *H. personata*, Coll. was common, ♀♀ only and I got 3 *H. obtusa*, Ztt. ♀♀. In both these species I have found the ♀♀ very much more abundant than the ♂♂, while in *H. sponsa*, Mg., the reverse is the case, the ♀♀ being extremely scarce*.

On my way home I passed a small stack of bags of fertiliser by the side of a field-path and found it swarming with *Protocalliphora terranova*, R.D. I had taken this species formerly, by a fish-manure factory in the Thames Marshes, but had not met with it elsewhere. I have little doubt it had bred out of the fertiliser.

No other item worth recording till May 30th, when at the Eastbourne Meeting of the Entomological Club I was able—thanks to Mr. Collin who put me on its track—to get a small series of the Anthomyiid *Chortophila (Nudaria) flavidipennis*, Stein., a recent addition to our lists, by sweeping *Silene maritima* on the shingle beds at The Crumbles; *Helomyza modesta*, Mg., was very common there and single specimens of *Sarcophaga haemorrhoidalis*, Mg., and *Sarcophila latifrons*, Fall., were taken.

From June 27th to July 2nd, I was on holiday at Tunbridge Wells, a fine week but for some reason or other disappointing as regards collecting; the rhododendrons were over and the thistles and large umbellifers not fully out. The only dipteran worth recording was *Dioctria linearis*, Mg.: in some 25 years collecting I had only taken three odd specimens of this species, but in the last few days of my stay I discovered a small colony in the woods near Eridge Warren and got a good series of both sexes, also a record of one with prey (a small Empid), which was of interest as there did not appear to be any previous British record on the prey of this species. In the same locality I took *Beris morissii*, Dale. On July 12th I got a nice dark form of *Ischyrosyrphus laternarius*, Müller, at Farningham, and on July 25th I got a ♂ *Phaonia rufipalpis*, Mcq., an addition to my local list of N. Kent Anthomyiids. On August 1st at the Thames Marshes by Abbey Wood

*This year (1932) going earlier, on May 7th, I got several ♂♂ *F. personata* and ♀♀ were scarce, pointing to a difference in time of emergence of the two sexes.

I got a *Fannia glaucescens*, Ztt., which I have taken sparingly in the same locality, but never found in abundance.

From August 29th to September 13th I was at Salisbury on a "family" holiday with a week-end at Linwood in the New Forest on September 6-7th. The weather though not all that could be desired was tolerable. This locality was new to me and looked very promising but I did not have sufficient time to myself to do much collecting. On September 1st I had a day's collecting with Mr. E. Rivenhall Goffe who first motored me to the Forest to the locality where Messrs. Collin and Wainwright turned up *Hydrotaea borussica*, Stein., in 1930. Mr. Goffe had previously sent me a number of females of *H. borussica*, which come round about one like *H. irritans* which species they closely resemble. This insect was still about and we managed to get a few of the high hovering ♂♂. Then in the afternoon Mr. Goffe took me to his collecting ground at Farley Down, where the same two dipterists took in one day in August over 50 species of Tachinids, and where other rarities such as *Tabanus glaucopsis*, Mg., and *Machimus rusticus*, Mg., have occurred. I was there considerably later in the year on a dull day that wound up with a steady drizzle of rain, but I saw enough to realise what a delectable spot it was and despite the poor weather took several species more or less common, and half a dozen *Dexia rustica*, Fab., a species new to me.

As stated above I spent September 6th and 7th at Linwood, on the western edge of the New Forest and had the pleasure of getting some collecting under the guidance of Dr. F. H. Haines, and looking at some of his large collections of insects of all Orders, coming away with some rich booty in the shape of several types of rare and local Diptera he generously gave me. On Sunday there was the unusual sight of four dipterists collecting together, as Dr. Haines had telephoned to Mr. Goffe to come over and he had brought Mr. Audcent who was staying with him after a holiday in the south of France, where in contrast to us they had been suffering from a heat wave. After a preliminary ramble through the neighbouring enclosures we motored to Matley in the hope of getting some *Eristalis cryptarum*, Fab., but a long search only produced one specimen. I swept a small series of *Trichopticus* (now *Lophosceles*) *cristatus*, Ztt., off *Umbelliferae*, and took a single *Hammomyia grisea*, Fall., on the way to the sandpit. On the Monday Dr. Haines took me to Highland Water enclosure in search of *Arctophila mussitans*, Fab., but here again only one specimen was taken.

Finally on September 19th, in the Bexley Woods I got a series of *Didea intermedia*, Lw., along the side of a fir-plantation, and to my delight and surprise a very fine ♀ of *Didea abneti*, Fall., a prolonged search produced no more, nor did another visit the next day, but in compensation I took another prize in the shape of a ♂ *Echinomyia ferox*, Pz., and with these two new records for the district my active collecting for 1931 came to an end.

On the "Illustrations of European Butterflies" by S. L. Mosley
(1879-1894).

By CHARLES MOSLEY, M.B.O.U.

(Curator of The City of Wakefield Museum and Art Gallery.)

(Continued from page 110.)

- Part XXVIII., 1882. Containing 4 Plates (9 Figures). Representing 5 Species.
- First plate: 17. *Pieris napi*, Linn. Three figures (two upper sides—male and female—and an under side).
- Second plate: 125. *Satyrus hermione*, Linn. Two figures (upper and under sides).
- Third plate: 229. *Polyommatus gordius*, Esp. Two figures (upper and under sides).
- Fourth plate: 291. *Pyrgus malvarum*, Linn. One figure.
293. *Pyrgus lavaterae*, Esp. One figure.
- Part 29, 1882. Containing 4 Plates (11 Figures). Representing 5 Species.
- First plate: 97. *Pyrameis cardui*, Linn. Three figures (upper and under sides, and larva) on sprig of Thistle.
- Second plate: 61. *Melitaea asteria*, Fr. Two figures (upper and under sides).
- Third plate: 73. *Argynnis thore*, Hub. Two figures (upper and under sides).
- Fourth plate: 238. *Lycæna fischeri* Esp. Two figures (upper and under sides).
239. *Lycæna trochilus*, (no authority). Two figures (upper and under sides).
Of the four figures on this plate, there is no indication as to which belong to which species.
- Part 30, January, 1884. Containing 4 Plates (15 Figures). Representing 4 Species.
- First plate: 81. *Argynnis aglaia*, Linn. Three figures (male and under side, and female) with plant of Hearts-ease.
- Second plate: 101. *Limenitis sibylla*, Linn. Four figures (upper and under sides, larva, and pupa) on spray of Honeysuckle.
- Third plate: 104. *Apatura iris*, Linn. Five figures (male and under side, female, larva, and pupa) on sprig of Willow.
- Fourth plate: 210. *Nemeobius lucina*, Linn. Three figures (upper and under sides, and larva) on plant of Cowslip.
- Part 31, January, 1884. Containing 4 Plates (16 Figures). Representing 4 Species.

- First plate : 211. *Thecla betulae*, Linn. Four figures (male, female and under side, and larva) on sprig of Blackthorn in fruit.
- Second plate : 213. *Thecla w-album*, Kh. Five figures (upper and under sides, two forms of the larva, and pupa) on sprig of Wych Elm in fruit.
- Third plate : 216. *Thecla pruni*, Linn. Three figures (male and under side, and female) with sprig of Blackthorn in flower.
- Fourth plate : 218. *Thecla quercus*, Linn. Four figures (male, female and under side, and larva) on sprig of Oak.
- Part 33,.....1884. Containing 4 Plates (8 Figures). Representing 4 Species.
- First plate : 68. *Argynnis polaris*, Bdv. Two figures (upper and under sides).
- Second plate : 110. *Melanarge larissa*, Hub. Two figures (upper and under sides).
- Third plate : 114. *Melanarge phersa*, Bdv. Two figures (upper and under sides).
- Fourth plate : 115. *Melanarge arge*, Sulz. Two figures (upper and under sides).
- Part ? 1884. Containing 4 Plates (9 Figures). Representing 4 Species.
- First plate : 176. *Erebia epiphron*, Kh. Three figures (upper and under sides, and variety *cassiope*, Fab.).
- Second plate : 179. *Erebia arete*, Fab. Two figures (upper and under sides).
- Third plate : 184. *Erebia oeme*, Esp. Two figures (upper and under sides).
- Fourth plate : 208. *Erebia disa*, Th. (Two figures (upper and under sides).
- Part ? (an old cover used and not correctly numbered nor dated). Containing 4 Plates (10 Figures). Representing 4 Species.
- First plate : 50. *Melitaea desfontainesii*, Bdv., a variety of *artemis*? Two figures (upper and under sides).
- Second plate : 79. *Argynnis elisa*, Gdt., 1823; *cyrene*, Bon., 1826. Two figures (upper and under sides), with spray of Bluebell.
- Third plate : 103. *Nymphalis populi*, Linn. Two figures (upper and under sides).
- Fourth plate : 152. *Triphysa phryne*, Pall. Four figures (male and under side, female and under side).
- Part ? (same remarks as against the last part). Containing 4 Plates (15 Figures). Representing 5 Species.
- First plate : 235. *Lycaena telicanus*, Hub. Three figures (male and female, and an under side).
236. *Lycaena balcanica*, Fr. Three figures (male and female, and an under side).

- Second plate : 237. *Lycaena tiresias*, Rg. Three figures (male and under side, and female).
- Third plate : 241. *Lycaena argus*, Linn. Three figures (male and under side, and female).
- Fourth plate : 269. *Lycaena daphnis*, W.V. Three figures (male and under side, and female).
- Part 43,.....1886. Containing 4 Plate (17 Figures). Representing 4 Species.
- First plate : 233. *Polyommatus halle*, W.V. Two figures (upper and under sides).
- Second plate : 240. *Lycaena aegon*, W.V. Five figures (male, female and under side, larva and pupa).
- Third plate : 261. *Lycaena alexis*, W.V. Five figures (male, female and underside, larva, and pupa) on sprig of Restharrow.
- Fourth plate : (Missing).

Part 59. No intervening parts are available between 43 and 59. Some time in the interim a new cover has been adopted with the following printing, "Water-colour Drawings of European Butterflies, taken direct from Nature by S. L. Mosley, F.E.S., Hon. Memb. Lancs. Ches. Ent. Soc., etc. Founded on Kirby's Manual. Huddersfield : Museum of Economic Natural History, 1894."

- First plate : 250. *Lycaena lysimon*, Hb. Three figures (male and under side, and female).
- Second Plate : 251. *Lycaena rhymnus*, Esp. Two figures (upper and under sides).
- Third plate : 252. *Lycaena psylorita*, Fr. Two figures (upper and under sides).
- Fourth plate : 289. *Lycaena arion*, L. Two figures (upper and under sides).

This part also contains Title-pages and Table of Contents for volumes 1, 2, and 3, into which it was intended the work should be divided ; there is also a Preface, dated Huddersfield, February 6th, 1884," from which the following paragraphs are extracted :—

"This Series of Figures was begun in 1884, but pressure of other important work, and latterly the difficulty of obtaining authentic and reliable specimens, have retarded its completion. The figures have all been painted by my own hands, and I found it impossible to secure any assistant who could produce similar work at the same rate. So the number of copies issued has been, necessarily, limited. I started with 13 Subscribers. One half of these have

dropped off, from deaths, or other causes, so there will not be more than half a dozen complete copies of this work in existence. . . .

“ I hope that this collection of Figures will be found to be of almost as much service to the student of Rhopalocera, as a collection of the real insects.”

(To be concluded.)

NOTES ON COLLECTING, etc.

BUTTERFLIES OF THE PULBOROUGH DISTRICT (WEST SUSSEX).—During the last five years, I have kept a record of the various species of butterflies, which I have noted to occur in the above district, which I define as five miles in any direction from the Southern Railway station. This area contains a great deal of meadow-land and marsh, but is well wooded especially to the north and west, while there are also considerable areas of downland and heaths. The remarks as to the abundance or otherwise simply give my impression, as I have never worked for any butterflies and it may well be that some species I have thought local are in fact wide spread.

Pieris brassicae, *P. rapae*, and *P. napi*: abundant.

Euchloë cardamines: plentiful.

Leptosia sinapis: very local and not plentiful.

Colias hyale: once only.

C. croceus (edusa): most seasons in small numbers and some years abundant.

Gonepteryx rhamni: plentiful.

Apatura iris: rather local and apparently scarce.

Limenitis sibilla: plentiful.

Polygonia c-album: rather plentiful these last few years.

Aglais urticae and *Vanessa io*: abundant.

Pyrameis cardui and *P. atalanta*: usually plentiful.

Dryas (Argynnis) paphia: plentiful in woods.

Argynnis adippe and *A. aglaia*: fairly plentiful.

Brenthis euphrosyne and *B. selene*: plentiful.

Melanargia galathea: local.

Satyrus semele: rather local.

Pararge aegeria: abundant in woods.

P. megera: plentiful.

Epinephele jurtina and *E. tithonus*: plentiful.

Aphantopus hyperantus: plentiful.

Caenonympha pamphilus: plentiful.

Zephyrus betulae: well distributed but nowhere abundant.

Strymon quercus: abundant.

Thecla w-album: local.

Callophrys rubi: plentiful.

Rumicia phlaeas: plentiful.

Cupido minima: local.

- Plebeius aegon* : abundant on heaths.
Aricia medon (*astrarche*) : abundant on downs. •
Polyommatus icarus : abundant.
P. coridon : abundant locally.
P. thetis (*bellargus*) : local.
Lycaenopsis argiolus : plentiful.
Hamearis lucina : local.
Hesperia malvae : plentiful.
Nisoniades tages and *Adopaea flava* (*thanmas*) : common.
Argiades comma : scarce.
A. sylvanus : plentiful.

A. J. WIGHTMAN.

EUPITHECIA PUSILLATA IN WORCESTERSHIRE.—I have recorded the date of the capture of the specimen mentioned on page 70 of the May issue of this magazine as May 25th, 1931. This is a mistake on my part, as it should be May 25th, 1930.

HYLOPHILA BICOLORANA, FUESS. (*quercana*, Schiff.) can be added to the list of species occurring in the Ran-dan Woods, Wors., as I now know that a larva I found in June, 1930, in the woods was that species. I failed to rear it.

GASTROPACHA QUERCIFOLIA, L., IN WORCESTERSHIRE.—On July 16th last I had the pleasure of rearing a splendid female of this species, from a larva beaten from wild plum near this village on June 5th, I fancy it is not a common insect in this district.

IMMIGRANT LEPIDOPTERA.—*Plusia gamma* first appeared on the Cotswolds on June 12th, when I saw about five at Guiting, and netted two worn males, and a female in better condition. It has been common everywhere since that date. The only *Pyrameis cardui* I have seen were two in Kent, both very worn indeed, one at Herne Bay on July 3rd, and one near Margate on July 8th. A male *Macroglossum stellatarum* caught at Valerian in the garden here on June 28th looks almost in too fine condition to be a migrant—the fringes are hardly worn at all.

Rhopalocera are very scarce this year. I have only seen two *Rumicia* (*Chrysophanus*) *phlaeas*, one in Cornwall in May and one in Kent in July, and only one *Aglais* (*Vanessa*) *urticae*, also in Kent at the beginning of July.—P. SIVITER SMITH, Pebworth.

A QUERY RE EPINEPHELE JURTINA.—*Epinephele jurtina*, L. ab. *splendida*, B. White is described in *Scott. Nat. I.* 200 (1872) as follows—“Larger and brighter coloured; the apical spot of the front wing with two white dots.” He adds that it is the only form to be found in the island of Longa, on the west coast of Rossshire, that it is occasionally found in Aberdeenshire and that he has also taken it in the island of Capri. Could any of our readers give us more information about this form, e.g., Is it really the only form of Longa Island? and is it a combination of the forms *fulvocincta*, Fuchs and *bioculata*, Rebel, as I suppose from the description? A more detailed description is badly needed.—B. J. LEMPKE, Amsterdam.

BIRDS AND SIREX GIGAS.—The following observations may be of interest. Beneath the sloping glass roof of my verandah a variety of insects are trapped daily (and nightly) owing to the fact that the angle formed by the wooden plate and the end of the glass affords no exit. Many species of moths, flies, bees, wasps, beetles, etc., incessantly keep to the line of the glass and few only escape the birds (mostly sparrows) that fly in to “clear them up” especially in the early hours after day-break. About a fortnight ago a fine specimen of *Sirex gigas* arrived and roused me with the noise of the rapid vibration of its wings against the glass (I sleep on the verandah), but although the birds have been busy with their usual slaughter of trapped insects, this formidable looking though harmless creature had not been attacked.

LIMENITIS SIBILLA IN CROYDON.—My wife saw a freshly emerged *Limenitis sibilla* flying in the strong sunshine over some fruit vegetable stalls in Surrey St. (Croydon) one day last week. This thoroughfare is a street market, and two or three excited people tried to catch the butterfly. I am glad to say they did not succeed and that it flew safely away.

I have never met either of the above mentioned insects before in these densely built-up parts of Croydon, that is, not in a state of nature.—THOS. B. FOSTER, Croydon, July 26th.

HOW RANATRA LINEARIS, L., SWIMS.—This large water-bug occurs in a large and ancient pond in Windsor Forest; though widely distributed it is a decidedly local species in England. On May 1st last, when fishing for water beetles in the above mentioned forest, several specimens were taken, and subsequently housed in an aquarium in the Natural History Museum—one at least being still alive.

The object of this note, however, is to describe how we saw the bugs swimming on the top of the water. Butler describes this in his *Biology of the British Hemiptera* as follows:—“The swimming is done mainly by the hind legs, which are then moved simultaneously and with a graceful motion like that of a frog’s hind legs. The intermediate legs are also moved simultaneously, but in a less rhythmical way. . . . The raptorial legs are sometimes moved vertically in the water as if to aid in progression.” But what we saw was quite different to this. The bug appeared to stand on the water in a slanting position and using the front legs like a dog swimming, and swimming with the back legs, it rushed forward, looking like a miniature motor-boat. We observed this several times; one specimen swept out and round in a great circle; another went right across the large pond in an incredibly short time, leaving a regular wave, as if from a steam-boat, in its wake. The day was warm and sunny which probably stimulated the creatures, and it looked as if they were taking this exercise purely for pleasure. In the aquarium they are very sluggish, and remain submerged beneath the surface of the water.—HORACE DONISTHORPE.

EUXOA VESIGIALIS FROM DORSET.—More than 2 years ago my kind correspondent, Mr. Parkinson Curtis of Parkstone, Dorset, very thoughtfully sent me the following note for inclusion in my *British Noctuae* notes. This was pigeon-holed and forgotten. Still I think rather than be so long deferred it would be better to record the form described in print.

Mr. Curtis writes thus, "There is one beautiful form, which seems to be worth naming and apparently has not so far been named. It is not very common here and occurs in both sexes. The double basal line is the usual two rich madder brown lines with a greyish interspace, but the basal between vein 1 and the median nervure is a very lively pale burnt sienna brown. The colour unfortunately deteriorates after death somewhat, but I have a ♂ before me, which is particularly well marked, and besides has the patagia tipped with the same ruddy brown, which is a very unusual feature in my experience. The form may of course be usual elsewhere, but I am told the *restigialis* from Dorset are particularly well-marked." In a considerable series we note one or two which approach the above, but none are marked sufficiently to be conspicuous, and some, especially the females, certainly have this feature almost distinctively dark as in Newman's fifth figure. Newman, in his description mentions this oval area as being light brown. I suggest the name **basidistincta** for this form with the almost pink basal oval.—HY.J.T.

RHODOMETRA (STERRHA) SACRARIA IN SUSSEX.—On the West Sussex Downs to-day I took a ♂ *R. (S.) sacraria* in bred condition. At the same spot 3 *Colias croceus* were seen.—H. B. WILLIAMS (LL.D., F.E.S.) August 23rd.

[Another example has been taken by Mr. Rayward at Eastbourne.—HY.J.T.]

SCARCITY OF INSECTS.—A day spent on the "Crumbles" at Eastbourne (August 17th) on one of the extremely hot days produced the now usual paucity of Lepidoptera. *Heliothis peltigera*, eight medium-sized green larvae on the *Senecio viscosa*. Six pupae of *Dianthoecia carpophaga*. Abundance of *Plusia gamma*. One *Pyrameis cardui*. One *Pararge megera*. One or two *Pieris brassicae*. A solitary micro unidentified. A few *Epirrhoë galiata*, the dark banded form. It was suggested that we might get all sorts of things but not even a solitary *C. croceus* was seen and even the flies (Diptera) ceased to worry.—HY.J.T.

IMMIGRANTS.—So far no *Pyrameis cardui* has been seen in Hastings this year until August 13th, when one was taken and released next day; it went up to at least 300 ft. when set free and flew due north. After one *P. atalanta* on May 28th no further specimen was seen until August 8th when seven were seen. As far as I know Niton in the Isle of Wight was the only place recorded *P. cardui* in numbers in May. Two *Macroglossum stellatarum* were caught at Round Island Red Light in the Scillies in June. In July the Light Vessel (7 miles S.S.E. of Selsey Bill) sent me many moths in the light westerly winds. They include *Ourapteryx sambucaria*, *Abraxas grossulariata*, *Tortrix viridana*, *Cabera pusaria*, *Pieris brassicae*, and others which Mr. Wm. Fassnidge has for identification. Perhaps some of these may be classed as "reinforced resident." Seven miles off seems hardly far enough for certainty though that is as far as *Aglais urticae* has ever been reported. The Owers also sent in two "lacewings" in their catch. *Plusia gamma* has been repeatedly seen at Hastings since June 28th. *P. atalanta* released on August 15th flew north as did 3 *Colias croceus* on August 9th.—From Notes received from CAPTAIN DANNREUTHER, August 15th, Hastings.

CURRENT NOTES AND SHORT NOTICES.

A meeting of the Entomological Club was held at Eastbourne on May 28th, 1932, Mr. Robert Adkin in the Chair.

Members Present in addition to the Chairman :—Mr. H. Donisthorpe, Prof. E. B. Poulton, Mr. H. Willoughby-Ellis, Mr. Jas. E. Collin, Dr. Harry Eltringham, and Mr. W. J. Kaye.

Visitors Present :—Mr. B. W. Adkin, Mr. H. W. Andrews, Dr. R. R. Armstrong, Maj. E. E. Austen, Mr. G. T. Bethune-Baker, Mr. E. C. Bedwell, Mr. K. G. Blair, Dr. Malcolm Burr, Capt. J. D. Dannreuter, Mr. H. M. Edelsten, Mr. F. W. Frohawk, Col. F. A. Labouchere, Dr. H. Lankester, Mr. Hugh Main, Rev. John W. Metcalfe, Mr. W. Rait-Smith, Mr. Edwin P. Sharp, Mr. J. R. le B. Tomlin, Mr. Alfred E. Tonge, Mr. H. J. Turner, Mr. G. C. Leman, Rev. Geo. Wheeler, and Mr. Cyril G. M. de Worms.

Several of the guests arrived by car. Those travelling by train were met at the station by the Chairman and conveyed to the Grand Hotel where luncheon was provided in a private room at 1.15 p.m. After luncheon the party divided, one section making a tour of the Downs and the other of the Crumbles. The latter locality provided Mr. Collin with a series of *Delia flavidipennis*, Stein., on *Silene*. The Entomological Club Supper took place at the Grand Hotel at 6 o'clock, and after a most enjoyable evening many of the guests returned to London. The Chairman had kindly extended an invitation to all who were able to stay over the week-end and this was very freely accepted, a considerable number remaining. Owing to Mrs. Adkin's delicate health all were accommodated at the Grand Hotel. On Sunday morning an excursion in motor cars was organized to Abbots Wood. The rides and wood generally after the recent rains were in a very sodden and muddy condition. The weather at first was rather dull and insects appeared to be scarce, but during the morning the sun shone brilliantly and insects were very plentiful, and *Pyrochroa coccinea* was flying freely in the sunshine. On returning to Eastbourne luncheon was provided at the Grand Hotel Public Dining Room. During the afternoon a visit was paid to Hodeslea, Meads, the Chairman's residence, where tea was provided and the gardens inspected. In the evening the Chairman and his family entertained the guests to dinner at the Grand Hotel, after which an excellent concert by the Hotel Band was much enjoyed. The meeting was throughout most successful and enjoyable, and the party broke up on Monday morning.—H. WILLOUGHBY-ELLIS.

REVIEWS AND NOTICES OF BOOKS.

BEES, WASPS, ANTS AND ALLIED INSECTS of the British Isles, by Edward Step, F.L.S., 264 pp., 44 coloured plates, 67 other plates, 64 wing maps, and many text figures. Price 10/6, Messrs. Frederick Warne and Co., Ltd.—Earlier in the year we recorded the death of a great figure in the dissemination of a knowledge of the natural history of our own country, the late Edward Step, F.L.S. We now have had sent to our table a posthumously published work, the last unfortunately, of which he had completed the MS. just previous to his death. We

have no hesitation in saying that it is the best of all his works. It is a happy combination of author and publisher, in which both have done their best to produce a book, which must be of inestimable value to field naturalists. The amount of classified information pleasantly put by the author and the unstinted wealth of illustrations by the publishers make it one of the cheapest books of its kind on the market. The price versus the contents is negligible. An Introductory Book on the Order Hymenoptera has been a great desideratum for all time. We have had erudite volumes on sections of the Order, of little use to the incipient student, or to the field naturalist, but no book existed where the average nature lover of a countryside could run down, more or less closely, the bees, wasps, ants, etc., one so often disturbs in the open field or garden of flowers. The wing venation is a structure of much use in the discrimination of the various sections of the Hymenoptera, and here we have no less than 64 diagrams of such. Lepidopterists often meet with larvae of Sawflies when beating; here we have two coloured plates of 24 figures of the more commonly occurring kinds. Illustrations of the saws of this group are given as text figures, and 5 plates are devoted to figure many species of sawfly. Of the Ichneumons there are 5 plates figuring numerous species and of the gall-flies numerous illustrations both of species and of galls.

The body of the work deals with the Hymenoptera-Aculeata, the Humble-bees, Cuckoo-bees, Social Wasps, Potter Wasps, Mason Wasps, Spider-hunting Wasps, Sand Wasps, Digger Wasps, Wood-boring Wasps, Solitary Bees, Mining Bees, Carpenter-bees, Homeless Bees, Ants, etc. Under each of these classes we have a readable general account of the creatures, with perhaps a reference to those who have made a special study of them, and then particulars and illustrations of the more commonly met with species. These illustrations are not limited merely to the figure of the species, but include cells of the Mason-wasp, ditto opened up, heath potter-wasp building its clay cell, queen wasp scraping a wooden post for material for "paper-making," leaf-cutter bee entering its nesting site, sand-wasp dragging its victim a paralysed caterpillar, and so on. The ordinarily met with bees, humble-bees, wasps, ants, etc., are similarly dealt with; one interesting chapter describes the lives of the "cuckoo-bees," of the fights between unwelcome visitor and unwilling host, and another chapter the violent banditry of the murderous spider-hunting wasps. The fascinating life-histories, so wonderful in their variety and interest, although known to the specialist perhaps for many years, are in this work brought together, compared and contrasted for the first time for the general lover of nature. Our local societies must have a copy of this work on its shelves and individual members will find a personal copy is indispensable. Appended we have a short list of reference books, a classified list of families and genera referred to in the book, a glossary of terms and a capital index, in fact nothing is omitted to spoil the completion. We congratulate the publishers, Messrs. Frederick Warne and Co., on the result of their efforts and trust that their reward may be a circulation better than they even anticipate.—Hy.J.T.

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EXCHANGES.

Subscribers may have Lists of Duplicates and Desiderata inserted free of charge. They should be sent to Mr. H_y. J. TURNER, "Latemar," West Drive, Cheam.

Duplicates.—*S. Andrenaeformis*, Bred 1928, well set on black pins, with data.

Desiderata.—Very numerous British Macro Lepidoptera.—*J. W. Woolhouse, Hill House, Frances Street, Chesham, Bucks.*

Desiderata.—Species of Dolerine and Nematine sawflies not in my collection; list sent.—*R. C. L. Perkins, 4, Thurlestone Road, Newton Abbot.*

Duplicates.—*Albimacula**, *sparganii**.

Desiderata.—Ova of *D.oo. pupae* of *X. gilvago*, *D. caesia*. *A. J. Wightman, "Aurago," Bromfields, Pulborough, Sussex.*

EXCHANGES.—Living Eggs of *Catocala fraxini* and *sponsa*, exchange for butterflies of British Isles.—*C. Zacher, Erfurt, Weimar, Street 13, Germany.*

Duplicates.—*Pyralina**, *Salicis*, *Ianthina**, *Orbicularia**, *Repandata* in variety, *Doubledayaria*, *Black rhomboidaria**, *Black virgularia** and others.

Desiderata.—*Hyale*, *Welsh aurinia*, *Polychloros*, *Tiphon Agathina*, *Lunigera*, *Lucerneae*, *Neglecta*, *Diffinis*, *Populeti*, *Gothica v. gothicina*, *White Leporina*, *Tridens Putrescens*, *Littoralis*, *Typhae v. fraterna*, *Rurea v. Combusta*, *Gilvago*, *Fulvago v. flavescens*, *Liturata v. nigrofulvata*. *Harold B. Williams, Woodcote, 36, Manorgate Road, Kingston Surrey.*

Duplicates.—A large number of species of European and Palaearctic Rhopalocera and Heterocera.

Desiderata.—All British species especially those illustrating characteristics of an island fauna. *Dr. Lor. Kolb, München 54, Dachauer-str. 409, Germany*, and *Franz Daniel, München, Bayer-str. 77, Germany.*

MEETINGS OF SOCIETIES.

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

The South London Entomological and Natural History Society, Hibernia Chambers, London Bridge. Second and Fourth Thursdays in the month, at 7 p.m. September 22nd. October 13th, 27th.—*Hon. Secretary, S. N. A. Jacobs, "Ditchling," Hayes Lane, Bromley, Kent.*

The London Natural History Society.—Meetings first four Tuesdays in the month at 6.30 p.m. at the London School of Hygiene and Tropical Medicine, Keppel Street, Gower Street, W.C.1. Visitors admitted by ticket which may be obtained through Members, or from the Hon. Sec. A. B. Hornblower, 91, Queen's Road, Buckhurst Hill, Essex.

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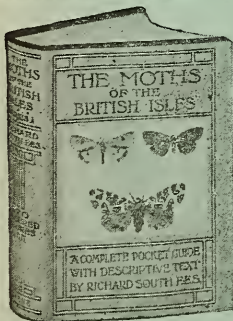
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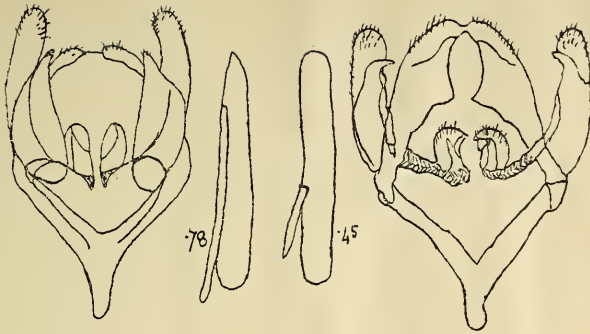
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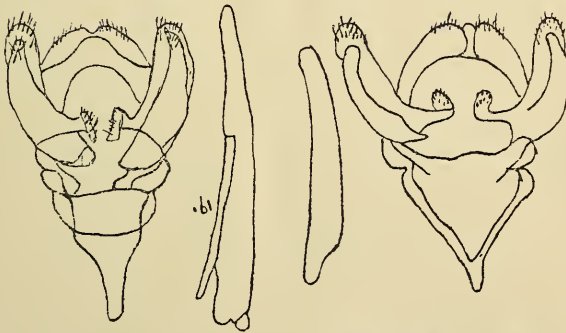


FUMEA CASTA.

PSYCHIDEA NUDELLA.



ACENTRA VESTALIS.



BIJUQIS PECTINELLA

EPICHNOPTERYX pulla.

The Entomologist's Record.

del C. R. N. Burrows.

MALE GENITALIA OF PSYCHIDAE.

Notes on the Psychidae. XIII. (With Plate.)

By Rev. C. R. N. BURROWS, F.E.S.

(Continued from page 119.)

Passing from the *Fumeidae*, still following Tutt's arrangement, we arrive at the extraordinarily awkward term *Epichnopterigidae*. This we owe to Hübner, who in his *Sammlung* (1822) introduced the name *Epichnopterix* for a certain group of the *Psychides*, which later proved to be a very mixed lot (Tutt, Vol. 2, p. 348).

Rambur (*Cat. Sys. Lep. Andalousie*, 1858, p. 314 et seq.) examining Hübner's group, separated certain species which possess a short anterior tibial spur, under the generic name of *Psychidea*. His words translated read "Thighs and anterior tibia shorter than the posterior, having a very short epiphysis."*

Most unfortunately, Rambur identified his type, so far as the name is concerned, with *pectinella*, Schiff., an error which has had unforeseen, and confusing, results.

Rambur, as a matter of fact, collected entirely in Andalusia. His insect must have been *nudella*, Ochs. Even up to the date of the publication of Seitz, vol. 2, there would appear to be no record of the occurrence of *pectinella* in Spain. It is however sufficient for our purpose to note, that the spur in Rambur's *Psychidea* must be, markedly short. The spur in *pectinella* is long, and the insect which he examined had a short spur. *Nudella* does occur in Spain, and is very like *pectinella*. *Nudella* is figured by Bruand (*Monograph*, Fig. 53). Hübner figures *pectinella* twice. First in 1793, and much later in his *Sammlung*. The former figure is unquestionably Bruand's *nudella*.

This mistake in a name has led to repeated error, to which Tutt called attention (*Entom. Record*. Vol. 12, p. 168, 1900).

First of all, Dr. Heylaerts in 1879 named the long spurred genus, *Bijugis*, and later (*Ann. Soc. Ent. Belg.*, May 14th, 1900, p. 189) still misled by Rambur's mistake in identification, places *pectinella*, and its long spurred congeners in Rambur's short spurred genus, *Psychidea*, and for the short spurred forms created a new genus,—*Rebelia*, which must, of course, fall before Rambur's older name. The rest of Hübner's species were left in *Epichnopterix*. Staudinger (*Catalog*, 1901) unfortunately follows Heylaerts, as also does Seitz. Staudinger places *Psychidea* next to *Fumea*, but his *Psychidea* is the long spurred genus containing *pectinella*, and not Rambur's.

Seitz also, gives *Psychidea* the long spur, and the "cellula intrusa" which really belongs to Heylaerts' *Bijugis*, the long spurred genus. But there are other, and equally important differences between these genera.

Firstly, *Psychidea*, as separated by Rambur, has its final segments in agreement with *Fumea*, and not with *Epichnopterix*.

Secondly, the tibial spur ratio is noticeably different (*Psychidea*, 33-51, *Bijugis*, 52-64).

Again *Psychidea* has the spur short, and no "cellula intrusa." *Bijugis* has the spur long and possesses the "cellula intrusa," while *Epichnopterix* has no spur, but has the "cellula intrusa." I am

* This term according to Smith's *Glossary of Entomology*, means—"A lappet-like process, covering an excavation on the fore tibia of many Lepidoptera." I must confess that I have not discovered this excavation, the cover must be that which we call the spur.

unable to detect the "cellula intrusa" in *Acentra*. Besides these differences the position of the genera is somewhat critical, and very interesting.

It will be remembered that there has been some uncertainty in time past as to the continuity of the Psychides. The ancient case of Stainton's "Manual" is an example of this. Tutt was wholeheartedly in favour of considering them to be "one separate, distinct, homogeneous, group of the Lepidoptera," with which opinion I entirely agree.

The genera now under consideration occupy this interesting position, but require shifting slightly, to bring them into line.

I have therefore thought myself justified in revising Tutt's arrangement, by placing *Psychidea* next to *Fumea*, that is above *Bijugis* and outside his *Epichnopterygidae*, and between these genera I have placed my new Genus *Acentra*, which is introduced, and defined, in my former paper. This suggested rearrangement will be found in the amended table now provided.

FUMEA.

PSYCHIDEIDI.

PSYCHIDEA.	Ramb. 1866.
62. SAPHO,	Mill.
63. NOCTURNELLA,	Alph.
64. NUDELLA,	Och.
v. SURIENS, -ntella	Reu.
65. PLUMELLA,	HS.
67. STAUDINGEII,	Heyl.
v. MAJORELLA,	
68. MILLIEREI,	Heyl.
69. FLAVESCENS,	Heyl.

ACENTRA,	Burrows.
61. VESTALIS,	Staud.

EPICHNOPTERYGIDAE.

EPICHNOPTERYGINAE.

BIJUGINAE.

BIJUGIDI.

BIJUGIS.	Heyl. 1879.
57. BOMBYCELLA,	Schiff.
v. ROTUNDELLA,	Brd.
v. ELONGATELLA,	Brd.
58. PROXIMA,	Led.
59. PECTINELLA,	Schiff.
v. PERLUCIDELLA,	Brd.
ALTAICA,	Staud.
60. ALPHERAKII,	Heyl.
71. GRAECELLA,	Mill.

In the plate attached I have tried to indicate the position. The resemblance of *Psychidea*, Rambur., to *Fumea*, and of *Bijugis*, Heyl., to *Epichnopteryx*. I doubt however whether I have succeeded in marking sufficiently the delicate *Fumea* form, as contrasted with the much stouter *Epichnopteryx*.

I have not found the species here discussed to be freely offered by dealers, and imagine them to be difficult to collect. In Chapman's material are a good many cases which agree with those which have been identified, but there is no specimen which can be identified as bred, or collected by him. I have in my collection now 6 specimens of *B. pectinella*. Such as bear data, come from Hungary, Lautarets, and Vienna, two having been bred.

Of *P. nudella* I have 5, which come from Fiume, Hungary, and Spain. The larval cases of all these insects so far as I have been able to ascertain (with the exception of *B. bombycella*, which appears to construct a "faggot") would appear to be cylindrical, long, and slender, consisting of silk, intersperced with fine black sand. There is complete absence of an attempt at decoration, in the shape of leaves, and sticks.

I have measured those of *Acentra*.

1. *Acentra vestalis* 2 females 14 + 3mm., slender, narrower towards exit.
2. " 2 males ? 15 + 3mm., stouter, parallel sides.
3. I have no case.
4. 2 1 male ? 10 + 3mm., swollen in middle, very pointed towards exit.

As to the genitalia I have made these notes.

1. 10 seg. ventral view, conical, very narrow and sharp, edge well infolded, 8th sternite strongly hooked laterally.
2. " " Wide, slightly infolded, Saccus blunt, forward edge lobed.
3. " " Narrower, slightly infolded, Saccus blunt, forward edge not lobed.
4. " " Conical, narrow, slightly infolded, Saccus produced, inner edge not lobed, but with two points.

I observe that *vestalis*, Staud., appears in the *Catalog*, 1901, as a var. of *Rebelia nudella*, but is identified with *pectinella*, Hüb. It is described as "minor, tota alba.," while *nudella* is, "cinereus, ciliis al. albis."

On the "Illustrations of European Butterflies" by S. L. Mosley (1879-1894).

By CHARLES MOSLEY, M.B.O.U.

(Curator of The City of Wakefield Museum and Art Gallery.)

(Concluded from page 127.)

CONTENTS OF VOLUME I.

PAPILIONIDAE	DORITIS	PEIRIS
PAPILIO	8. Apollina	14. Brassicae
1. Podalirius	PARNASSIUS	15. Krueperi
2. Alexanor	9. Apollo	16. Rapae
3. Machaon	10. Delius	17. Napi
3. Hospiton	11. Nordmanni	18. Callidice
THAIS	12. Mnemosyne	19. Daplidice
5. Cerisyi	APORIA (PIERIS)	20. Chlorodice
6. Rumina	13. Crataegi	ANTHOCHARIS
7. Polyxena		21. Belemia
		22. Belia

23. Tagis	48. Matura	ARASCHNIA
24. Cardamines	49. Artemis	87. Prorsa
25. Gruneri	50. Desfontainesii	
26. Damone	51. Cinxia	GRAPTA
27. Eupheno	52. Arduinna	88. Egea
	53. Phoebe	89. C-album
LEGRIS	54. Didyma	
28. Pyrothoe	55. Trivia	VANESSA
29. Eupheme	56. Deiona	90. Polychloros
	57. Athalia	91. Xanthomelas
LEUCOPHASIA	58. Dictynna	92. V-album
30. Sinapis	59. Britomartis	93. Urticae
31. Lathryi	60. Parthenie	94. Io
	61. Asteria	95. Antiope
COLIAS	ARGYNNIS	PYRAMEIS
32. Palaeno	62. Aphirape	96. Atalanta
33. Phicomone	63. Selenis	97. Cardui
34. Hyale	64. Selene	98. Ionia
35. Erate	65. Euphrosyne	
36. Chrysothome	66. Pales	NEPTIS
37. Hecla	67. Chariclea	99. Aceris
38. Thisoa	68. Polaris	100. Lucilla
39. Myrmidone	69. Freja	
40. Edusa	70. Dia	LIMENITIS
41. Heldreichi	71. Amathusia	101. Sibylla
42. Aurorina	72. Frigga	102. Camilla
	73. Thore	
GONEPTERYX	74. Daphne	NYPHALIA
43. Rhamni	75. Ino	103. Populi
44. Cleopatra	76. Hecate	
	77. Lathonia	APATURA
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DANAIS	79. Cyrene	105. Ilia
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	81. Aglais	CHARAXES
	82. Niobe	106. Jasius
	83. Adippe	
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47. Iduna		

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107. Galathea	125. Hermione	146. Janiroides
108. Laschesis	126. Akcycone	147. Nurag
109. Teneates	127. Briseis	148. Ida
110. Larissa	128. Anthe	149. Tithonus
111. Hylata	129. Autonoe	150. Pasiphae
112. Clotho	130. Semele	151. Hyperanthus
113. Pherusa	131. Anthelea	
115. Arge	132. Pelopea	TRIPHYSA
116. Thetis	133. Agave	152. Phryne
	134. Beroe	153. Sunbecca
	135. Lolaus	
LASIOMMATA (SATYRUS)	136. Arethusa	COENONYMPHA
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121. Megaera	141. Actaea	158. Arcanius
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123. Dejanira	143. Lyacon	160. Philea

161. Dorus	EREBIA	192. Stygne
162. Dorinna	176. Epiphron (Cassiope)	193. Afra
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170. Tarpeia	185. Medusa	202. Pronoe
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212. Spini	250. Lysimon	294. Proto
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227. Eurydice (Chryeis)	269. Daphnis	PAMPHILA (HESPERIA)
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* This item is crossed through with ink, and it is written "N. Amer. Sp. Not Europ."

Newly-described Forms of Species of Lepidoptera found in Britain.

1. *Zygaena purpuralis*.—In the *Int. Ent. Zeit.* for December 8th, 1931 (Vol. XXV., p. 341) the Oban race of this species is named *caledonensis*, by H. Reiss. It is characterised by the thin scaling, and the very strong hairs on the thorax and abdomen, and is smaller than the *purpuralis* from Germany while exceeding somewhat in size the small high alpine race *unbigena*.

2. *Zygaena achilleae*.—In the same place the Scottish subspecies of this species is named *caledonica* by H. Reiss. It is characterised by smaller size, resembles mostly the subspecies *alpestris* from the high alpine districts of Europe, and has thinner scaling, with hyaline streaks at the base of the hindwings. Ground colour blackish in both sexes without gloss or scattered yellowish scales and distinctly strongly haired. Forewing spots much contracted. Spot 6 small, attached to spot 5. Hindwings lead coloured with blackish fringes.

3. *Zygaena meliloti*.—On p. 344 of the same Herr Reiss names the English (Lyndhurst) race of this species as *anglica*. It is characterised as smaller than the typical form in Bavaria. Ground colour in the ♂s with practically no gloss, but in the females with a slight green sheen. Thorax and abdomen more thickly clothed with hair than in the typical form, comparable with f. *nigrina* of East Prussia, from which it is readily separated by its much narrower black margin of the hindwings.

In *Lamb.* for December, Vol. XXXI. p. 199, M. C. Cabeau describes an aberration of *Melitaea aurinia* as ab. *simigracilens*. It is characterised by the forewings being of an almost uniform fawn colour with the black markings very thin or quite obsolete; while the hindwings are greyish black with some of the fulvous markings more or less well emphasised. Rabais-Virton.

In *Lamb.* for January, Vol. XXXII. p. 3, M. C. Cabeau describes a new form of *Arctia caja* as ab. *flavomacula*. This form is characterised by the forewings being white and the dark marking being separate and not united by lines. But the hindwings are orange red; the spots, numbering five, are not of the usual bluish black colour but are of a pale yellow. Caught at Ruffac, Charente, in September, 1930.

Gonepteryx rhamni, L.—In *Lamb.* for February, p. 38, Herr B.-J. Lempke describes and names two hitherto unnoted forms of this species. (1) ab. ♂ *aurantiaca*, "Ground colour of a magnificent golden yellow." It must not be confused with ab. *fervida*, Fritsch, in which this coloration is less intensive and confined to the upperside only. (2) ab. ♀ *alba*, "Ground colour of a pure white."

Melitaea aurinia, Rott., ab. *melanoleuca*, Cabeau.—In *Lamb.* for April, p. 76, this aberration is described as an extraordinary mixture of melanism and albinism and is figured on Plate IV., fig. 1. The base and disc of the forewings are black leaving only 2 fawn coloured spots somewhat reddish, while the submarginal area is much lighter and of a yellowish fawn. The hindwings are similarly suffused but the marginal area is not so pronouncedly light. The nervures are all well emphasised with black. On the underside the ground is as above but less emphasised and the submarginal area is greyish. Digne.

Mamestra oleracea, L.—M. Dufrane describes 3 new forms of this species in *Lamb.* XXII. 81. (1) ab. *minor*.—of small size. 32mm.

Framières, Belgium. (2) ab. *nana*.—Of small size but the colour that of *obscura*, Spul. Framières. (3) ab. *minuscula*.—Of the same size as ab. *minor* but has the colour of ab. *obsoleta*, Lambl. Framières.

Sideritis (Leucania) pallens, L.—M. Dufrane describes 2 new forms of this species in *Lamb.*—(1) ab. *minor*, 28mm., with coloration as in the type. Framières, etc. (2) ab. *nana* like ab. *minor* but coloration as in ab. *suffusa*, Steph.

Miana (Oligia) furuncula, Schiff. (*bicoloria*, Vill.).—M. Dufrane described 2 new forms of this species in the same magazine.—(1) ab. *minor*, 17mm. in expanse, similar to the form *bicoloria*, Vill. (2) ab. *minuscula*, same as ab. *minor* but similar to ab. *rufuncula*. Both from Framières.

Rivula sericealis, Scop., ab. *ochrea*, Cab.—The ground of the forewings deep yellow ochre and not straw-yellow as in the type; the hindwings are of a greyish yellow. Hautes-Pyrénées.

Zygaenae, Grypocera and Rhopalocera of the Cottian Alps compared with other races.

By ROGER VERITY, M.D.

(Continued from Vol. XL., p. 163.)

Melitaea trivira, Schiff., race?—Oulx ("one specimen taken by Mr. Lawson, July 31st, flying with *M. didyma*"). This information is furnished by L. G. Higgins in *The Entomologist*, 1930, p. 153, who also says it is "very different from examples from Eastern Europe; a most distinct form." Not having met with this species at Oulx and having two male *didyma*, which resemble *trivira* very much, from that locality, I asked Mr. Higgins whether it was quite sure that Lawson's specimen exhibited Riley's distinctive feature of *trivira* on the underside of the hindwing, *i.e.*, the first row of black dots, beyond the end of the cell, very near and quite parallel to the following row, which is on the edge of the orange band. This is the only character which I have found to be perfectly reliable in separating the two species. His answer was that it is unmistakably present.

Melitaea diamina, Lang (= *dictynna*, Esp. hom. prim.) exerge *vernetensis*, Rondou, race *alpestris*, Frhst., at Sestrières, and race *alpestris*, Frhst., trans. ad *magnaclara*, Vrtý., at Oulx (only one male on July 1st and a female on the 17th) and Cesana (males abundant and all very fresh on July 11th; females from the 15th and a few of both sexes still emerging on the 24th).—I have stated in my recent paper on this species in the *Ent. Rec.* that the race of Sestrières is small and very melanic and that its underside exhibits the features of the Central exerge, so that it corresponds exactly with the broadspread *alpestris*, Frhst., of the western and central Alps. The Cesana and Oulx race is larger and has broader fulvous spaces, so that it is intermediate between the preceding and the still larger *magnaclara*, Vrtý., of the Maritime Alps. I think the Central exerge of *diamina* should, taken as a whole, bear the name of *vernetensis*, Rondou, because it is the first one given to one of its races, although the latter is not a pure strain of that exerge, many individuals showing they carry a strain of the Northern one mixed with it, so that the race is a synexerge, as I have pointed out in the aforesaid paper.

Melitaea (parthenoides), Kef. = *parthenie*, Auct. nec Borkh. exerge?) *varia*, Meyer-Dür. race *variabella*, Vrty.: Clavières, 1800 m. (on July 29th, and, according to Higgins, Sestrières on July 4th).—I have described this race and established its position in the *Ent. Rec.* of 1931, p. 152, so that nothing need be added here about it.

Melitaea parthenie, Borkh. = *aurelia*, Nickerl, race *imitatrix*, Vrty. Oulx (males already abundant, but all quite fresh, at the end of June and still emerging after the middle of July; females from the beginning of this month and a few still emerging at the beginning of August).—I have already stated in the paper mentioned above that the species is found also on Mt. Musiné, which stands at the foot of the Susa Valley, near Turin, and is about 1000m. in height. I sent specimens from both these localities to Reverdin, who made sure of the species by dissecting the genitalia of several, with a view to discovering whether any belonged to the exactly similar *M. britouartis*, Assm. race *aureliaeformis*, Vrty., but it was not found. I have described race *imitatrix* and its appearance and variations at Oulx in the same paper. I must record here an aberration, in which the fulvous is replaced by deep chestnut, inclining to chocolate colour, whereas the black pattern is so poorly pigmented that it looks grey; it is a male with the edge of the wings on the right side ill-developed.

Melitaea athalia, Rott., exerge *helvetica*, Rühl = *pseudathalia*, Reverdin, race *celadussa*, Frhst.—Oulx (males from June 30th; females from July 4th; on the 20th this species had nearly entirely disappeared, but a few sporadic females still emerged till the 28th); Cesana (a few still fresh at the beginning of August).

Melitaea deione, H. G., race *berisalii* (spelt with a double *i* in the original description), Rühl.—I have not met with this species, but Higgins informs us in *The Entomologist* of 1930, p. 153, that he has collected at Oulx, on July 3rd, one worn example at about 3000 ft., which he cannot separate from those he has from Martigny. If the genitalia and other specimens confirm this diagnosis, it will be an interesting discovery, as *berisalii* was only known from the Valais and the *deione* of Tessin and the Alto Adige stand nearer to the nominotypical race of the species than to it. Whilst race *tessinorum*, of Biasca, is described as a transition to *berisalii* by Fruhstorfer, nobody seems to have noticed that in the Maritime Alps there exists another very fine race, transitional to *rondoni*, Obth., of Gédre in the valley of Saint-Sauveur (Hautes Pyrénées), and to the, more or less, similar *signata*, Sagarra, of Catalonia (Seva), which could easily be mistaken for the *athalia* of the same region, owing to their heavy black markings and their deep fulvous. The original figures of the species in Hübner's magnificent plates represent a very extreme and rather unusual form of both sexes, from what, one may be sure, was a remarkably arid locality: the size is strikingly small, as compared with the usual, normal, one of the lowlands of southern France, but not as much so, especially in the male sex, as in the tiny *dejonella*, Vrty., of the second generation (the length of forewing from base to tip measures 20mm. in Hübner's figure, whereas in my typical series of *dejonella* from Marseilles it measures 18); the tone of the fulvous is very pale and cold; the black markings are extremely thin and notably the central elbowed row of spots are reduced to a degree one seldom meets with. Hemming, in the *Trans. Ent. Soc. London*, 1931, p. 504, points out

that, on the strength of a statement of Duponchel. Hübner's specimens must have been from "Aix-en-Provence." There remains to be seen whether Hübner's form ever is so constant locally as to constitute a peculiar race; anyhow, I think it will be useful to distinguish the usual, larger, brighter and more bodily marked form by the name of **praestantior**, taking as typical a series of specimens collected for me by Foulquier at the well known Sainte Baume, in the Var, on May 20th.

The race of the Maritime Alps, mentioned above, as represented by a series collected by C. Höfer at Saint Martin de Vésubie, at the beginning of June, and again from August 10th to 27th in the second generation, is constantly, in all the specimens, and markedly distinct from *praestantior*, of the Var, and can be described as a further degree in the direction of *rondoui* and *signata* to which it is a near approach. Both generations are distinctly larger than the corresponding ones of the Var and the first is, in fact, as large as *magna*, Seitz, of Andalusia, the male's forewing measuring 22 and the females 22 to 23mm.; the fulvous is of a rich, warm and bright tone; some females are handsomely variegated in that this colour is alternated with a yellowish fulvous in some of the spaces; both the basal suffusion and the rest of the black pattern are always much more prominent than they ever are in *praestantior* and thus resemble some *rondoui* and *signata*, and even *berisalii*, except for the peculiar broad black marginal band of the latter, which does not exist at all; the underside does not differ much from that of *praestantior*, and there is no tendency on this surface to the prominent markings of *berisalii*. I propose naming this fine race **vesubiana** and its small second generation (male 18, female 18 to 20mm.) **vesubiella**. The latter, compared with the former, exhibits no tendency to a reduction of the black pattern, as does *dejonella* compared with *praestantior*.

As I am dealing with this species I must also note that, now Ribbe has made it clear that *magna*, Seitz, is the Andalusian race of *deione* and not *athalia*, Oberthür's name of *nitida*, given to the Algerian race, which is exactly the same, makes it a synonym, as Seitz's was published on October 7th and Oberthür's in June of the same year, 1909. I cannot agree with Ribbe that *magna* is a synonym of *nevadensis*, Obth.: the original figure of the latter is exactly like one of my *vesubiana* and it must apply to the mountain race, whereas *nitida* = *magna* is the larger one, with broader wings, a brighter colouring and a very thin black pattern, of the lowlands of southern Spain; I possess it from Murcia.

Boloria euphrosyne, L. race *neston*, Frhst. Oulx (beginning of June) and along the path from Jouvenceau to Notre Dame des Broussailles (beginning of July); race *euphrosyne*, L. Cesana (July 11th), Clavières (July 29th) and Sestrières (July 4th, according to Higgins).—I have shown in my recent paper on this species that in the drier and warmer valley of Oulx a race similar to the *neston* of Tessin is produced, whereas, further up in the mountains, from Cesana, one meets with a distinctly different one, which is quite similar to the nominotypical one of Sweden.

Boloria pales, Schiff. race *palustris*, Frhst. Clavières (both sexes emerging on July 29th); Sestrières (swarming on August 8th, from very worn to perfectly fresh conditions).—I have discussed this race, together with other cases afforded by this interesting and somewhat

puzzling species, in a monograph on this subject, published in the "Iris" of September, 1932. It unquestionably is, on the whole, a true *palustris*, but I have pointed out that some specimens, to my mind, distinctly betray a strain of *broyotarus*, Frhst.=*tendensis*, Higgins, so that this is one of the reasons, which scarcely admits considering the latter as belonging to a distinct species, according to Higgins's view (*The Entomologist*, 1930, p. 199).

(To be continued.)

NOTES ON COLLECTING, etc.

M. (E.) JURTINA SPLENDIDA, B. WHITE. REPLY TO MR. LEMPKKE.—Mr. Lempke has only to consult the *Entomologist*, LXIII., nos. 802, 803 to find an account of Buchanan White's insect '*Pipinephela jurtina* ab. *splendida*,' which is there proved to be a good subspecies. Since the paper was published I have visited Longa Island and Gairloch. and taken *splendida* in fair numbers. It is unmistakably a subspecies and when seen in flight looks much darker than the ordinary S. English *jurtina*.—P. P. GRAVES (F.E.S.).

ANOTHER LITERARY CURIOSITY.—Another loss for Parisians. Paris without butterflies is inconceivable. It is a prospect calculated to bring infinite sadness to the entomologist, and nothing short of consternation to the Secretary of State for Tourist Propaganda. But it is a dread possibility serious entertained, it would seem, by expert Nature observers.

According to one of these, M. Gérard d'Houville, the beautiful insect is this year a rare sight in the gardens of the Luxemburg and the Bagatelle Gardens of the Bois de Boulogne. M. d'Houville remembers years when his eyes were gladdened in these delightful resorts by great flights of butterflies. He recalls a night of long ago when André Gide offered him a superb specimen that he had captured on an electric globe in the Rue Royale.

To the plaints of old Parisian about the demise of famous cafés and of familiar boulevard landmarks, and about the decay of manners, there may now have to be added yet another variant of the poignant familiar line—"Où sont les papillons d'antan?" ("Where are the butterflies of yester-year?")—"D.T." 18.vii.32.

CURRENT NOTES AND SHORT NOTICES.

A meeting of the Entomological Club was held at Speldhurst Close, Sevenoaks, on July 9th, 1932, Mr. H. Willoughby-Ellis in the Chair. *Members Present* in addition to the Chairman:—Mr. Robt. Adkin, Mr. Horace Donisthorpe, Mr. Jas. E. Collin. *Visitors Present*:—Mr. L. W. Adkin, Maj. E. E. Austen, Mr. H. W. Andrews, Mr. E. C. Bedwell, Mr. F. W. Frohawk, Dr. K. Jordan, Mr. Hugh Main, Mr. J. F. Perkins, Mr. W. Rait-Smith, Capt. N. D. Riley, Mr. H. J. Turner.

The members and visitors arrived at 3 o'clock and were received by Mr. and Mrs. Willoughby-Ellis. The Chairman's Museum was open for inspection, which included his re-arranged collection of British

Butterflies in 160 drawers, the British Moths in 60 drawers, British Hemiptera and British Coleoptera. Mr. Hugh Main brought a number of newly-hatched larvae of the Cetoniid beetle, *Gnorimus nobilis*, in their pabulum of decayed brown mould, from an oak tree, in which the eggs were laid. Tea was served on the lawns at 4 o'clock, after which, in brilliant weather, a tour was made of the gardens and woods. Supper was served at 6.30 p.m., and the party dispersed about 11 o'clock. Some of the guests remained at Speldhurst Closè for the week-end, and on Sunday morning Darenth Wood was visited in very hot weather. The portions of the wood which still remain are very much overgrown, and considerable difficulty was experienced in proceeding from one part to another; insects were found to be somewhat scarce. *Byctiscus betuleti* and many other species of Coleoptera were captured, amongst which was a very white variety of *Strangalia armata*.

The Members of the Club took the opportunity of their meeting together to join in sending its congratulations and good wishes to Mr. Robert Armstrong Adkin, the only son of Mr. and Mrs. R. Adkin, senior member of the Club, on the occasion of his marriage to Miss Eileen Marguerite Melvill late of Johannesburg, S. Africa, at the same time presenting the bridegroom with a clock suitably inscribed. Mr. R. A. Adkin has for many years past assisted his father in the meetings of the Club at Eastbourne. He takes a particular interest in the Mollusca.—H.W.-E.

The volume of the *Ann. Soc. ent. France* for 1932, contains articles on the Faunas of the Azores Islands and the Mascarene Islands, dealing with spiders, Orthoptera and Coleoptera. There are six plates, one coloured. The format of this journal is now quarto.

We have to thank Dr. F. Heydemann for various separates of his writings. In *Ent. Rund.* of the present year he has been dealing with Lycaenid species of the Palaearctic Fauna. His articles are very thorough and all palaearctic students should consult them for the results of his study.

L'Amat. de Pap. for March has an account of Lanslebourg as a good collecting ground by M. Catherine. More than once both Dr. Chapman and Mr. J. W. Tutt spent many days in this neighbourhood.

We have received a copy of no. 1 of the Journal of the Entomological Society of the South of England. In addition to the valuable Transactions which this Society is publishing year by year, this new journal has been established to take the smaller communications of local value and interest, which may not be of sufficient comprehensiveness for the former. The Society does not intend to publish it as a journal of proceedings at their meetings, but it will contain each year the list of officers, a list of members and their addresses, a financial statement, and other matters of general interest to the Society. The issue will, we understand, be at regular intervals. There are no less than 36 items contributed by sixteen members the subjects being mostly of the "other orders" six only being purely lepidopterous in content although two, such as the interesting note by Prof. E. B. Poulton, deal in part with lepidoptera. Needless to say the general get up of the journal is admirable. The progress and usefulness

of this Society has been wonderful since its inception some 10 years ago and is a great credit to all concerned in its management. The position it has so quickly attained is a measure of the importance of entomology in itself, and indicates that it is not in anyway necessary to tack the subject on to general zoology to make it an attractive and successful branch of natural science. It can stand on its own basis. We wish it all the future it so well deserves.

In the February no. of *Lamb.* Herr. B. J. Lempke discusses the variation which has been recognised in *Gonepteryx rhamni*. He divides the aberrations into four groups to which he adds the races recorded. Those species in the first group have developed an orange ground colour above with a tendency more or less to reddish and are eight in number, which the writer reduces to three. Those in the second group have the basic colour of the other sex. Of these there are three. Those in the third group are aberrations of the underside, four in number. Those in the fourth group are six aberrations not classed in the other three groups. The races are two besides the typical one.

The species of the genus *Cacullia* are considered by A. Dufrane in the March no. of *Lamb.*; especially the closely allied species or forms *C. verbasci*, *C. lychnitis*, and *C. scrophulariae*, but the difficulties remain unsolved still.

In the same no. of *Lamb.* Command. de Sandt contributes an article "Some figures" in which he gives some appalling calculations on the results of the present extreme desire to enregister the aberrations in the Lepidoptera.

AN EXTRACT.—A Diagram speaks for itself but it is not always one can carry it around with one so that it may be handy to show to friends. "However, Nature has built a copy of this into each of us. Stretch your arms out horizontally at your sides. Now, if you take the distance between the tips of the fingers of your outstretched arms as representing the number of different kinds of animals living to-day, the last joint of the middle finger of your right hand will represent the number of different kinds of mammals. The middle joint of that finger will represent the number of different kinds of reptiles and their kin. The first joint of the same finger will represent the number of different kinds of birds; and the distance from the knuckles to the wrist will represent the fishes. In other words you can hold our so-called zoological gardens and their aquarium annexes in one hand. The length of one fore-arm from the wrist to the elbow would, on the same scale, represent the number of the different kinds of spiders, worms, known protozoa and all other invertebrates which are not insects. And you have left the distance from that elbow to the shoulder across your chest, and out to the tips of the outstretched fingers of the other arm to represent the number of different, already described, insects now living on this earth. What right has any man to call himself a zoologist who does not know a bug from a beetle?" From an Address given by Frank E. Lutz to the Entomological Society of Ontario And yet we entomologists allow ourselves to be "ruled" by a relatively small section who do "not know a bug from a beetle," the so-called zoologists. We let the tail wag the dog.—HY. J. T.

A FLY VISITATION.—Motorists on the coastal road near Mablethorpe, Lincolnshire, were recently held up by a swarm of flies. There were

many species amongst the swarm. They came apparently from the sea, and by the time night fell they had mostly disappeared.—*The Motor*.

Those who take an interest in our British species *Miana* (*Oligia*) *strigilis* should read Dr. Heydemann's thorough discussion of that and the closely allied species, *M. latruncula*, *M. fasciuncula* and *M. versicolor*, Bork. This last he says is Tutt's form *virgata*. The paper is illustrated by 2 plates. Unfortunately the results of the author are not summarised in our notes on British Noctuae as they were published after our own notes had appeared. Dr. Heydemann's paper appeared in the *Ent. Zeit.* for April, May, June, July.

A further portion of the *Schwett. Südbayerns*, Heft 4, Geometers (continued), has been received, as a supplement to the *Mitt. Münch. Entom. Gesellschaft*. There are 2 photographic plates, 47 figs. of local forms and a number of new aberrations and races are described in the text. Those of species occurring in Britain will be dealt with later.

Parnassiana—a magazine devoted solely to the restricted genus *Parnassius* and one or two allied genera which are more closely allied to it than to any other, has reached the end of its first volume in 8 numbers from June, 1930, to November, 1931. It contains 2 plates and 34 figures, and is probably a magazine with the most restricted outlook known. A register of an extreme example of specialisation.

Our correspondent Herr Warnecke of Kiel has kindly sent us a copy of the first portion of his work on the *Noctuidae* of the Hamburg-Altona area. His work on the Macro-lepidoptera began in 1924 with the butterflies and the present section is the fifth in order. The order of Staudinger's *Catalog* 1901 is followed with Warr.-Seitz corrections in nomenclature. The new forms of any species occurring in Britain will be recorded later. The author treats *latruncula* and *fasciuncula* as separate species.

One of our contributors, Herr B. J. Lempke of Amsterdam has sent us his summary of the history, relationship and variation of *Colias croceus* in which he has followed the action of the more advanced entomologists in treating *croceus* as a subspecies of *Colias electo*, L. ["*Colias electo*, L. subsp. *croceus*, Fourer. (*ednsa*, Fb)."] Descriptions and notes are given of no less than 30 forms 2 of which are new. The paper is published in the *Entomologische Berichten* for May. He refers to the statement of Kloss and Hannemann in *Supp. Ent.* that the genus name *Colias* properly refers to *rhamni*, etc. and that *Eurygnus*, Swains., is the correct genus name for *croceus*, etc. Unfortunately the average British reader is handicapped by his ignorance of the language in which this most useful paper is written.

A copy of the *Hastings and E. Sussex Naturalist*, Vol. IV., No. 5, lies before us. A very interesting and useful local magazine of a seaside resort dominated, as it should be just now, by the subject of Immigration, for which our friend Capt. Dannreuther is largely responsible with the paper he read on March 3rd. The rest of the pages contain useful records in all branches of natural history, but in the List of 18 species of Butterflies observed on July 31st at that famous collecting ground, Abbott's Wood, surely, if only for the education of the younger members, the nomenclature and spelling should be up-to-date. *H. thaumas* for more than 20 years has been *H. flava*, and *E. janira* has been *E. jurtina*, the prior names. *Sibylla*

should be *sibilla*, *galatea* should be *galathea*, *hyperanthus* should be *hyperantus*; all the prior spelling. In another page we have the variation *sybilla*!

We noticed Dr. F. Heydemann's exhaustive paper on the *Hydroecia nictitans* Group of species while it was in course of publication. The author has now sent us a copy of the completed paper with the 6 plates. Four species are recognised: *oculea*, L. (1761), with form *nictitans*, Bork. (1792); *fucosa*, Freyer (1830), with subsp. *paludis*, Tutt (1888), and subsp. *pallesceis*, Stdgr. (1899); *lucens*, Freyer (1845); and *crinanensis*, Burrows and Pierce (1908).

It is often the case that first class work is done by members of a local society but that want of funds make it impossible to publish the records of such and there the matter ends. With the Entomological Society of the South of England such appears not to be the case for there lies before us Pt. 2 of the *Transactions* of the Society for 1931 and Pt. 1 of the *Journal* for 1932, both recently issued. The former contains three excellent papers. (1) "A Biological Survey of the Megaloptera—Neuroptera of Hampshire and the I. of Wight" by Fred J. Killington, F.E.S. (2) "Observations on the Wasp *Mellinus arvensis*," by B. M. Hobby, M.A., F.E.S. (3) "An Annotated List of the Coleoptera of Sheppey," by Jas. J. Walker, M.A., R.N., F.L.S., F.E.S. All of outstanding merit and usefulness. The *Journal* contains some 36 extended Notes and Observations by no less than 18 members, relating mostly to the area of operations of the Society. These notes are of a high level and such as we would much like to see in our three entomological journals where they would most probably have the more extended circulation which they are quite worthy of.

In the *Bull. Soc. Ent. de France* M. Le Charles describes and figures the abnormally bifid antennae of a *Zygaena occitanica* and *Ortholitha mucronata* (*plumbaria*) with a supplementary lower left wing perfectly developed and of almost normal size.

In a recent number of the *Bull. Soc. ent. Bulgaria*, Herr Drenowski makes a comparative investigation of the butterfly fauna of the Bulgarian High Mountain Regions. Unfortunately the paper is written in the Bulgarian tongue, but an admirable summary has been given in German. The species recorded are mostly alpine and racially differ from the typical alpine forms, e.g., *Erebia tyndarus* var. *balcanica*, *Coenonympha tiphon* race *rhodopensis*, *Erebia lappona*, *E. tyndarus* race *ottomana*, *E. gorge* race *peronica*, *Psodos trepidaria*, *Titanio phrygialis*, *T. schrankiana*, *Brenthis pales* race *balcanica*, *Gnophos myrtilata*, *Pararge hiera*, etc.

In another paper in the same number Herr Tuleschkow discussed the species of lepidoptera discovered from 1928 onwards new to the Bulgaria area. The account describes and announces two new forms: (1) *Agrotis lucerneae* subsp. *buerschii*, and (2) *Plebeius orbitulus* subsp. *rebeli*.

On p. 95 of *Lamb.* Herr B.J. Lempke points out how ignorant we still are on the biology of *Colias hyale*. He collates the various notes published in recent years in what stage hibernation takes place, when the larva appears and how many broods occur per year, and finds no agreement and no probable solution.

REVIEWS AND NOTICES OF BOOKS.

AN ANNOTATED LIST OF THE COLEOPTERA OF THE ISLE OF SHEPPEY. By James J. Walker, M.A., R.N., F.L.S., F.E.S., etc. Reprinted from the Transactions of the Entomological Society of the South of England. 7 (2) 81-140, June 1st, 1932, with Map.—This excellent and interesting little production is not a mere list of names but, as its title denotes, an annotated list, giving full information about many species, and at least how all are to be found. It is also of much historical value, many of the ancient coleopterists of the past being referred to, and their doings in the Isle of Sheppey mentioned. It is probable that only the author with his special knowledge of this locality and the many years he collected there, could have written it. Sheerness is his native town, and was his home and headquarters until the end of last century during the intervals of his naval service abroad.

The map of the Island is very clear and well executed. In the Introduction the physical features of the Island are dealt with, and some historical facts are mentioned.

The capture of the beautiful little beetle *Acupalpus elegans*, Dej. (now alas! extinct in Britain) by Rev. Hamlet Clark in 1853 and subsequently by others is referred to here, but dealt with fully in the body of the list. We believe that the author is the only living coleopterist who has taken this beetle in Britain.

The value of such a list as this is greatly increased by the fact that a lasting record of the whole coleopterous fauna is brought together here; as building operations gradually destroy many of the best collecting grounds, many of the rarer species become extinct, and their occurrence forgotten.

To refer to some of the rarer species:—*Acupalpus elegans*, Dj. (p. 76) we have already mentioned.

Amara strenua, Zimm. (p. 89).—It is pointed out that Dr. Power and Dawson captured it in 1858 and the author in 1897. Mention is made that the writer and my old friend the late A. J. Chitty took it with the author in the Iwade Marshes in 1898, 1899. My friend Sir T. Hudson Beare also took it with us, for I have an interesting "snapshot" of Commander Walker and Sir Thomas sitting in the "Lord Nelson" at Iwade. I believe the only other known British locality was Ryde in the Isle of Wight, where it used to occur very many years ago—except that I have recently taken it, in June last, at Port Victoria!

Pogonus luridipennis, Germ. (p. 91), is another fine species, once abundant, which appears to be extinct in Sheppey now. Through the author's kindness I took a nice series in company with Professor Beare near Sheerness in 1897.

Polystichus connexus, Geof. (p. 92), one of the specialities of the Isle of Sheppey. It also occurred in numbers in flood refuse at Iwade, where we found *Amara strenua* sparingly in 1899. I was very surprised to capture two specimens of this beetle at the roots of a tree in Windsor Forest in 1923.

Berosus spinosus, Stev. (p. 95), another of the Island's specialities; it appears that the brackish ditches in which it occurred are now filled up.

Emus hirtus, L. (p. 102). This grand beetle was first taken in Sheppey in 1859. Many of us, including the author and the writer, are indebted to the kindness of Dr. Malcolm Cameron for the pleasure of taking this insect.

Malachius vulneratus, Al. (p. 123), has only occurred in Sheppey in Britain; the author is the only Coleopterist who has found it in any numbers.

Haemonia mutica, F., var. *curtisi*, Lac. (p. 125). For the capture of this very local beetle, which occurs in brackish ditches, the writer is again indebted to the kindness of the author. Stephens records it for Windsor, no doubt erroneously, in the place of *H. appendiculata*, Pz., though he records that species for Windsor also.

Bayous argillaceus, Gyll. (p. 134). This very local beetle discovered in Sheppey by Messrs. Champion and Marsh in 1869, has been taken in greater numbers in Sheppey than in any other British locality.

Baris scolopacea, Germ. (p. 136), was taken in the Isle of Sheppey by the late Mr. Champion and the author in 1872 and it has occurred in numbers there by sweeping *Atriplex portulacoides*, L., the Sea Purslane.

The only other known British locality is a salt-marsh near Bosham, West Sussex, where I discovered it on August 19th, 1920 [*cf. Ent. Mo. Mag.*, 57 153 (1921)]. I was collecting there with Mr. P. Harwood and I pointed out that the Sea Purslane, which was growing in the salt-marsh, was the plant on which this beetle occurred in the I of Sheppey, I proceeded to sweep it and immediately captured the *Baris*.

At the end of the list is a useful table comprising the number of species recorded from—British Isles 3587; Isle of Sheppey 1211; Rochester District 1615; Oxford District 2141; and Wicken Fen, 1044. I may add—Windsor Forest 1631.

CONTRIBUTO ALLA CONOSCENZA DELLA BIOLOGIA DEI RHOPALOCERA IBERICI. (Contribution to the knowledge of the Biology of the Iberian Rhopalocera), by Orazio Querci, published by the Barcelona Museum of Natural Sciences. Vol. XIV. of the Annals.—The MS. of this work of some 270 quarto pages was left behind by the author in 1929 when he went to the United States. Nearly 200 species are discussed from varietal and biological points of view. The remarks on the various broods are very enlightening. He notes for instance that sometimes the common Pierids appear to emerge almost uninterruptedly from April to November. The suggestion is that there are two independent cycles of emergence running contemporary, both having three annual broods, but one cycle is retarded so that while in the one case pupae hibernate in the other the ova hibernate being laid too late to hatch before the winter influence arises. It was unfortunate that the author had no opportunity to correct the proofs, as there are numerous "printer's errors," and the 34 new forms described and named are not in any way indicated. We thank the author for kindly emending our own copy and compliment him on this fine piece of work.—Hy.J.T.

Will readers send us accounts of their doings of the year. These records are most valuable for reference, and many areas are still unworked or unrecorded.

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EXCHANGES.

Subscribers may have Lists of Duplicates and Desiderata inserted free of charge. They should be sent to Mr. Hy. J. TURNER, "Latemar," West Drive, Cheam.

Duplicates.—*S. Andrenaeformis*, Bied 1928, well set on black pins, with data.

Desiderata.—Very numerous British Macro Lepidoptera.—*J. W. Woolhouse, Hill House, Frances Street, Chesham, Bucks.*

Desiderata.—Species of Dolerine and Nematine sawflies not in my collection; list sent.—*R. C. L. Perkins, 4, Thurlestone Road, Newton Abbot.*

Duplicates.—*Albimacula**, *sparganii**.

Desiderata.—Ova of *D.oo*. pupae of *X. gilvago*, *D. caesia*. *A. J. Wightman, "Aurago," Bromfields, Pulborough, Sussex.*

EXCHANGES.—Living Eggs of *Catocala fraxini* and *sponsa*, exchange for butterflies of British Isles.—*C. Zacher, Erfurt, Weimar, Street 13, Germany.*

Duplicates.—*Pyralina**, *Salicis*, *Ianthina**, *Orbicularia**, *Repandata* in variety, *Doubledayaria*, *Black rhomboidaria**, *Black virgularia** and others.

Desiderata.—*Hyale*, *Welsh aurinia*, *Polychloros*, *Tiphon Agathina*, *Lunigera*, *Lucernea*, *Neglecta*, *Diffinis*, *Populeti*, *Gothica v. gothicina*, *White Leporina*, *Tridens Putrescens*, *Littoralis*, *Typhae v. fraterna*, *Rurea v. Combusta*, *Gilvago*, *Fulvago v. flavescens*, *Liturata v. nigrofulvata*. *Harold B. Williams, Woodcote, 36, Manorgate Road, Kingston Surrey.*

Duplicates.—A large number of species of European and Palaearctic Rhopalocera and Heterocera.

Desiderata.—All British species especially those illustrating characteristics of an island fauna. *Dr. Lor. Kolb, München 54, Dachauer-str. 409, Germany*, and *Franz Daniel, München, Bayer-str. 77, Germany.*

URGENT.—Wanted English (Cumberland) *Erebia epiphron*. Adequate exchange will be made in European Lepidoptera.—*B. C. S. Warren, 14, Avenue de l'Eglise Anglaise, Lausanne, Switzerland.*

I am seeking an opportunity of exchanging Macro- and Micro-Lepidoptera with English collectors and beg to send list of duplicates.—*J. Soffner, Trautenau (Bezirksbehörde), Bohemia, Tschechoslowakische Republik.*

MEETINGS OF SOCIETIES.

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

The South London Entomological and Natural History Society, Hibernia Chambers, London Bridge. Second and Fourth Thursdays in the month, at 7 p.m. October 27th. November 10th, 24th.—*Hon. Secretary, S. N. A. Jacobs, "Ditchling," Hayes Lane, Bromley, Kent.*

The London Natural History Society.—Meetings first four Tuesdays in the month at 6.30 p.m. at the London School of Hygiene and Tropical Medicine, Keppel Street, Gower Street, W.C.1. Visitors admitted by ticket which may be obtained through Members, or from the Hon. Sec. A. B. Hornblower, 91, Queen's Road, Buckhurst Hill, Essex.

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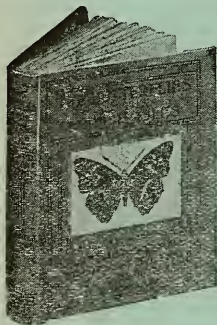
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Races.

At the request of Mr. Bethune-Baker some while ago I have been endeavouring to trace the specimen of *Polyommatus coridon* in the Herrich-Schäffer collection from which he drew the figure 500 labelled *hispana*, without success. During the quest I have received a letter from our old correspondent Signor Querci containing some very interesting facts and suggestions that should be registered for future reference. Signor Querci has been in Cuba and Philadelphia for two or three years since leaving the Iberian Peninsula where he collected for several seasons. He writes from the Academy of Natural Sciences, Philadelphia, U.S.A., as follows:—

“I have carefully searched everywhere but I have been able to find no European butterflies, which might have belonged to Herrich-Schäffer’s collection. All the Pocy’s specimens are Cuban; there is an explanatory list written by him, but not any list of Palaearctic insects. The main Pocy collection remained at Habana as I have heard say.

“I am convinced that the specimen figured by H.-S., by the name of *hispana*, was taken in Catalonia. Probably it was collected by Martorell, when he was a boy. I still possess a series of specimens, taken in September near Barcelona, which look like the type figure. The type of *hispana* does not belong to the most frequent form, but this often occurs. If you compare Esper’s figure of *belemia* and Hübner’s figure of *aesculi* with specimens we took in Portugal, you will see that the types differ from most specimens we found in the same place whence the types came. Esper’s type of *proto* looks different from every specimen of *proto* from Portugal I have seen, save 5 specimens in the Museum Bocage at Lisbon. They were taken only a few miles from the place where we found a quite different form in the exceptionally fine spring of 1927.

“The fact is that the so-called “races” are not constant. The larvae fed in a season favourable for vegetation produce bigger examples than when the larvae have suffered from the scarcity of food. The specimens emerging in a hot and dry period are brighter than these, which have emerged when it is cold and damp.

“The *coridon* (true *coridon*) we collected in Central Spain in the very dry summer seasons of 1924 and 1926, look different from Pyrenean specimens, but in 1928 Central Spain was as wet as a marsh, and the *coridon* (true *coridon*) from Cuenca does not differ from those in the damp valleys of Catalonia. Most butterflies from Cuenca in the damp summer of 1928, and particularly *actaea*, *statilinus*, *lachesis*, *russiae* (*japygia*), *iphioides*, *thetis* (*bellargus*), *comma*, *cinerea*, etc., look different from those taken, quite in the same place, in the dry summer of 1926. Most species from the Sierra Nevada in the dry summer of 1926, are showier than in the same place in the damp summer of 1925. The specimens from Sierra da Estrella in the Museum Bocage of Lisbon, taken by Lima and Lemos in 1886, during a very dry summer, are very different from those collected by us in 1927. For instance *statilinus* in 1886 perfectly agree with *allionia*, which Fabricius described from Portugal; our specimens taken during a rainy and mild summer, are much bigger and darker.

“At Una (Cuenca), both in 1926 and 1928, we daily collected all

the *proto* and *fritillum*, which gradually emerged in a valley near our home. The period of emergence was long, the weather often changed from one day to another. We observed

1. When it was hot and dry most specimens were orange-cinnamon on the underside of the hindwings.

2. When it was hot and damp the tint was verona-brown, or mikado-brown.

3. When it was mild and dry the tint was cinnamon-buff.

4. When it was mild and damp the tone varied from saccard's-umber to tawny-olive.

"The reddish underside was much more frequent in 1926 than in 1928; the yellowish underside occurred only in September, 1926, not in August; while in the milder and damper August of 1928 we found many specimens having a yellowish underside.

"My conclusion about racial names would be, that in many cases the description of a geographical race is but the opinion of an author who looked at a few specimens taken at a given time in a locality. If he had observed another series, collected quite in the same place, but either in another season, or in another year, his description would have probably been different. The material, which I collected, sometimes more than one year in the same place, seems to prove this statement."

Notes on some Devonshire Coleoptera.

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

Having paid two short visits to Devonshire this year to collect Coleoptera, my friend Mr. T. H. Edmonds has asked me to put on record the species taken. From June 7th-14th, Miss Kirk and I stayed at Torcross, where we were joined by Mr. Edmonds, and collected at Slapton Ley and other places near by. The chief object of the visit was to take more of the new species discovered last year, *viz.* *Oxyptoda maritima*, Donis., *Scopaeus minutus*, Er., *Cephennium edmondsi*, Donis., *C. pallida*, Edmonds, and *Malachius elegans*, Ol.; all except the last two being again secured.

The following is a list of the species taken:—SLAPTON LEY. *Lionychus quadrillum*, Duft., running on shingle, and under larger stones. The typical form was very scarce, but the abs. *bipunctatus*, Heer., and *unicolor*, Schil., occurred in small numbers. *Metabletus foveatus*, Geoff. (*foveola*, Gyll.) was running in company with them, and on June 9th, a specimen was taken in cop. with the ab. *unicolor*! *Oxyptoda maritima*, Donis., a short series was secured, after very hard work, under small stones and sifting very fine shingle. *Atheta flavipes*, Jh. (*halobrectha*, Shp.) under shingle, *A. euryptera*, Steph., and *A. atramentaria*, Gyll., under flood refuse. *Philonthus varius*, Gyll., *P. bimaculatus*, Gr., and *Gabrius nigrifulus*, Gr., under stones. *G. pennatus*, Shp. under flood refuse. *Othius laeviusculus*, Steph., under stones. *Scopaeus ryei*, Woll., and *S. minutus*, Er., sifting very fine shingle, the former in some numbers, but the latter very scarce. *Paederus riparius*, L., and *P. fuscipes*, Curt., under flood refuse. *Cephennium edmondsi*, Donis., a short series, after very hard work, under small stones and sifting very fine shingle; *Stenichnus pusillus*, Müll., ditto, but in some

numbers. *Cryptohypnus dermestoides*, Hbst., ab. *4-guttatus*, Lap., under flood refuse. *Malachius margiuellus*, Ol., some hundreds of specimens were examined in the hope of finding *M. elegans*, Ol. All the specimens of the former were found to have very narrow borders on the thorax, and I shall shortly publish more on this subject. *Psilothrix cyaneus*, Ol. (*nobilis*, Kies) occurred in profusion on the flowers of Thrift, etc.; all green (ab. *viridis*, Rossi) different shades of blue, blue and green, and deep violet forms occurring. *Rhynchites germanicus*, Hbst., and *Strophosomus retusus*, Marsh., sweeping. *Apion urticarium*, Hbst., on *Urtica urens*.

Between SLAPTON LEY and HALLSANDS, by sweeping—*Atheta hypnorum*, Kies., *A. fungi*, Gr., *Mycetoporus angularis*, Rey., *Stenus nanus*, Steph. (*declaratus*; Er.) *Phalacrus corruscus*, Pz., *Lathriulus angusticollis*, Gyll., *Meligethes fulvipes*, Bris., *Micrurula melanocephala*, Marsh., *Malachius viridis*, F., abundant in a grassy hollow on top of the cliff—at first glance we thought we had got on to *M. elegans*, Ol.; *Bruchus loti*, Pk., abundant sweeping *Lotus corniculatus*; *Lamprosoma concolor*, Stm., *Psylliodes chrysocephala*, L.; *Barypithes araneiformis*, Schr., *B. sulcifrons*, Boh., and *Tychius flavicollis*, Steph. (*squamulatus*, Gyll.). *Laccobius nigriceps*, Th., not uncommon in a pool in an old stone quarry.

HALLSANDS. *Trechus fulvus*, Dej. (*lapidosus*, Daws.) under large stone on, and in shingle. *Gyrinus elongatus*, Aub., common in the Ley outside the reeds and in a stream running out of it into the sea. *G. urinator*, Ill., a certain number of specimens were taken, but only in the water outside the reeds in one spot. This capture is of importance as Fowler writes [*Coll. Brit. Isles*. 1 213 (1887)] "Very local; recorded by Stephens from Slapton Ley near Dartmouth, but this appears to have been in error, as it has not occurred there since." The only other records I know of are near Newcastle-on-Tyne; Strathglass, Scotland; Kerry, Ireland; Bath; Bodelstreet, near Battle (where I took it with the late W. H. Bennett many years ago); New Forest; and Bude. *Atheta graninicola*, Gr., and *A. clientula*, Er., on the wing, *A. vestita*, Gr., and *A. sulcifrons*, Steph., in shingle, *Scopaeus abbreviatus*, Rey., recently added to the British list by Mr. Edmonds, of which some 15 specimens were taken on damp sand under fine shingle; *Medon pectiniventris*, Donis., recently described by me, of which several specimens were taken under a large stone on and in, coarse shingle.

My second visit was from August 19th-22nd when I stayed with Mr. Edmonds at Totnes. *Agabus melanarius*, Aub., occurred in some numbers in pools in the sphagnum bog at Haldon Moor. *A. chalconatus*, Pz., and *A. bipustulatus*, L., occurred with it, but it is easy enough to recognise *melanarius* at a glance by reason of its very different puncturation. *Crepidodera ventralis*, Ill., was swept in plenty off *Solanum nigrum* at Slapton Ley. Several specimens of a *Lema* were swept up, which raised hopes of *L. erichsoni*, Suffr., but eventually proved to be only *L. puncticollis* (*cyanella*, L.). Considerable rain spoilt a greater part of the visit.

Notes from Spain.

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

After an interval of twenty years it was very nice paying a flying visit to Spain again. I was only there a few days and did not penetrate beyond the frontier village of Port-Bou, but was able to take a few strolls around the rocky cliffs and pick up a few Orthoptera.

The air was fragrant with the aromatic shrubs. Rosemary was the chief, and apparently it is the rocky cliffs of the Mediterranean coast that are the original home of this sweet shrub, as indeed, its name implies, *Rosmarinus*. Another sweet-smelling herb was a lavender, *Lavandula stoechus*, neither so large nor interesting a plant as our garden species, but with a certain reputation. I find from the books that it extends from Asia Minor to the Canaries and was in our pharmacopeia until 1746, while the Arabs still use it as an anti-spasmodic and expectorant. I found also that the Stoechades, to-day known as Hyères, were so called from the abundance of this herb.

It was October when I was there and the plants were over. The thistles were dried up; there was some gorse, without flowers, and a dark green shrub like a broom, with pods, and very hard sharp spikes, *Genista scorpius*, a member of the same genus as our dyer's weed and needle furze. Here and there was a pleasant green shrub with small red berries, which I was surprised to learn was a pistacio. I had known the more familiar kind, *P. terebinthia*, in Macedonia and seen it in the Caucasus, where it grows into a tree, but this was *P. lentiscus*, the lentisk, a quite important shrub, for it is the source of mastic, an exudation which appears in incisions in the bark in the form of rounded tears, as big as peas, with a glassy fracture, once an important ingredient in medicine. It is still used largely as a chewing-gum and in the form of the favourite drink of the Levantines, and too as a varnish. It is chiefly cultivated in Asia Minor and some of the Greek islands. For some reason Chios was specially famous for its mastic in classical days.

There was a heath, too, *Erica arborea*, chiefly interesting from its remarkable distribution, for it occurs on Kilimandjaro, where it grows like a gigantic cabbage to a height of twelve feet or more and I rather think it is the same species which forms thickets among which I have hunted Orthoptera on Tenerife. There was also an *Euphorbia*, much stouter than our English species, but of course far feebler than the Canary or African kinds.

But the dominating shrubs on those rocky slopes are two species of *Cistus*, *C. albidus* and *C. clusii*. It must be a beautiful sight when they are in flower. Apparently these species are of no particular use, but several of the rock roses give "ladanum," a kind of balsam which was once very highly prized in ancient Greece and still used in perfumery and for making fumigating pastilles. The grey green velvety leaves of these shrubs give the hillsides a characteristic colour, the greyish green tint, suggestive of the olive, characteristic of the maquis. The Spaniards give special names for these plant associations, from the dominant species; thus, the great groves of *Cistus* are *jarales*, from *jaras*, a rock rose, which are in places so extensive as to cover great areas, and give a characteristic appearance to the scenery. The Sierra Morena derives its name from the

dark colour of the extensive thickets of *jarales*, but what a splendid sight it must be in the spring when they are in flower. Where thyme and the low growing Labiates dominate, they call them *tomillares*, from *tomillo*, thyme, with *Thymus*, *Lavandula*, *Rosmarinus*, etc. Both forms seem to be about equally divided on these rocks around Port-Bou.

Here and there was a prickly pear, which fitted in very well with the native scenery, where it is long since naturalised. It is strange that so queer and uncouth a plant should have so delicate a flower, suggestive of a lemon-yellow tulip.

The scarcity of birds was surprising. There were plenty of insects about and no lack of food. I caught a glimpse of a yellow wagtail and of a lark. A few pigeons sometimes flew over, but these were probably domesticated or perhaps rock doves. One evening a couple of crows flew over the sea, on their way to roost among the cliffs, where here and there a stunted pine was the only tree to offer them a perch.

I was surprised to move a rabbit as no creature could dig a burrow on those hard rocks.

I picked up a few Orthoptera. The tinkling tintinnabulation of *Decticus albifrons*, so characteristic of a Mediterranean autumn, at once evoked many memories. He has a strange preference for the thorniest shrubs and driest ground. His colour fitting in well and his great activity made him not easy to catch. The last time I had heard it was at Doiran in Macedonia under very different circumstances. The only other Tettigonid was *Metriopectera intermedia*, Serv., barely distinguishable from *M. grisea*, so common in suitable localities along our south coast. Of Mantids I picked up a couple of small *Ameles*, but Mr. Uvarov, who was good enough to determine these Orthoptera for me, declines to venture on a specific name, so complete is the muddle in this genus. It is an extraordinary thing that even such a marked physical feature as conical eyes have no specific value, as they vary considerably and seem to pass into the rounded form.

The coloured-winged grasshoppers of course were quite at home on these rocks. There was a *Sphingonotus*, without smoky bands to the wings, but here again, no one can offer a certain identification of the numerous and apparently plastic species of this extensive and almost world-wide genus. *Oedipoda caerulescens*, L., with blue wings, and *O. germanica*, Latr., with red, both quite common central and south European species, were plentiful. The pretty *Ramburiella hispanica*, Ramn., was fairly common; it is a purely meridional species and seems to prefer the coast, as not penetrating far inland, in Spain, the south of France and north coast of Africa. Of the Stenobothrine grasshoppers, that is the group of true grasshoppers, there were three species, two central European and one typically southern, *Omocestus rayuondi*, Yers. This is closely related to our *O. rufipes*, but much paler in colour and purely southern in distribution; it is a native of the western Mediterranean countries, where it may be found adult from the early summer to the end of the year. *Chorthippus vagans*, Ev., was there too, a regular but somewhat localised Central European species which Mr. Uvarov has identified in some British material in the museum. In appearance it is very close to the generally abundant *Ch. bicolor*. The third grasshopper was *Euchorthippus pulvinatus*, F.W., which may be found commonly

adult throughout southern Europe from the early summer to the end of the year. I was surprised to find a high proportion of immature grass-hoppers so late in the season.

Of course, *Calliptamus italicus*, L., was numerous. This is a remarkable species. The male is about half the size of the female, but both vary extensively in dimensions as well as colour. Brunner has recognised several of these forms by name, but it has been regarded as a single species. However Captain Campbell, an excellent observer, but with no systematic knowledge, noticed in Macedonia that there were two quite distinct races which never met, as they appeared at different times, and now the opinion is in favour of splitting it. Hitherto, only the Canary form, *C. vulcanius*, Kr., has been recognised as distinct, the Madeiran form being associated to the European. But now it looks as though the Madeiran is really near the Canary one and that the whole group will be split into half a dozen distinct species, or perhaps even more.

I sent the Orthoptera to Mr. Uvarov to be verified. In the bottles with them were a few casuals, four common Rhynchota, *Graphosoma lineatum*, L., *Eurydema ornatum*, L., *E. festivum*, L. and *Codophila varia*, F. These are very ordinary and call for no comment, but what puzzled the staff at the Museum was a big wasp. This was clearly a species of *Belonogaster*, a big handsome fellow, but what was he doing in Spain? He caused, in fact, quite a commotion, and they came to the conclusion that it must have been a straggler from the tropics. When I heard this, I realised that I was myself the cause of all the pother. I had used an old killing-bottle that I had last had in my hands in Northern Rhodesia. That wasp must have come from the Luano Valley, and been lying in the bottle four years.

Reduviidae collected in the Barberton District, Eastern Transvaal.

By J. SNEYD TAYLOR, M.A., D.I.C., F.E.S.

The following twenty-nine species of *Reduviidae* were collected in the Barberton District, Eastern Transvaal, during five-and-a-half years residence there. As sufficient time was not available in order to make a systematic collection, the list is probably very far from being complete, and it could doubtless be considerably augmented by anyone fortunate enough to be able to devote all his time to collecting in this district, which is so rich in entomological fauna. The majority of the species contained in the list were collected in the vicinity of the town of Barberton, and the remaining few on brief and occasional visits to other parts of the district.

The altitudes of the various localities mentioned are as follows:—Barberton, 2,825 feet; Nelspruit, 2,349 feet; White River, about 3,300 feet; Tonetti, about 1,360 feet.

In five cases, where the specific name is not given, the species concerned were not previously represented in the British Museum collection, while in one instance the genus was also not represented.

I am indebted to Mr. B. P. Uvarov, of the Imperial Institute of Entomology, for determining the majority of the species.

Tribelocephala boschjesmana, St.—Two specimens obtained at light, October and November, Barberton.

Oncocephalus caffer, St.—Two specimens obtained at light, September and March, Barberton and Nelspruit.

Oncocephalus annulipes, St.—Two specimens obtained at light, March, Nelspruit.

Varus flavoannulatus, St.—One specimen obtained at light, October, Barberton.

Reduvius tarsatus, Germ.—Common at light, October, February, Barberton.

Reduvius sp. ?—One specimen obtained at light, November, Barberton.

Sastrapoda baerensprungi, St.—One specimen obtained at light, December, Barberton.

Edola sp. ?—One specimen found under a stone, apparently hibernating, July, Barberton.

Acanthaspis obscura, St.—Common at light, November-June, Barberton.

Acanthaspis lurco, St.—Common at light, October-February, Barberton.

Pirates lugubris, St.—One specimen obtained at light, January, Barberton.

Pirates sp. ?—Two specimens obtained at light, March, Nelspruit.

Leptodema acanthocephala, Carl.—One specimen found in the house, apparently at light, January, Barberton.

Rhinocoris violentus, Germ.—One specimen found in cotton field, March, Barberton.

Rhinocoris tristis, St.—One specimen obtained on tobacco plant, January, Barberton.

Rhinocoris tibialis, St.—One specimen found in house, apparently at light, April, Barberton. (Two specimens obtained on cotton plant, February, Magut, N. Natal).

Rhinocoris abopunctatus, St.—Occasionally found in cotton fields, and on wild plants. Has been observed preying upon Lepidopterous larvae. October-June, Barberton.

Rhinocoris segmentarius, Germ.—The commonest species met with in the field, it has frequently been observed in association with infestations of cotton, maize, tomatoes, peas, etc., by larvae of *Heliothis obsoleta*, Fabr. and other Noctuids, upon which it preys. Egg-clusters (*Ent. Rec. & Jr. Var. XL.*, p. 141) have been found on cotton foliage. The species occurs commonly, September-May, Barberton and Tonetti.

Rhinocoris sp.—One specimen found on grass, April, Barberton.

Rhinocoris sp.—One specimen found in cotton field, March, Barberton.

Pantoleistes princeps, St.—Fairly numerous on trunk and branches of *Acacia* sp. ?, February, 1928, Barberton.

Endochus cinnamopterous, Dist.—(?) One specimen obtained on citrus tree on which larvae of *H. obsoleta* were abundant at the time, September, Nelspruit.

Phonoctonus formosus, Dist.—Two specimens found on citrus, November and February, White River.

Coranus carbonarius, St.—One specimen found under pea plant in the presence of larvae of *Euxoa segetum*, Schiff., August, Barberton.

Coranus papillosus, St.—A common species found in the field. During the summer it has frequently been observed in cotton fields

where it preys upon "bollworms" and other Lepidopterous larvae. In the winter months it has been found under pea plants in the presence of larvae of *E. segetum* and *Laphygma exigua*, Hbn., and also among debris in cotton fields. Barberton.

Coranopsis vittata, Horv.—Three specimens obtained, one on kaffir-corn, infested by larvae *H. obsoleta*, one among debris in cotton field, and one at light, January, August, and September respectively, Barberton.

Ploearia hewitti, China.—Three specimens obtained, two at light, and one on grass, April, September, and July, Barberton.

Physorhynchus crux, Thunberg.—Two specimens obtained, one on garden path, and one in house, January, and March, Barberton.

Records of Immigrant Lepidoptera seen at Hastings (East Hill), with dates on which specimens were on the wing.

By CAPT. T. DANNREUTHER.

Pyrameis cardui.—First appearance in Hastings Aug. 3rd (W.F.) Single specimens 12th : 13th : 17th four rosy fresh : 18th two worn : 19th three : 23rd : Sept. 4th three.

Pyrameis atalanta.—May 15th : Aug. 8th seven : 15th : 17th three : 18th four : 23rd : 28th two : Sept. 7th two.

Colius croceus.—Aug. 9th three : 12th : 16th two : 24th.

Pieris brassicae.—First appearance May 29th then average.

Pieris rapae.—More abundant than usual but no direct evidence of immigration. In hot spell in August at the maximum 19 summer brood counted feeding on one lavender bush. Few left in Sept.

Pieris napi.—Not common. Seen July 27th : and Aug. 17th two.

Aglais urticae.—Common but no indication of immigration. Several taken Aug. 5th and 8th : 17th eight : Sept. 12th two on the beach.

No Hawk-Moths or vagrant lepidoptera seen [except one *Auorpha populi* at Battle July 13th, and larvae of *Chaerocampa elpenor* Aug. 20th (J. E. Ray.)]

Plusia gamma.—Taken in daylight : June 28th : July 28th two : Aug. 6th : 9th : 10th two : 13th seven : 15th fourteen : 16th two : 18th twenty-one : 19th four : 21st : 24th : 25th : 28th.

Nomophila noctuella.—Sept. 6th.

Pionea ferugalis.—Aug. 16th two.

Dragonflies, probably residents—*Sympetrum sanguineum* Aug. 25th. *Aeschna miata* Aug. 16th : 17th five. (*Aeschna cyanea*, *Sympetrum striolatum*, *Aeschna grandis*, and *Agrion puella* also taken but not classed as possible immigrants).

Other records reported from elsewhere :—

Colias hyale and *C. croceus* at Waldringfield (Suffolk) May 13th (Rev. A. P. Waller.)

Pyrameis cardui.—Corton Cliffs. July 5th, three worn. (J.G.)

Pyrameis atalanta.—Norwich. Aug. 4th new brood. (G.J.C.)

Phryxan livornica.—Grantham (Lincs.) early June (H. Preston.)

Nomophila noctuella.—Crumbles (Eastbourne) May 28th (H. Main).

Wm. Fassnidge wrote from Maurin, Basses-Alpes, on Aug. 29th :—
"Glorious weather but a bad season. A few immigrants have shown

up, and last night *N. noctuella* was in thousands at the lamp and sheet."

Mr. H. Main writes from South Woodford, E. 18, "Nothing but Large and Small Whites on Buddleias but a few *P. atalanta* in vicinity."

Whenever I obtain migrant species tired or merely fluttering at the flowers they are kept captive until the following morning and then released from a lawn. About half the *P. cardui* and *P. atalanta* so released will dart up at an angle of 45 degrees flying fast and straight to the North or N.N.W. (true) thus showing that the urge to migrate is still present though not observed when captured. Others will merely flutter in the vicinity and *Plusia gamma* will usually remain where released. One very worn *P. cardui* died in the house before release on August 18th. The specimen was exhibited at the B.A. meeting at York.

Newly-described Forms of Species of Lepidoptera found in Britain.

Phragmitiphila (*Nonagria*) *typhae*, Thnbg.—M. Dufrane describes two new forms. (1) ab. *obsoleta*, on the forewings, the black spots before the submarginal line are completely obsolete, or reduced to the merest atoms. Dampremy, France. (2) ab. *punctata*, on the forewings these same dots are enlarged and very black. Mons. *Lamb.* XXXII. 83.

Hybernia defoliaria.—Herr Gornik describes and names two unrecorded forms of this species in *Zeit. Oestr. Ent. Ver.* XVII. 5. (1) ab. *destrigata*. "The ground colour of the upperside forewing lighter or darker reddish ochre-brown and more or less powdered. But the black brown sharp, transverse streak wanting while the rest of the marking is present, hence the darker brown unevenly wide scaling of the large hinder transverse band shows clearly just as does the smaller more basal line. Thus the enclosed central area becomes somewhat lighter. The discal spots of both fore- and hindwings are very distinct. Fringes unicolorous. Hindwings finely powdered brown." (2) ab. *punctata*. Like *holmgreni*, Lamp., but the discal spots of both fore- and hindwings upperside are very distinct.

Metachrostis (*Bryophila*) *muralis* ab. *viridior*.—Herr Schawerda describes and names this form taken at light in Corsica, in the *Zeit. Oestr. Ent. Ver.*, vol. XVII. 30 as intensively suffused with bright green, above other green examples.

Hadena didyma ab. *xanthostigma*.—Herr Schawerda also describes and names on the same page an example of this species with the stigmata yellow instead of white as in the well-known form *leucostigma*. Col de Vizzavona, Corsica.

Metrocampa margaritata ab. *rubrociliata*.—The same writer names a new form of this species with carmine red fringes on both wings, taken at light on the Col de Vizzavona, Corsica.

In the *Ent. Bericht* for May, Herr B. J. Lempke records and describes two new aberrations of our familiar *Colias croceus*. (1) ab. *hasisuffusa*, an "orange ♀ with strongly suffused base." (=ab. *suffusa*, Tutt, 1896, nec. Cockerell, 1889). (2) ab. *rufomaculata*, "the double silver spot wholly suffused with carmine red."

Chloroclystis rectangulata ab. *ochrea*, Derenne, Lamb. (1932) XXXII. 156.—The ground colour of the wings is yellow ochre. Ixelles, Brussels.

Hydroecia fucosa, Freyer (*paludis*, auct.)—Dr. Heydeman in his masterly paper (*Ent. Zeit.* 1930) on the *nictitans* group describes and names the following forms. (1) ab. *fucosa-albo*, Heyde., "with larger, snow-white reniform stigma, but in which the 2 white spots on the innerside do not appear quite so perfect and roundish as in *oculea*, L." (2) ab. *intermedia*, Heyde., "somewhat darker leather yellow-brown." (3) *intermedia-albo*, Heyde., "as the last with white reniform." (4) *brunnea*, Heyde., "dull yellow, often suffused violet-grey in the marginal area, with larger more fully yellow reniform." (5) *brunnea-albo*, Heyde., "ditto with restricted white reniform." (6) *grisea*, Heyde., "in which the yellow-brown ground-colour is quite masked by a dusky slight yellowish grey on which the often quite large reniform is clearly evident and yellow in colour." (7) *grisea-albo*, Heyde. "ditto with white reniform." [*rufa*, Dadd, and *rufa-albo*, Dadd, were not recorded in *British Noctuae*. Without grey or ochre-yellowish tone with deep orange coloured reniform in the former and reniform white in the latter.]

H. fucosa, Freyer, subspecies *paludis*, Tutt. (1) *rufa*, Heyde, "pale red brownish with ochre-yellow-toned reniform." (2) *rufa-albo*, Heyde. "ditto reniform not yellow." (3) *obscura*, Heyde., "deep chocolate leather brown, without red tone, melanistic, with quite narrow streak-like reniform."

H. lucens, Freyer. (1) ab. *brunnea*, Heyde. "brown to dark leather brown without red tone in the disc and with mostly dark grey hindwings and red ochre fringes. Yellow reniform." (2) ab. *brunnea-albo*, Heyde. "not yellow reniform."

Coremia (*Ochyria*) *spadicearia* (*ferrugata*, Clrek.) ab. *extrema*, Schneider.—In *Ent. Runds.* XLIX. 145 (1932), Carl Schneider describes and figures this new form. "Forewings:—basal area normal, central band wholly obliterated by the encroachment of the adjoined markingless grey outer area. Hindwing markingless as well as the whole undersides of the wings." Cannstatt, Württemberg.

In the *Ent. Ziet.* XLVI., p. 112 (1932) Dr. Przegendza of Nürnberg describes and names new races of *Zygaena* species. *Z. purpuralis* race (subsp.) *erythroides* from Managgio. "Middle size, with very broad bright red forewing marking. The central wedge spot is much enlarged and cut off sharply. The wings are narrow of a dull black ground without gloss. In 33% the forewing marking is so much enlarged that only a small area of the black ground colour remains." *Z. purpuralis* race (subsp.) *kijevana*. "Scaling of the ♂ thickly overspread with dull bluish black gloss, the ♀ thinner scaled and duller in colour. The markings of a clear dark scarlet red colour very regular, but tolerably narrow. Spot 6 short and of oval form united with 5 broadly. Gov. Kijer. There are 4 figs. on plt.

SCIENTIFIC NOTES AND OBSERVATIONS.

THE BIOLOGY OF TRIPLE-BROODED SPECIES.—I have been studying the *Pieris* and other triple-brooded species with the help of Scudder's and Edward's data and the large and magnificent series of specimens, which

I sent here from Spain and Portugal. All these series are here at my disposal and with them at hand I can speak much more fully than in my recently published book. After three years since I wrote at Barcelona the note printed last January I still believe what I then said about the triple-brooded species is right. My hypothesis explains every case.

Everyone says that the *Pieris*, and some other species having more than one brood, pass the winter as a chrysalis. I feel sure that when, in the fall, there is a marked and sudden change in the weather, which continues until the following year, some eggs remain unhatched. They are those only which have been laid in the last week, or so, of fine weather. If a few eggs hatch, the larvae die when the country becomes icy and barren. But both the chrysalides and a few eggs survive. The eggs hatch as soon as the fields become green again, for instance in March, producing a brood in May, a second late in July and in August, and a third late in October. The hibernating pupae, however, produce imagines 20 to 30 days later than the hatching of the eggs, in the warm days of April, with a second brood in June, and a third in September and early October.

Thus sometimes there is a continued emergence of the butterflies from April to November, and we must admit that there exist in the country two quite independent cycles of emergence: *viz.* that from the hibernating chrysalis and that from the hibernating egg. When the rainfalls are frequent and the country generally verdant throughout the year, we have what appears to be six broods, when really there are only two sets of three.

It is quite impossible to admit that this second group, which emerge even less than one month later than the hatching of the eggs of the first group may be the descendants of the first. The eggs from the earliest emerged specimens have not time to complete their life cycle in such a short period and while the climate is still mild. Besides that we have sometimes found larvae of *Pieris* in early spring before any specimen of that genus had emerged.

I came to this conclusion, observing what happens in spring, after a sudden change of weather in the previous fall. In April (for instance) we collected the small and grey forms produced by lethargic pupae: *Pieris rapae* f. *metra*, *P. manni* f. *farpa*, *P. napi* f. *vulgaris*, *P. brassicae* f. *verna*, *P. daplidice* f. *bellidice*, *Colias hyale* f. *vernalis*, *C. croceus* f. *vernalis*, *Coenonympha pamphilus* f. *murina*, *Polyommatus icarus* f. *vernalis*, etc. About 20 to 30 days later than the earliest appearance of these forms and while they were still in full emergence, we found on the wing the showiest forms of the same species *P. rapae* f. *messanensis*, *P. manni* f. *secundogenita*, *P. napi* f. *atlantica*, *P. daplidice* f. *expansa*, *C. hyale* f. *calida*, *C. croceus* f. *ampla*, *P. megera* f. *vividior*, *C. pamphilus* f. *australis*, *P. icarus* f. *meridionalis*, etc. etc.

When the previous fall gradually becomes cold, which allows all the eggs to hatch in the autumn and the larvae to develop pupae that overwintered as such, the showy forms of butterflies cannot emerge, because there are no pupae produced in early spring.—ORAZIO QUERCI.

NOTES ON COLLECTING, etc.

STENOPHYLAX DUBIUS, STEPH., A VERY RARE TRICHOPTERON IN WINDSOR FOREST.—When fishing for waterbeetles in a stream in Windsor Forest on October 2nd, 1931, I noticed a Trichopteron on the water net. As it looked darker in colour than any other species I had seen at Windsor before, it was promptly bottled.

Mr. Martin E. Mosely informed me, at the British Museum, that it was a male of the very rare *Stenophylax dubius*, Steph., of which there was only one example in the B.M. collection, the type, also a male. Stephens described the species from "near London" in 1837, and it has never been taken in this country again until now. The species has been taken on the Continent in Germany, Galicia, Croatia, Finland, Russia and Courland.

On September 18th this year when sweeping long grass, etc., in another spot in Windsor Forest, but near to the same stream I captured a second specimen which Mr. Mosely tells me is a female, and of course that sex has not been taken in this country before.—HORACE DONISTHORPE.

THE SEASON IN CUMBERLAND.—Lately I have been sugaring the trees. *Amathes litura*, *Scopelosoma satellitia*, *Orrhodia tigula*, *O. vaccinii*, and *A. circellaris* are about at present (October 11th). On October 2nd I took *Calocampa vetusta* my fourth example in Cumberland. I mostly take *C. exoleta* here. We have had a bad summer, wet and frosty nights must have been bad for the summer larvae. Of course larvae that hibernate can stand the cold.—G. B. ROUTLEDGE (J.P., F.E.S.), Tarn Lodge, Head's Nook, Carlisle. October 11th.

NOTES ON *A. ATROPOS* IN EAST SUFFOLK, 1932.—I came here on August 17th, and the same day 2 larvae of *A. atropos* were brought to me from the village of Orford. I imagine that these had been dug up with potatoes, as they immediately burrowed when I gave them the chance. Another larva was brought to me on September 10th, about $\frac{2}{3}$ grown. I then made a personal search and secured 12. More were brought to me, until I at last had about 30. Several of these had been dug up while pupating, and 3 or 4 of them died, but the others, though unable to burrow or form their earthen case, succeeded in pupating when placed in a hollow on damp sand, and covered with moss. At this time most of the potato leaves had died down and the larvae were, I think, underfed while in the open. The pupae seemed small. The only pupa brought to me was received on September 19th from a village boy. This produced a good medium sized ♀ on October 15th. Of the larvae which pupated in captivity, none has so far attained the perfect state. I have never seen it noted that this larva makes a peculiar sharp clicking sound when disturbed. Of all the larvae seen, only one was of the dark form. The remainder were of a brilliant green ground colour.—D. G. B. HAWLEY (Lieut.-Colonel), October 17th, 1932.

NOTES FROM THE STRATFORD-ON-AVON AREA, ETC.—The output of useful entomological work has diminished tremendously since the death of Tutt; how he ever found the time necessary for his work I don't know.

I have been having a very interesting ten days at Bourton-on-the-Cotswolds, but the good Noctuae are just arriving as I have to leave. I have been quite successful in getting pupae of *Hydraecia petasitis*, which occurs there, but I am afraid a large percentage of them come out crippled. I have had a few nice ones so far. I have tried sugar and light for them, and also took down a crippled ♀ but I could see no imagines at all. Barrett says they fly at dusk, but I could not confirm it, and I don't think it has been confirmed anywhere.

I caught an interesting Noctua at sugar which appears to be a second brood of *Mamestra* (*Hadena*) *thalassina*, Rott., but when it is set I will let you see it as it may interest you. It is not at all like ordinary *thalassina*, having a broader forewing and a more rosy tinge over the whole. The hindwings are much darker too.

C. xerampelina was just coming to sugar and I got one female at light. At light also I got *Luperina testacea* of course and a single *Ennomos fuscantaria*, which is rare in the district.

One *Triphaena orbona*, Hufn. (*subsequa*, Hb.) came to my sugar, but I believe Col. Donovan has had several this season. A very interesting visitor was the var. *suffusa* of *Polia chi*, and another between that and the type, which is of course common in the district.

My friend Col. Donovan has been very successful in Ireland this year getting three larvae of *Leucodonta bicoloria* and other prominents, not, I think, recorded in Ireland before. A note about them will appear soon I fancy.

It is a bad year for immigrants, but I caught a splendid *P. cardui* on the Cotswolds which is rather nicely coloured.—P. SIVITER-SMITH, Peabworth. August 31st.

NOTES FROM DORSET.—On August 1st I visited our local colony of *Polyommatus* (*Agriades*) *coridon*, but found none on the wing, owing, no doubt, to the lateness of the season and the site being some 600 ft. above sea level. On August 20th I again visited this site and found *P. coridon* on the wing but very scarce; *P. icarus*, *Plebeius medon* and *Coenonympha pamphilus* were also flying, the slope being covered with *Hippocrepis*, *Lotus* and *Helianthemum*. I took about a dozen very ordinary ♂ and ♀ *P. coridon* as I wished to procure some ova to breed from, and was on the point of leaving when, what I took at first sight for a moth, got up in front of me. On netting it I found it to be a worn pathological specimen of *coridon* corresponding almost exactly with the description of specimen ϵ on p. 7 of Tutt's *British Butterflies*, vol. IV. ♀ diameter 38 mm. The forewings are the same pale fawn tone as the hindwings but in some lights look much paler. Fringes worn, hairs on wings in good condition. Hindwings each with a small piece missing. Underside also pale fawn, fully spotted, orange lunules rather pale. As this ♀ had evidently laid most of her ova I set her rather than risk further damage to her wings. I hope to visit the locality next year and work for her offspring if any. I again visited the slope in September but *coridon* was no longer on the wing, my only capture being a ♀ *Rumicia phlaeas* which gave me a good batch of ova.—ROBERT TROUP, Buckland Newton, Dorchester. October 24th.

CURRENT NOTES AND SHORT NOTICES.

A meeting of the Entomological Club was held at 52, Oakhill Road, East Putney, on September 21st, 1932, Mr. H. Donisthorpe in the Chair. *Members Present* in addition to the Chairman:—Mr. H. Willoughby-Ellis, Mr. Jas. E. Collin, Mr. W. J. Kaye. *Visitors Present*:—Sir T. Hudson Beare, Mr. K. G. Blair, Dr. M. Burr, Dr. E. A. Cockayne, Mr. F. W. Edwards, Dr. K. Jordan, Mr. M. E. Moseley, Mr. W. H. T. Tams. The meeting was called for 6.30 p.m., and the members and guests were received by the Chairman, when tea and light refreshments were served. A retirement was made to the Chairman's study, where his collections and recent work were inspected. His method of filing notes and separata in the Orders in which most of his work has been done, which enables any reference to be found within the space of a few minutes, was greatly admired and appreciated. Supper was served at 8 o'clock, after which the Chairman made the following exhibits:—

Scopaeus abbreviatus, Rey., a Staphylinid beetle taken at Hallsands, S. Devon, 12.vi.32, new to Britain, taken by Miss Kirk and Messrs. Edmonds and Donisthorpe. The first named found the first and most of the specimens. Next day Mr. Keys joined the party and more specimens were taken. Recently further captures have been made by Messrs. Edmonds, P. Harwood and Sir T. H. Beare. *Medon*, n. sp. A specimen was taken at Hallsands, S. Devon on 12.vi.32., by Mr. Donisthorpe in fairly coarse shingle. Subsequently Miss Kirk took a second specimen, and recently Messrs. Edmonds, Harwood and Sir T. H. Beare have made further captures. *Stenichnus*, n. sp. A number of specimens were taken at Slapton Ley, June 8th-12th, 1932, in fine shingle on turf. A very pleasant and interesting evening was spent.—H.W.-E.

The Insect Immigration Committee of the South-Eastern Union of Scientific Societies request that all who have been supplied with the standard Immigrant Insect Record cards since April 1st, 1932, will send in any filled in records (with specimens if available), in time to reach the local Recorder for the County, by November 1st, annually (or if his address is unknown, to Captain T. Dannreuther, R.N., "Windycroft," Hastings), in order that Recorders may complete their lists by November 10th.

As negative evidence is of value, it is requested that if it can be definitely stated that any of the common immigrant species were absent from the observer's district during 1932, that the word "Absent" may be against it in the list given below, and the list returned to Recorder.

LOCALITY:—Painted Lady, *Pyrameis cardui*; Red Admiral, *Pyrameis atalanta*; Clouded Yellow, *Colias croceus* or *edusa*; Pale Clouded Yellow, *Colias hyale*; Silver Y Moth, *Plusia gamma*; Diamond-back Moth, *Plutella maculipennis*; Rush Veneer Moth, *Nomophila noctuella*.

Vol. XXVI. of the *Boll. Lab. Zool. Gen. e Agraria* issued by the Institution at Portici, contains the usual well done and adequately illustrated memoirs of the original work done by the able staff, under the Directorship of Prof. Silvestri. The papers are devoted to Coleoptera 2, Diptera 2, Hymenoptera 2, Isopoda 3, Hemiptera 2, Thysanura, etc. There are 2 plates with nearly 60 figures of galls and most of the papers are illustrated by a very large number of figures. The volume is very clearly printed and displayed, and a credit to all concerned.

In the recent numbers of *Ent. Rundschau*, Herr H. Beuret has been issuing a number of biological and nomenclatorial "Notes on the Continental *Lycaenidae*"; and Herr H. Marshener is giving an account of the "Macrolepidoptera of the Riesengebirge"; Dr. A. Seitz continues the account of his journeys abroad. In No. 17, Herr H. Reiss and Herr E. G. A. Schneider give an account of the *Zygaena*-fauna of the Southern Urals illustrated by a plate of 34 figures. New forms are described of *Z. meliloti* and *Z. lonicerae* of both of which figures are given.

For some time past an account of the "Lepidoptera of Inner-Anatolia" by Fritz Wagner has been appearing in the *Int. Ent. Zeit.* Various authors are giving Notes on the *Zygaenidae*. There is a register of the *Noctuidae* occurring in Württemberg and Hohenzollern. Dr. W. Stichel writes on the Genus *Notonecta* in N. Germany. Herr Schneider discusses the Geometrid Genus *Boarmia* as laid down by L. B. Prout in Vol. IV of Seitz *Palaeartic Geometridae*. No less than 16 species are noted as occurring in Württemberg. Herr G. Warnecke is contributing an article on the myrmecophilous larvae of the butterfly family *Lycaenidae*, summarising the facts of the connection so far as investigated, with a detail plate. Herr Hugo Reiss is discussing the the races of the beautiful *Zygaena fansta* of the more southern portions of Europe. There is a very good black and white plate of about 3 dozen figures.

The *Ent. Zeit.* during the past few months has articles on The Breeding of *Acherontia atropos* from the egg; a "List of the Lepidoptera of Glatz"; C. Schneider writes concerning the Geometers of Württemberg; Kurt John introduces a series of new Sphingid hybrids and contributes two plates of figures of *Celerio* with *Mimas*, and *Sphinx*. Fortunately none of results of this hybridisation has received names.

The "Lepidopterous Fauna of Corsica" by Dr. C. Schawerda continues to occupy pages in the *Zeit. Oesterr. Ent. Ver.* Dr. Heydemann with his usual thoroughness, discusses *Oporinia christyi*. There is a plate with comparative figures of the ♂ antennae, the octavals or portions of the hind margin of the 8th segment with tufts, and the last segment of the pupae of *C. autumnata*, *C. nebulata (dilutata)* and *C. christyi*.

The *Report of the London N. Hist. Socy.* for the year 1931 contains considerably more entomological matter than it has for some years. For this thanks are due to the energetic Hon. Secretary, Mr. H. J. Burkill, M.A., F.R.G.S., whose contributions are (1) the Report of the Entomological Section, (2) a very interesting paper "An Introduction to the Study of Plant Galls" in which study Mr. Burkill is a specialist, (3) "Plant Gall Records for 1931" with notes on each species observed, (4) "British Butterflies in 1931," a compilation of the observations sent in by some thirty members with the notes summarised. (5) "Heterocera Notes in 1931," a similiar compilation on the Moths. Also there is a few Notes on the Large Wood Wasp (*Sirex gigas*) by Arthur Richardson, and Studies on the Biology of Fleas by Patrick A. Buxton, M.A., M.R.C.S. (The Bacot Memorial Lecture). We are surprised that the Society had to go to Scotland to get it printed.

Some so-called "gynandromorphs" are circulating; they are "reported" from three different centres.

REVIEWS AND NOTICES OF BOOKS.

Seitz MACROLEPIDOPTERA, Supplement to the Palaearctic Section pts. 34, 35, 36 have been just published. Parts 34 and 36 with 2 plates deal with additions to the *Saturniidae* and *Sphingidae* and an Appendix to the latter dealing with the Hybridisation that has been carried out. There is only one British species of *Saturniidae* dealt with but such well-known species as *Graellsia isabellae*, *Sannio cynthia*, and *Saturnia pyri* have considerable additional forms named. The hybrids with *Saturnia pyri* have a section to themselves. *Aglaia tau* has no less than 15 further recorded forms, while our native *S. (Eudia) pavonia* has added 16 named forms from localities scattered all over Europe, but none British. Additional names are added to the British Sphingids as follows: to *Acherontia atropos* 7, to *Herse convolvuli* 3, to *Sphinx ligustri* 5, to *Sphinx pinastri* including those of Dr. Cockayne, 8+4 genitalic forms, to *Mimas tiliae* 17, *Smerinthus ocellata* 4, *Amorpha populi* 5, *Haemorrhagia fuciformis* 4, *Macroglossum stellatarum* 1, *Celerio euphorbiae* 86, *C. livornica* 2, *Pergesa eipenor* 4, *P. porcellus* 2, *Hippotion celerio* 3. The above summary shows how necessary it is for all British workers to consult the pages of Seitz volumes ere venturing to add further synonyms to our already overburdened Lists. Part 35 is a continuation of Dr. Corti's summary of the *Agrotidae*, 8 pages and 2 plates. The British species dealt with are *Agrotis ypsilon (suffusa)* with 2 additions, *A. segetis (segetum)* 9, *A. corticea* 7, *A. vestigialis* 8, and *A. cinerea* 6. The two plates are quite good. With regard to the Agrotid larvae Dr. Corti makes some interesting remarks. He says, "The larvae are as a rule typical subterranean larvae, like those of the genus *Euxoa* and outwardly very similar to same. However various species already show a tendency to leave the earth and exist above the surface." "The eggs are almost without ridges, occasionally weakly ridged. Generally they are laid loose or in clusters in or on the earth."—Hy.J.T.

The *Report of the Eton College Natural History Society* for 1931-2 lies before us. It is a very interesting little report of this very active School Society. Several times throughout each month there is some meeting or other, either Lecture or Excursion, devoted to one of the subjects embraced in the comprehensive term "natural history." Several of the excursions were largely devoted to the search for Lepidoptera. Among the Lectures we note "Life among the Ants," by Mr. W. L. Tutton, "Colour in Animals" by C. R. White-Thompson. Brigadier General B. H. Cooke is thanked for his valuable help in the excellent Collection of European Butterflies and Moths in process of formation. There is a useful article by N. G. Wykes on "Moth Traps" describing the making and use and the results after a three weeks trial. In the last report was a list of Coleoptera taken during the year. The present report gives an additional list of some 82 species collected near Eton. There are 5 admirable plates. A record of another successful year adequately reported.—Hy.J.T.

We regret to learn of the death of the Abbé Joannis, one of the best micro-lepidopterists of France with a fine all-round knowledge of our science.

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EXCHANGES.

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be sent to Mr. HY. J. TURNER, "Latemar," West Drive, Cheam.

Duplicates.—S. *Andrenaeformis*, Bred 1928, well set on black pins, with data.

Desiderata.—Very numerous British Macro Lepidoptera.—J. W. Woolhouse, Hill
House, Frances Street, Chesham, Bucks.

Desiderata.—Species of Dolerine and Nematine sawflies not in my collection; list
sent.—R. C. L. Perkins, 4, Thurlestone Road, Newton Abbot.

Duplicates.—*Albimacula**, *sparganii**.

Desiderata.—Ova of *D.oo. pupae* of *X. gilvago*, *D. caesia*. A. J. Wightman, "Aurago,"
Bromfields, Pulborough, Sussex.

EXCHANGES.—Living Eggs of *Catocala fraxini* and *sponsa*, exchange for butterflies of
British Isles.—C. Zacher, Erfurt, Weimar, Street 13, Germany.

Duplicates.—*Pyralina**, *Salicis*, *Ianthina**, *Orbicularia**, *Repandata* in variety,
Doubledayaria, *Black rhomboidaria**, *Black virgularia** and others.

Desiderata.—*Hyalae*, *Welsh aurinia*, *Polychloros*, *Tiphon Agathina*, *Lunigera*,
Lucerna, *Neglecta*, *D.ffinis*, *Populeti*, *Gothica v. gothicina*, *White Leporina*, *Tridens*
Putrescens, *Littoralis*, *Typhae v. fraterna*, *Rurea v. Combusta*, *Gilvago*, *Fulvago v.*
flavescens, *Liturata v. nigrofulvata*. Harold B. Williams, Woodcote, 36, Manorgate Road,
Kingston Surrey.

Duplicates.—A large number of species of European and Palaearctic Rhopalocera
and Heterocera.

Desiderata.—All British species especially those illustrating characteristics of an
island fauna. Dr. Lor. Kolb, München 54, Duchauer-str. 409, Germany, and Franz
Daniel, München, Bayer-str. 77, Germany.

URGENT.—Wanted English (Cumberland) *Erebia epiphron*. Adequate exchange
will be made in European Lepidoptera.—B. C. S. Warren, 14, Avenue de l'Eglise
Anglaise, Lausanne, Switzerland.

I am seeking an opportunity of exchanging Macro- and Micro-Lepidoptera with
English collectors and beg to send list of duplicates.—J. Soffner, Trautenau (Bezirksbehörde),
Bohemia, Tschechoslowakische Republik.

MEETINGS OF SOCIETIES.

Entomological Society of London.—41, Queen's Gate, South Kensington, S.W. 7.
8 p.m. November 16th, December 7th.

The South London Entomological and Natural History Society, Hibernia
Chambers, London Bridge. Second and Fourth Thursdays in the month, at 7 p.m.
November 24th, December 8th.—Hon. Secretary, S. N. A. Jacobs, "Ditchling,"
Hayes Lane, Bromley, Kent.

The London Natural History Society.—Meetings first four Tuesdays in the
month at 6.30 p.m. at the London School of Hygiene and Tropical Medicine, Keppel
Street, Gower Street, W.C.1. Visitors admitted by ticket which may be obtained through
Members, or from the Hon. Sec. A. B. Hornblower, 91, Queen's Road, Buckhurst Hill,
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TO ENTOMOLOGICAL SOCIETIES and MUSEUMS.

BACK VOLUMES OF

The Entomologist's Record and Journal of Variation.

(Vols. I-XXXVI.)

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GENUS *Acronycta* and its allies.—Variation of *Smerinthus tiliæ*, 3 coloured plates—Differentiation of *Melitæa athalia*, *parthenie*, and *anrelia*—The Doubleday collection—Parthenogenesis—Paper on *Taeniocampidæ*—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.

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MELANISM AND MELANOCROISM—Bibliography—Notes on Collecting—Articles on VARIATION (many)—How to breed *Agrotis lunigera*, *Sesia sphegiformis*, *Taeniocampa opima*—Collecting on the Norfolk Broads—Wing development—Hybridising *Amphidasys prodromaria* and *A. betularia*—Melanism and Temperature—Differentiation of *Dianthæciæ*—Disuse of wings—Fauna of Dulwich, Sidmouth, S. London—Generic nomenclature and the *Acronyctidæ*—A fortnight at Rannoch—Hereditiy in Lepidoptera—Notes on Genus *ZYGENA* (*Anthrocera*)—Hybrids—Hymenoptera—Lifehistory of *Gonophora derasa*, etc., etc., 312 pp.

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By HENRY J. TURNER, F.E.S., F.R.H.S., *Editorial Secretary.*

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Notes on Erebiid Species.

By. B. C. S. WARREN, F.E.S.

(1) *E. pronöë*.—I have recently received specimens of a remarkable little race of this species, from the mountains near Krunn, on the south-side of the Isar Tal, in the Bavarian Highlands. This new race at once reminds one of the beautiful little race *gardeina*, Schaw., but the latter is characterised by the reduction of all markings on the upperside, while the new race is very strongly marked. It may be described as:—

Race *varia*, nov.—The smallest form of the species, ♂ averages 46-48, ♀ 42-46mm. Other average sizes are; *pronöë* 50-52mm. both sexes; races, *tarcenta*, Frhst. 48-50mm. both sexes, *gardeina* ♂ 46-50mm., ♀ 44-48mm.

On the upperside *varia* is suggestive of *tarcenta*, for all the black spots excepting the apical two on the forewings, are much reduced in size, and any, or all of them may be lost. The two apical ones remain as large as in typical *pronöë*. *Varia* differs from *tarcenta* in that, in spite of its small size, the bands are as fully developed as in typical *pronöë*, and the coloured spots on the hindwings often even more developed. In *tarcenta* the bands are narrow on the forewings, and reduced to mere dots on the hind. In the ♀ *tarcenta* they are extremely reduced on the forewings and entirely wanting on the hind. In the *varia* ♀ they are broader on the forewings than in ♀ *pronöë* and equally so on the hind. This, of course, makes the reduction of the spots all the more conspicuous. There is much variation in the width of the bands on the forewings, which can sometimes be as narrow as in *tarcenta*, but such specimens still differ from the latter by their smaller size and the invariably greater size of the reddish spots on the hindwings. The variation in the number of the black spots, other than the two apical ones, is endless; but even when all are present they are never fully developed as in *pronöë*. The underside is typical of the species.

(2) *E. neoridas*, Boisduval.—There have been many uncertain references as to the locality of typical *neoridas*. In the *Index Meth.*, 1829, Boisduval merely gives "Alpes" as the locality, which naturally has been interpreted in various different meanings. Fortunately in the *Icones* in 1832 he is more explicit and writes: "Cette espèce a été découverte par nous aux environs de Grenoble. Elle a été retrouvée depuis dans le département des Basses Alpes . . . et de la Drôme." The typical race is therefore that of the mountains of the Isère. A decidedly different race occurs in Lozère, which I would describe as:—

Ssp. *lozerica*, nov.—A much smaller race, averaging 40-43mm. in both sexes; typical *neoridas* averages 44-52mm. The colour of the bands on the upperside of the forewings is golden rather than a dark reddish, the spots on the hindwings of the same colour but very small; the black spots are reduced in size on both wings and the white pupils frequently wanting on the hindwings. Sometimes the black spots are also lost, and specimens with quite black hindwings, all markings lost, also occur. In the feature of the hindwing markings, *lozerica* resembles the little race of the Sibillini mountains—*sibyllina*, Vty.—but in this the spots are still smaller and the colour of the

bands darker; the colour of the *lozerica* ♂ being very like that of the *sibyllina* ♀. The underside of the hindwings in *lozerica* is a pale brown, the antemarginal band only very faintly silvered, and the basal area practically unmarked, and merged with the median area. This underside is very different from *sibyllina* where the bands contrast strongly, but it is extremely like the underside in *E. zapateri*, in fact both in colouring and marking *lozerica* might well be taken for a race of the latter. Types from the Causse above Mende, Lozère.

(3) Some races of *E. ottomana*.—One of the most interesting discoveries in connection with the Erebias was made last year by Herr Dannehl, who found a race of *ottomana* on Monte Baldo above lake Garda; which he is describing. This race is closest to the ssp. *balcanica*, Rbl., but differs in being much darker on the upperside, the rusty patches around the apical spots on the forewings being reduced to mere rings, and the spots on the hindwings to mere points, in some cases hardly visible. On the underside of the hindwings, especially in the ♂, the Garda race is strongly banded and therefore strikingly different from the more even colour of *balcanica*. The antemarginal band in the ♀ is also a little better marked than in the ♀ *balcanica*. In his description of the latter, Rebel included specimens from all the known Balkan localities, north of Greece. But *balcanica* varies a good deal, and the form from the Durmitor in north Montenegro, forms a remarkable transition to the Garda race. This race I would describe as:

Race **durmitorensis**, nov.—A transition between *balcanica* and Garda specimens, nearest the former, being similar to it on the underside. All the markings on the upperside are considerably reduced, the black spots being affected as well as the bands, the two apical on the forewings being a little smaller than in *balcanica* and all the others reduced to mere points, or completely lost. In the loss of markings *durmitorensis* resembles Garda specimens, though as a rule the spots on the hindwings in the latter are still smaller. I have one specimen, however, which is indistinguishable from Garda ones on the upperside, but this is not normal, and the underside remains closer to *balcanica*. From these notes it might seem that *durmitorensis* was scarcely worthy of a name, but if attention was not drawn to this race it would be a certain source of trouble, for Durmitor specimens if taken as typical of *balcanica* would mislead anyone into concluding that the Garda race was the same as *balcanica*, or that it occurred in Montenegro, either of which would greatly confuse the records of the future.

(4) Nomenclature.—I take this opportunity to make three changes which unfortunately are necessary:

(a) *E. erinna*, Stg.—This name has already been changed once, by Staudinger himself, but as it is a secondary homonym of *Pap. erina*, Fab. 1787, it must be changed a second time. I propose the name *E. erinnyn*, nov. pro *erinna*, Stg.

(b) *E. tyndarus* var. *retjezatica*, Diósz.—This name is a primary homonym of *manto* var. *retjezatica*, Diósz. which has page priority over the former. For this Transylvanian form of *tyndarus* I propose the name, **transylvaniensis**, nov.

(c) *E. evias orientalis*, Rbl. (1914).—A primary homonym of *E. epiphron orientalis*, Elw. (*Trans. Ent. Soc. Lond.* 1900). I propose the name **rebeli** pro *orientalis*, Rbl.

It may be noted that in the case of (a) *erinna*, Stg., was never a valid name under any rules, only a synonym. If it were not for the rules on homonyms, it would fall under the law of priority. The older name, *erynnis*, is also a secondary homonym, which was why Staudinger changed it, noting that it was not wise to retain two similar names in the genus. He overlooked the *erina* of Fabricius or he would certainly have chosen another name. Whatever changes entomologists may make, it is to be hoped they do not alter the rules on homonyms, which are nearly "fool proof" in use, and of great value in dealing with the earliest names. But for them such familiar names as *E. aethiops* and *E. euryale* would be lost under the law of priority.

[These 3 examples of the homonymic stupidity of the "Zoological" Rules well emphasise the necessity for the Entomologists to make their own Rules which would apply as such to quite 95% of the world's organisms. As this is being done (notoriously slowly) it does not seem wise to add further to the already overloaded nomenclature. (a) *erinna* is not strictly a homonym of *erina*. (b) There seems no practical reason why the name *retyezatica*, Diósz. should not be applied to every *Erebia* species if necessary, even if it were a subspecies and (c) *orientalis* can be applied to every species if necessary.—Hv.J.T.]

Extracts from a letter dated November 7th, 1932 from H. W. Wilson, Hon. Sec., Lancashire and Cheshire Entomological Society.

Only three *Plusia gamma* and *Pyrameis atalanta* have been recorded for Lancashire and Cheshire this year.

Pyrameis cardui in the larval stage is usually observed on the coast sandhills in July, but I am not aware that the species has been seen there in 1932. It had been noted in three of the four preceding years including 1931. Since writing this I have learnt that a single imago was observed early in May at Freshfield, Lancs.

It would be interesting to know what evidence there is of the migration of *Plusia moneta*. The increase in the range of this species has been steady and its northward progress has been noted step by step. In these circumstances there does not seem to be any adequate reason for discarding the theory of its introduction with imported delphiniums, unless of course it has been observed well out to sea.

Pyrameis atalanta is apparently classified with *P. cardui* as a migrant, but its status as a migratory species seems to call for careful consideration. It is curious that although this insect is a very more abundant and more generally distributed species in this country than *P. cardui* the evidence of migration is not nearly so conclusive. I have not seen any reference to a migrating swarm consisting solely of *P. atalanta*, but mere notes of its presence, in much smaller numbers, accompanying migrating hordes of *P. cardui*.*

* See *Ent. Record*, Vol. XI, p. 279, 1899, *P. atalanta* seen in numbers 500 miles from the Lizard bound for S. America and *Ent. Mo. Mag.* No. 809, October 1931, p. 229, which gives an instance contradictory to this view.—T.D.

All the Vanessids, including *Polygonia c-album* (not regarded as a migrant) have a disposition to wander about, and as *P. atalanta* is so strong on the wing its general distribution seems to be sufficiently explained, in the absence of direct evidence of true migration, by its notorious vagrant habits. It certainly seems to be impartial as to the direction of its long distance flights and may be observed on occasion flying fast on an undeviating southerly course. The value as immigrant records of observations of *P. atalanta* in this country is also so dependent on the question of whether the species is capable of surviving the winter here that it is important that the evidence in favour of its being a local resident should be carefully examined. I have noted below a few significant facts which have come under my notice.

(1) Kept in captivity by myself throughout winter and remained vigorous in spring—also by H. W. Head (*Entom. Nov.* 32).

(2) Seen ovipositing in April (Penmaenmawr, N. Wales).

(3) Found drying wings beside empty pupa case in early July (Penmaenmawr) not same year as (2).

(4) Regularly seen in fresh condition in July in many places in N. Wales.

(5) Observers frequently remark on excellent condition of specimens seen in June-July, when *P. cardui* is invariably very worn. The possibility cannot be ignored that such specimens may be bred from ova deposited in April by hibernated butterflies. It will be appreciated that the North Wales observations so early in the year carry greater weight than similar records from the south coast and indicate that local conditions are favourable for the species to maintain itself there from year to year. I would suggest that it is desirable to explore the subject further.

(Letter from H. W. Wilson to Capt. T. Dannreuther, 7.xi.32.)

An Account of my Studies in the Biology of *Pieris rapae*.

By ORAZIO QUERCI.

This year I have made some experiments to get data about the life-history of *Pieris rapae*, Linné, and some other polygenetic species of butterflies. I found an excellent collecting place on the Parkway, near the Art Museum, which by solicitation of the Academy of Natural Sciences of Philadelphia was left to grow wild.

Last year, at Philadelphia, the butterflies began to emerge in April, but in 1932 the weather was bad in early spring and we saw the first Lepidoptera on the wing on May 15th. From that day until now we have collected without interruption taking about 7000 specimens which were brought home still living; some were set in cages, with their host plants, where they laid eggs; others were mounted. Eggs, larvae, chrysalids and imagines were also tried in different temperatures in refrigerators and incubators kindly put to my use by several institutions.

I. BREEDING FROM THE EGGS.

A). The butterflies taken in the field were set in a cage with wild flowers and food plants. Some females laid eggs, and those laid on the same day were reared all together. The lots of eggs

obtained in different days were kept separated. Both in spring and summer the mean temperatures varied from 65° to 75°F, and almost always the eggs hatched in four or five days. In each lot there were a few larvae which grew very rapidly and became full grown in seven days; for others, although being laid by the same female on the same day, full development required 8 to 14 days. The butterflies emerged from the chrysalids in from one to two weeks. From May 19th to September 15th we reared more than 100 lots of eggs, and the whole life-cycle was never shorter than 18 days, and longer than four weeks.

(B). In this fall the temperature was lower; the eggs hatched in 5 to 7 days, the most rapid larvae grew in 10 days, and the imagines emerged after 8 days. The minimum required in development of the imago from the egg is now 23 days instead of 18. I do not yet know the maximum because the other chrysalids of the same lot have not yet emerged.

(C). On May 19th and 20th we obtained two big lots of eggs from specimens of the first brood taken in the field. Those eggs hatched in 5 days, and one of the larvae, from the eggs laid on May 19th, hatched on the 23rd, pupated on May 30th, and a female emerged on June 7th. That female was not well developed and died without laying eggs. On June 8th one male and one female emerged at home from eggs laid on May 20th; they mated on the same day of their birth and the female laid eggs from June 9th to the 13th, which hatched from the 13th to the 17th of the same month. A few larvae, from the lot of eggs laid on June 9th, pupated on the 20th, and the imagines emerged from them on June 27th.

The male and female of the second brood, emerged on June 8th (mounted after their death), are large, with pale and reduced pattern at the tips of the wings; their descendants, born on June 27th and following days are smaller, with a very black and extensive pattern. All the *rapae* which emerged in our cage on June 27th from the home born specimens of the second brood, were placed in another cage, where the females laid many eggs for six days. I wished to mount those specimens of the pure-line third brood, but they were so badly broken, while flying in the cage, that I preferred to set in my collection one male and one female, which emerged on June 29th, from the same lot of eggs, which looked very like those emerged two days before and from which I had six lots of eggs from June 27th to July 2nd.

At the beginning of July it was hot: the thermometer reached up to 93° F., and all the larvae of five lots died. Placing the larvae in an ice box and in front of a fan, a few of them, from the eggs laid on June 29th, were able to survive, and pupated. Two females emerged on July 19th, another female and two males on the 21st. These five specimens of the pure-line fourth brood are very small with pale and reduced pattern. The three females laid many eggs, but, in spite of every care, only three larvae survived the heat and pupated. One male and one female of the pure-line fifth brood, emerged on August 9th, mated and the ♀ laid 19 eggs only. Another female emerged on the 13th, but did not lay eggs as the male of the same lot was dead.

The pure-line *rapae* of the fifth brood are larger than their parents

and with a very black pattern; they resemble their grand-parents of the third brood.

The 19 eggs, from which I expected specimens of the sixth brood, hatched in four days, the larvae became very big, but all died on August 22nd, on a sultry day when the thermometer reached up to 88° F. Thus my series of pure-line breedings remained uncompleted before reaching the sixth brood, but my experiment proves that if I have obtained five consecutive broods from May 20th to August 9th, at least three other broods may occur before the frost in October.

II. TEMPERATURE EXPERIMENTS.

(D). Eggs, larvae and chrysalids tried for 5 to 20 days at 0° F., and later gradually warmed at 30°, 50° and 70° F, died when they returned to normal temperature.

(E). The spring eggs, larvae and chrysalids died when tried for 25 days at 30° F. The experiment was made again with summer specimens, which remained one month at 30°, and later were gradually returned to the temperature of our rooms. About a half of the eggs hatched, the larvae survived and the chrysalids emerged. Another big lot of eggs was tried for 45 days at 30° F. Very few larvae hatched when they returned to normal temperature.

(F). At the temperature of 45° to 50° F, most eggs of a big lot hatched there after 14 days. The larvae were left in that rather cold room with fresh plants. They grew very little and in about one month died.

(G). Some chrysalids, placed in a room at 50° F, emerged there after 27 days, but the Lepidoptera were not able to spread their wings.

(H). Many butterflies of different species remained at 60° F for 18 days. All the males died; most females survived and laid eggs when they were placed in our cages.

(I). A lot of eggs placed at 98° F, hatched there in 4 days. All the larvae died almost at once, also if they were taken out from the incubator they died.

(J). Most larvae in our breeding cages turned yellow and later died when the temperature reached 85° F for a few hours.

(K). It seems that also in the field, many larvae die when it is hotter than 90° F. As the heat does not injure the chrysalids, the butterflies continue to be plentiful, for about one week, after a wave of heat, later they become scarce for about ten days because the high temperature kills both the small and big larvae. Comparing the results of our collecting with the data of the Weather Bureau of Philadelphia, I am finding a perfect concordance.

The scarcity and often the total absence of polygenetic species which sometimes I observed for ten and more days while collecting in Southern Europe, and which I supposed to be intervals between one brood and its following, are but the effect of the waves of heat.

III. LIFE-HISTORY OF *PIERIS RAPAE* AT PHILADELPHIA, IN THE YEAR 1932.

The American authors relate that *rapae* begins to emerge sometimes by the end of March, and often in April. This year the weather was fine in winter but it became bad in early spring, until mid May. On the 15th of this month we took some butterflies.

They continued to emerge until May 20th, and later, until the 26th, only worn specimens were on the wing. The duration of the flying period of the first brood was 12 days. The lack of *Lepidoptera* in the last days of May was not due to the climate as the weather was fine.

In the afternoon of June 2nd we saw a few *rapae* in the City, and the following morning we collected two males and one female. The second brood had begun to emerge 19 days later than the first emerged specimens of the first brood. This period corresponds with the result of our breedings.

To know when the second brood might cease to emerge I had the support of the data of our breedings: minimum of duration of the larval stages 18 days, maximum 28 days, but I was not sure that, both in the cages and in the field, the period would have been the same. A useful indication I might perhaps get by looking at the forms. While most *rapae* of the first brood are small and with a pale apical pattern of reduced extent, many specimens of the second brood are very large, the grey pattern is a little wider and the ocelli are bigger. Fresh *rapae* of this exuberant form were taken until June 22nd, that is 28 days later than May 26th, when we saw the last female of the first brood laying eggs. Worn *rapae* of its largest form were found until June 28th. The flying period of the second brood was 27 days and it was 15 days longer than that (12 days) of the first brood.

In accordance with what I believe to be a rule (when the temperature does not change) the earliest *rapae* of the third brood should begin to emerge on June 19th, but on that day it was raining. The following day there was 63 per cent of sunshine, and we took some *rapae* a little smaller than those of the prevailing form of the second brood but with a wide and very black pattern. Specimens of this form became more frequent later. From June 20th to 28th we saw specimens both of the second and third brood flying together and when, on June 29th, the second brood ended, the black-spotted *rapae* of the third brood remained on the wing alone until July 7th, when the striking form of the fourth brood began to emerge.

I expected that the *rapae* of the third brood would have disappeared from the field by the end of July, instead the specimens with a prominent black pattern continued to emerge in August, September and until now. For some time I was unable to understand why the duration of the third brood might have been so long, while at home *rapae* continued to emerge in no more than 28 days since its egg was laid. Only later I knew that the deep black-spotted *rapae* is also the prevailing form of the fifth brood. This is confirmed by the three pure-line *rapae* of the fifth brood, which emerged in our cages and which are black (not grey) at the tips of their wings.

With the support of these data I suppose that the third brood, began on June 19th or 20th, and ended on July 24th. Some females continued to fly until the 30th, or so. By the end of July the butterflies in our cages had lived long and laid many eggs. The probable flying period of the third brood was 44 days, about 17 days longer than in the second brood.

The fourth brood of *rapae*, which is rare in the hot and barren

countries of Southern Europe and of which we found no specimen in North Africa, has been plentiful at Philadelphia this year. We have taken at least 600 specimens of that pretty form. Last summer the country was always verdant: almost as luxuriant as we have seen in the Tropics in the raining season. At the Weather Bureau I have been told that such a fine summer has not happened in this City for 30 years.

Many specimens of the fourth brood, we collected in the field, are as small and with as pale a pattern as the five pure-line *rapae* which emerged in our cage from the cross of a male of the third brood with a female of the same generation. This seems to prove that the small size of some polygenetic species is produced by heredity and not by environment. Until now I had believed that the butterflies smaller than usual might be the ones which had grown in distress, but I must change my opinion. The largest number of small *Pieris rapae*, *Pontia protodice*, *Colias philodice* and *C. eurytheme* were taken, this year, after the field had been for a long time (during their larval stages) the most luxuriant I have seen in the Temperate Zone. From my breedings I have learned that when the larvae of the *Pieridae* are in distress they die.

The nice *rapae* of the fourth brood began to emerge on July 7th; fresh specimens were found until August 28th, and some worn females until September 3rd. The flying period of this brood has been 59 days.

Many individuals of the fourth brood (form *phaiosoma*, Verity) in my collection look to be from the cross of both third brood male and female, as this last brood remained to fly alone for some time last June. In August we found some very small *rapae* with a black (not pale grey) pattern, which are perhaps the mongrels between the third and fourth broods, which flew together in July.

For the fifth brood I am unable to check whether it began on July 25th and ended on October 7th, according to my forecast, or not. When it began, there still were on the wing specimens of the similar third brood, and in September it mixed with the eighth brood, the form of which is, I believe, the same as in the third and fifth broods. Almost every day, from June 20th until now, we have taken some *rapae* with a very black pattern; this is the most frequent form of the species, being of the third, fifth and eighth broods. Also among the so-called second brood there are specimens which resemble those of the third, etc. This occurs for a cause which I will try to explain later.

The large *rapae* of the second brood did not fly after June 28th; after that day we found only smaller (third and fifth brood) and much smaller (fourth brood) specimens on the wing; also their mongrels were not large. On August 12th a few white *rapae*, which looked like those of the second brood, were found. The appearance of this showy form, which we had not seen for 45 days, happened just when I had foreseen that the sixth brood should begin to emerge, and this allows me to suppose it may be the peculiar form of *rapae* when two pure-bred specimens of the fifth brood cross together or when the third brood crosses with the fifth. Some large *rapae* have been taken almost every day from August 12th until now, but they have not been plentiful, because the fifth brood, having flown together with the

fourth, which is small, produced mongrels of reduced size. I was not able to get in my cages any specimen of the sixth brood, as the 19 larvae, I had from the pure-line *rapae* of the fifth, died after the wave of heat of August 22nd, but from that breeding I learned that the pure sixth brood *rapae* must be large, as the larvae which grew more rapidly and that were trying to pupate when the heat killed them, were very big.

The pure bred *rapae* of the seventh brood, which began to emerge on August 29th, have been scarce, as their pure bred parents had not been plentiful and had mated with those of the fourth and fifth broods and their mongrels. I have no positive data to establish which may be the peculiar form of the seventh generation; I suppose that some small *rapae*, like those of the fourth, but dusted with black scales (owing to the increasing humidity in the fall) may be those of the seventh when one pure-bred male of the sixth crossed with a pure-bred female of the same brood. This year these dwarf *rapae*, the smallest in my series, emerged from chrysalids made by larvae which, in August, had lived among the most luxuriant vegetation. Also in this case, the very reduced size seems not to be produced by environment but by heredity. I think these specimens, flying in September and also in these last days (October 1st to 10th) can not be still those of the fourth brood which should be ended by the beginning of last September.

On August 31st, after the eclipse, a wave of heat (up to 95°F) arrived in this country and continued for some days. In spite of that the *Lepidicum virginicum*, which is the plant that the larvae of *rapae* prefer to eat, remained verdant everywhere, and the period, 18 to 28 days, for the metamorphosis, remained unvaried for the specimens which we bred in September. I suppose that the eighth generation began to emerge on September 18th, but I cannot prove my assertion. I also suppose that the pure bred *rapae* of the eighth brood may be as black spotted as those of the third and fifth broods.

What I observe is that, in spite of the considerable hybridisation, *rapae* has never been so variable as in September: dwarf specimens of the seventh flew together with the giants of the sixth and the black-spotted individuals of the fifth. If some *rapae* of this last form are those of the eighth brood, is not sure but likely.

By the middle of September until now the weather has been unsettled and the field is not so verdant as in summer. The butterflies in the cages die quickly, laying very few eggs. The wave of heat at the beginning of September has lowered the number of butterflies on the wing. However the larvae, which we are rearing, continue to grow almost in the same time as in spring and summer. Perhaps the emergence of the chrysalids will be delayed, but if the weather continues fair for a few days longer, a ninth brood may occur this year although last spring the lepidoptera began to appear very late in the season.

What I have tried to explain above can be shown by the following table where (1) for every brood, I record (2) the day on which the specimens of each brood probably began to emerge; (3) the not so probable

days on which the last specimens of every brood emerged; (4) the day on which they ceased to fly and to lay eggs; and (5) the presumed duration, in days, of each brood:

(1)	I	II	III	IV	V	VI	VII	VIII	IX
(2)	May 15.	Jun. 2.	Jun. 19.	Jul. 7.	Jul. 25.	Aug. 12.	Aug. 29.	Sep. 18.	Oct. ?
(3)	May 20.	Jun. 22.	Jul. 24.	Aug. 28.	Oct. 1.	(a)	(a)	(a)	(a)
(4)	May 26.	Jun. 28.	Jul. 30.	Sep. 3.	Oct. ?	(a)	(a)	(a)	(a)
(5)	12	27	44	59	75?	(b)	(b)	(b)	(b)

(a) A few chrysalids of the VI, some of the VII, many of the VIII and most of the IX brood will go over winter, emerging in the spring of 1933.

(b) It is not possible to state the duration of the flying period of the last broods, which will occur after the winter pause.

In accordance with the data of the preceding table, the broods of *Pieris rapae* have probably emerged and overlapped (at Philadelphia and in the very regular season of 1932) as follow:

from May 15 to May 26, first brood;

from May 27 to June 1, interval between the first and second brood;

from June 2 to June 18, second brood alone;

from Jun. 19 to Jun. 28, second and third;

from Jun. 29 to Jul. 6, third alone;

from Jul. 7 to Jul. 24, third and fourth;

from Jul. 25 to Jul. 30, third, fourth and fifth.

from Jul. 31 to Aug. 11, fourth and fifth;

from Aug. 12 to Aug. 28, fourth, fifth and sixth;

from Aug. 29 to Sept. 3, fourth, fifth, sixth and seventh;

from Sep. 4 to Sep. 17, fifth, sixth, and seventh;

from Sep. 18 to Oct. ?, fifth, sixth, seventh and eighth;

from Oct. ? to Oct. ?, sixth, seventh, eighth and ninth.

Now I hope to be able to get the data which are still missing; later I will check better, with the support of my collection of more than 2000 *rapae*, 300 *protodice*, 200 *philodice* and *eurytheme*, which seem to emerge in the same manner as *rapae*, all mounted and labelled.

I regret not to have been able to breed all the larvae from the eggs laid by one single female of *Pieridae*, to see whether all the imagines are equal among them, or not. I succeeded with the larvae of *Papilio* and *Phyciodes*, when I obtained imagines 98 per 100 of the laid eggs, but the larvae of *Pieridae* are very frail, and from more than 12,000 larvae, which I tried to rear, I had no more than 250 chrysalids.

Also in the field the mortality must be considerable when it is very hot, and still more when it is hot and dry. Some authors say that one female of *rapae* can lay more than 200 eggs; also supposing that the eggs are only 25 of which 15 males and 10 females, if each egg might produce the imago there would be 10 females at the second brood, 100 at the third, 1,000 at the fourth, 10,000 at the fifth, 100,000 at the sixth, 1,000,000 at the seventh, 10,000,000 at the eighth. This does not happen; the butterflies instead of being plentiful are scarce chiefly because the heat killed most larvae.

IV. OBSERVATIONS.

I feel almost sure that the data I record for the beginning of the first to the seventh brood are right. At any rate the error can be no more than one day or two. From May 15th to September 10th the temperature lowered to 50°F only thrice (May 19th and 23rd, and June 8th) during the night. The minimum mean temperature varied from 61.3° in May to 69.4° in August, and in those conditions, the larval stages went ahead with the greatest regularity.

The data which I quote for the end of every brood are tentative, because in each lot of larvae, which we have bred, those which grew slowly always died. The search in the field for the last living female of every brood is not an easy task, not only because it is hard to find her, but also because I based my investigation looking at the form.

That the form of *rapae* should change from a generation to its following is a simple opinion which I base on the fact that the specimens of the second, third, fourth and fifth brood, which I obtained from consecutive breeding, changed at each brood, and that their change corresponding with it had occurred in the field some days before. However I must notice that my series of pure-line *rapae* is very poor. I had many chrysalids of the second brood, most were tried in temperature experiments and in many cases died; also of the third brood I had many pupae, some died when tried at low temperature, others emerged but the specimens were ruined in the cages; of the fourth brood I obtained five specimens, of the fifth only three. This is all.

The study of the variation, referred to the identification of the broods, is also doubtful because also the specimens of the first generations are not alike among themselves in my series of *rapae*, the earliest emerged almost at the same time from May 15th to 20th, there are a few, which look different from the others and seem to have not been produced by chrysalids, which had gone over winter. Among the *rapae* of the second brood, emerged in the first fortnight of June, when certainly the real third brood specimens had not had time to emerge, I see some specimens, with very black spots, which look like those of the true third brood, which surely did not began to emerge before June 19th.

The presence of these specimens which apparently have advanced one brood over their time of emergence, allow me to suppose that either the eggs, or the larvae, or both, might go over winter together with the chrysalids.

From my experiment (E), related at p. 170, I have learned that very few eggs, of a big lot, survived when kept 45 days at 28° to 30°F. At Philadelphia, this year it was never cold in winter for long. The coldest days were: Dec. 8th, 1931, Jan. 23rd, Feb. 1st and 16th, March 9th, 1932, on which the thermometer was 23°F for a short time. Perhaps some eggs, laid in the last fair days of October, 1931 and remained unhatched, were able to survive, and hatched during the first days of April, when it was 67° and 73°F. The larvae did not die, as is shown in my experiment (F) at p. 170, and pupated about on April 23rd, when the max. temperature was 72 to 79°F., but were not able to emerge until middle May, when it was 77° to 87°F. The

presence of these specimens from the egg-cycle are a trouble when they are mixed with those of the chrysalids-cycle in the first brood. Now I am arranging to keep many eggs to see whether they will hatch next spring, or not.

V. CONCLUSION.

My experiments are still incomplete, but at any rate I can state that :

1. *Pieris rapae* and many other polygenetic species are ready to be prolific at any time of the year, as soon as the temperature allows their eggs to hatch. In Southern Portugal we collected many polygenetic butterflies in January of 1928.

2. The cold injures only when it is, probably, below 15°F. Otherwise it only delays the metamorphosis.

3. The intensive heat, above 90°F produces a terrible massacre of larvae, but does not injure either eggs or chrysalids.

4. When the mean temperature is above 60°F, a new brood occurs about every 18 or 19 days. (I have not yet full data for the fall.)

5. The duration of every brood is at least 15 days longer than that of its preceding brood, and therefore all the broods, save the first, overlap.

6. This year, at Philadelphia, with a uniform and favourable season, but shorter than in most years, certainly eight broods have emerged, and probably a ninth may occur. When the butterflies emerge here from April to October there may be 10 or 11 broods. In Southern Spain and Portugal, and in the southern portion of the United states, perhaps 14 broods occur in most years.

PHILADELPHIA. October 11th, 1932.

SCIENTIFIC NOTES AND OBSERVATIONS.

LENGTH OF LIFE OF THE IMAGO OF ORRHODIA LIGULA.—Of this species South (*Moths Brit. Is.*) says "It lives through the winter . . . but does not seem to turn up at willow catkins in the spring," Adkin (*Moths of Eastbourne*) "It is doubtful whether it ever lives through the winter." In this connection it may be interesting to note that I took a specimen at Chipstead, Surrey, on January 30th of this year, at rest on a hawthorn by night, which was fed with sugar at intervals and lived until mid-April.—J. A. Downes.

"FOOD" OF CUCULLIA VERBASCI LARVAE.—This year I collected a few larvae of *C. verbasci* at Box Hill. They were kept in a cardboard honey carton, which as usual had a thin layer of wax on its surface. One day the larvae were given insufficient food, with the result that they nibbled through the wax and started on the cardboard underneath. A friend of mine had a somewhat similar experience with this species. He enclosed them in a muslin sleeve, again with insufficient food, and found next day that they had eaten a hole in it and escaped.—ID.

NOTES ON COLLECTING, etc.

RECENT ADDITIONS TO THE IRISH FAUNA AND FLORA. [Proc. Roy. Irish Acad. XXIX (1929).]—With reference to the comments of Canon G. Foster on the above in the April No. of this journal, page 63, the following are additional records and corrections.

Argyroploce (Diluta) semifasciana, Hb.—Barrett writes, in *British Lepidoptera* (1905), "taken by Canon Cruttwell in Connemara;" not uncommon among sallows, Killycolpy Wood, Co Tyrone, June 1920.

A. (Penthina) corticana, Hb.—Beaten out of birch near Maghery, Co Tyrone; and Churchill, Co Armagh.

A. (Euchromia) rufana, Scop.—Near Stewartstown, Co Tyrone, June 1921.

Epiblema crenana, Hb.—Lisdoonvarna Co. Clare, larva found and imago bred August 1929, W. G. Sheldon: *Entom.* Vol. LXII page 241.

Chimabache (Diurnea) phrygaella, Hb.—Tullylagan Co. Tyrone, October 1921.

Tinea semifulvella, Haw.—Already recorded by Kane from Sligo, Clonbrock, and Bray; near Stewartstown, August 1923.—THOMAS GREER, Milton, Dungannon.

CURRENT NOTES AND SHORT NOTICES.

The Hon. Treasurer will be obliged if those subscribers who have not yet paid for the current volume (1932) will do so *before the end of the year*. The amount (10/-) should be sent to H. W. Andrews, F.E.S., 6, Footscray Road, Eltham, S.E.9.

Several readers have sent or promised to send notes on the season's experiences. We shall be very pleased to have others. General reports seem to tell us that there never was a worse season and yet we hear of captures of unusual species and some of our very young collectors have not done badly.

CORRECTIONS.—By an oversight an incompleated proof of the November number was passed "for press" and thus several important corrections are necessary, besides spelling, etc.

p. 149, l. 13, Poey=Poey: l. 23, *aesculi*=*esculi*.

p. 151, l. 7, insert a " ," before "different" l. 27, *Coll.*=*Coleoptera*.

p. 152, l. 9, "lavendar"="lavender": *stoechus*=*stochas*.

p. 153, l. 40, "Rammn."="Ramb.": l. 41, del "as": Mediterranean.

p. 156, l. 14, insert "1932" after "wing.": "*Aeshna*"="Aeshna": except.

p. 157, l. 34, "*vividior*"="viridior": l. 48, del stop after "nec."

p. 161, l. 3, *Hydraecia*=*Hydroecia*.

p. 162, l. 25, *Stenichus*=*Stenichus*.

p. 163, l. 35, the generic initial "O." should be "O.": journeys.

p. 164, l. 8, *Aglaia*=*Aglia*.

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All MS. and EDITORIAL MATTER should be sent and all PROOFS returned to H_r. J. TURNER, "Latemar," West Drive, Cheam.

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EXCHANGES.

Subscribers may have Lists of Duplicates and Desiderata inserted free of charge. They should be sent to Mr. H_r. J. TURNER, "Latemar," West Drive, Cheam.

Duplicates.—S. Andrenaeformis, Bred 1928, well set on black pins, with data.

Desiderata.—Very numerous British Macro Lepidoptera.—J. W. Woolhouse, Hill House, Frances Street, Chesham, Bucks.

Desiderata.—Species of Dolerine and Nematine sawflies not in my collection; list sent.—R. C. L. Perkins, 4, Thurlstone Road, Newton Abbot.

Duplicates.—Albimaculata*, sparganii*.

Desiderata.—Ova of D.oo. pupae of X. gilvago, D. caesia. A. J. Wightman, "Aurago," Bromfields, Pulborough, Sussex.

EXCHANGES.—Living Eggs of Catocala fraxini and sponsea, exchange for butterflies of British Isles.—C. Zacher' Erfurt, Weimar, Street 13, Germany.

Duplicates.—Pyralina*, Salicis, Ianthina*, Orbicularia*, Repandata in variety, Doubledayaria, Black rhomboidaria*, Black virgularia* and others.

Desiderata.—Hyale, Welsh aurinia, Polychloros, Tiphon Agathina, Lunigera, Lucerneae, Neglecta, Diffinis, Populeti, Gothica v. gothicina, White Leporina, Tridens Putrescens, Littoralis, Typhae v. fraterna, Rurea v. Combusta, Gilvago, Fulvago v. flavescens, Litorata v. nigrofulvata. Harold B. Williams, Woodcote, 36, Manorgate Road, Kingston Surrey.

Duplicates.—A large number of species of European and Palaearctic Rhopalocera and Heterocera.

Desiderata.—All British species especially those illustrating characteristics of an island fauna. Dr. Lor. Kolb, München 54, Dachauer-str. 409, Germany, and Franz Daniel, München, Bayer-str. 77, Germany.

URGENT.—Wanted English (Cumberland) Erebia epiphron. Adequate exchange will be made in European Lepidoptera.—B. C. S. Warren, 14, Avenue de l'Eglise Anglaise, Lausanne, Switzerland.

I am seeking an opportunity of exchanging Macro- and Micro-Lepidoptera with English collectors and beg to send list of duplicates.—J. Soffner, Trautenau (Bezirkshörde), Bohemia, Tschechoslowakische Republik.

MEETINGS OF SOCIETIES.

Entomological Society of London.—41, Queen's Gate, South Kensington, S.W. 7. 8 p.m. January 18th, 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. January 12th, 26th, Annual Meeting.—Hon. Secretary, S. N. A. Jacobs, "Ditchling," Hayes Lane, Bromley, Kent.

The London Natural History Society.—Meetings first four Tuesdays in the month at 6.30 p.m. at the London School of Hygiene and Tropical Medicine, Keppel Street, Gower Street, W.C.1. Visitors admitted by ticket which may be obtained through Members, or from the Hon. Sec. A. B. Hornblower, 91, Queen's Road, Buckhurst Hill, Essex.

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All communications should be addressed to the Acting Editor, Hr. J. TURNER, "Latemar," West Drive, Cheam.

IMPORTANT

TO ENTOMOLOGICAL SOCIETIES and MUSEUMS.

BACK VOLUMES OF

The Entomologist's Record and Journal of Variation.

(Vols. I-XXXVI.)

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 *Taenioctenidae*—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*, *Eponida lichenea*, *Heliophobus hispidus*—Captures at light—Aberdeenshire notes, etc., etc., 360 pp.

CONTENTS OF VOL. II.

MELANISM AND MELANOCHROISM—Bibliography—Notes on Collecting—Articles on VARIATION (many)—How to breed *Agrotis luuigera*, *Sesia sphegiformis*, *Taenioctenaria opima*—Collecting on the Norfolk Broads—Wing development—Hybridising *Amphidasys prodromaria* and *A. betularia*—Melanism and Temperature—Differentiation of *Dianthacis*—Disuse of wings—Fauna of Dulwich, Sidmouth, S. London—Generic nomenclature and the *Acronyctidae*—A fortnight at Bannoch—Heredity in Lepidoptera—Notes on Genus *ZYGÆNA* (*Anthrocera*)—Hybrids—Hymenoptera—Lifehistory of *Gonophora derasa*, etc., etc., 312 pp.

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ascribed to *basilinea* by its author in his Vol. I. of additions since the issue of Seitz *Pal. Noctuae*.

ORIG. DESCRIP.—“Has a pale clear brown colour of forewing running slightly into reddish, while in *lama* it is light (yellowish) grey. The females agree consistently in having the hindwings almost uniformly darker grey brownish; the central line of the hindwing is also clearly developed on the upperside. In the single ♂ obtained the colour of the forewing is more reddish than in the females; but the hindwings of the male are darker than in *lama*, although not so dark by far as those of the females of *dubiosa*. The eyes are naked as in *lama*.”

Apamea Tr. (1816-25) Tutt, Gn., Barr. [*Hadena*, Schrnk. (1802) Stdgr., Meyr., Culot: *Xylina*, Tr. (1816-25): *Trachea*, Tr. (1816-25) Hamps.: *Parastichtis*, Hb. (1827) Warr.-Seitz: *Hama*, Steph. (1829): *Luperina*, Dup. (1842)] *pabulatricula*, Brahm. (1791) = *connexa*, Bork. (1792).

Bork., *Nat. Eur. Schm.*, IV. 360, although he referred to the name *pabulatricula* (mis-spelled *papulatricula*) of Brahm, *Scriba's Beitr.* III. 259, pl. XVIII., renamed the species *connexa*, a name which stood many years for this species.

Even Treit. *l.c.* V(2). 105 (1825), used the name *connexa* giving Brahm's name as a synonym. So did Gn. and Dup.

The spelling *papulatricula* was used on the plate in Scriba but *pabulatricula* was used in the text.

Tutt *B.N.* I. 86 (1891): Barr., *Lep. Br. Is.* IV. 398, pl. 184 (1897): Stdgr. *Cat.* IIIed. 175 (1901): Splr. *Schm. Eur.* I. 196, pl. 41 (1905): *South Moths Br. Is.*, I. 273, pl. 132 (1907): Hamp. *Lep. Phal.* VII. 172 (1908): Warr.-Seitz *Pal. Noct.* III. 168, pl. 40d (1911): Culot *N. et. G.* I(1). 165, pl. 30 (1909-13).

Hb., *l.c.*, 462 (1808-18), figured a form of the species under the name *elota*, in which there was a wide transverse brown clouded band with the almost black inner-marginal square spot included. Subsequently in his *Text* Hb. p. 182 (1805-18) altered this to *connexa*.

Ernst and Ingr. *l.c.* VI., p. 116, fig. 351 (1788), figure two examples without name, the one nearer to the fig. of Brahm but darker clouded, the other closely resembling the *elota* of Hb.

Dup. *Sup. l.c.* pl. 68, 4, is a good figure but somewhat too bluish grey.

Spuler, *l.c.* 196, treats *semibrunnea*, Petersen, as the same as *elota*, Hb.

Culot, *l.c.* I(1). pl. 30, has an excellent figure.

Of the variation Barrett says—“Hardly variable except in the greater or less completeness of the broad central band, and in the tinge of brown over the grey-white ground colour.”

Barrett records a specimen, “of which the ground colour is wholly dark grey, and the central band tinged with brown.”

List of Forms and Names to be considered:—

pabulatricula, Brahm *Ins. Kal.* II(1). 395 (1791).

connexa, Bork. *Naturg.* IV. 360 (1792).

ab. *elota*, Hb. *Saml.* 462 (1808-18).

ab. *semibrunnea*, Ptrsn. *Beitr. (Lep.) Kunde Est. &c.* IV. 84 (1902).

ab. *conjuncta*, Splr. *Schm. Eur.* I. 196, pl. 41 (1905).

Tutt dealt with *elota* with ochreous central and basal area and with the typical form *pabulatricula* = *connexa*.

ab. *semibrunnea*, Petersen, *Beitr. Lep. Fn. Est. &c.* 84 (1902.)

ORIG. DESCRIPT.—“There occur examples in which the basal half of the forewings up to the reniform and the outer transverse line is uniformly brown or brown black, so that the forewings have a dark basal half and a pale marginal half.” Wesenburg-Reval.

Splr. *l.c.*, 196, says that *semibrunnea* is the same as *elota*, Hb.

ab. *conjuncta*, Splr., *Schm. Eur.* I., 196 (1905).

ORIG. DESCRIPT.—“A form in which the pale basal area (of the type) is united with the outer light marginal area by a broad yellowish white band above the orbicular and reniform along the costa.”

Apamea, Tr. (1816-25) Steph., Tutt, Barr. [*Hadena*, Schrnk. (1802) Meyr.: *Parastichtis*, Hb. (1822) Warr.-Seitz: *Oligia*, Hb. (1822) Hamps.: *Miana*, Steph. (1829) Stdgr., Splr., Culot.] *ophiogramma*, Esp.

Tutt *Brit. Noct.* I. 87 (1891): Barr. *Lep. Br. Is.* IV. 399, pl. 184 (1897): Stdgr. *Cat.* III ed. 164 (1901): Splr. *Schm. Eur.* I. 180, pl. 41 (1906): South *Moths Br. I.* I. 274, pl. 132 (1907): Hamps. *Lep. Phal.* VII. 374 (1908): Culot *Noct. et G.* I(1). 121, pl. 21 (1909-13): Warr.-Seitz *Pal. Noct.* III. 170, pl. 40f. (1911).

Esper's fig. on pl. 182, Vol. IV., is very wooden and rough, and the darker markings are much too dark in contrast with the light ground which errs in being much too smooth and light; no lunule on h-wing.

Ernst and Engr. *l.c.*, VIII. fig. 529 is more like Esper's fig. and by no means good.

Hübner, *l.c.*, fig. 355, correct in contour of marking is too much slate in colour and no suggestion of the normal ochreous suffusion, *i.e.*, a badly coloured figure.

Treit in 1825 said that the fig. 529 of Ernst and Engr. was better than Hübner's and much better than Esper's.

Dup. *l.c.* pl. 109 vol. VII. has a good figure but the dark area is too contrasted with the ground and there is very little trace of the yellow ochreous.

Wood's fig. *Ind.* 272, is a somewhat dark form and not like Hübner's fig. in colour at all. The former has a rich brown tone over all, the latter a pale grey or slate tone.

Freyer's fig. on pl. 75 is better than those of his predecessors but not very successful. It is between Esper's and Hübner's in general tone of colour.

South, *l.c.*, I., pl. 132 gives a good fig. except that the lighter ground hardly shows the tone of average examples.

Warr.-S., *l.c.*, pl. 40 f. has one of the best figures of the yellowish ochreous typical form.

Culot has an excellent figure, *l.c.*, I(1). pl. 21.

Since Haworth identifies his *biloba* with Hübner's figure which is not coloured as Esper's fig. and description, the name *biloba* should take the place of *ophiogramma* for Hübner's fig. This is supported by Haworth's description "*alae anticae griseae*," while Esper's figure is yellowish ochreous.

Variation according to Barrett.—"Usually not very variable."

Barrett records specimens, "having the ground colour pale slate-grey, dark slate, and smoky slate with intermediates."

He also records a specimen "which has the orbicular stigma and a blotch near the hind margin rich orange-yellow."

List of Names and Forms to be considered:

ophiogramma, Esp. *Abbil.* IV(3). 10, pl. 182 (1794?).

ophiogramma, Hb. *Noct.* 355 (1802-8).

ab. *biloba*, Haw. *Lep. Br.* 209 (1806-10).

ab. *moerens*, Stdgr. *Cat.* 164 (1901).

Tutt dealt with the typical form and ab. *biloba*.

ab. *moerens*, Stdgr. *Cat.* IIIed. 164 (1901).

FIG.—Snell. *Ent. Tijds.* pl. XII. 3 (1897).

ORIG. DESCRIPT.—"Multo obscurior, al. ant. fere unicolor nigricantibus; ab. frequens."

Ground colour blackish; forewing with the grey area suffused with fuscous. (Hamp. *Lep. Ph.* VII. 375).

Apamea, Tr. (1816-25) Gn., Tutt, New. [*Hadena*, Schrnk. (1802) Fr., Culot, Splr., Steph., Stdgr.; *Parastichtis*, Hb. (1822) Warr.-S.: *Trachea*, Tr. (1816-25) Hamp.] *gemina*, Hb. (1808-18) [= *remissa*, Hb. (1808)].

Hübner, *l.c.*, figs. 482, 483 are labelled *gemina*, but 483 is obviously not a *gemina* but *thalassina*. Hübner in his *Text.* p. 193 refers to 483 only as *gemina*. Tutt, B.N., does not refer to fig. 483 but only to 482 which may be considered the type figure of the *gemina* form. This was published between 1808 and 1818.

Hübner, *l.c.* fig. 423 is labelled *remissa*, a good figure of a form with an extremely light ground and dark band. This was published in 1808, and consequently should be considered in the light of subsequent discovery that *gemina* and *remissa* are one species, the typical form and name.

Haworth, *Lep. Brit.* 189 gave a description of a moth and referred it to Hübner's *remissa* 423. This was published in 1806-1810 and must have been subsequent to Hübner. On the same page Haworth described a variety of *remissa* under the name *obscura* ("varietas praecedentis"). Whereas *remissa* was a *genistae*-like insect, *obscura* was described as "*Alae anticae magis obscurae, seu fusco-cinereae, macula magna basi costali pallidior, lineolae atrae internè adnatâ. Juxta marginem posticum striga obsoletissima undulata vix pallescens.*

Posticae cinereo-fuscescentes," and thus described and preceded the figure of *gemina*, Hübner 482.

The actual Synonymy for the two chief forms would thus appear to be according to priority.

remissa, Hub., 423 (Haw.).

f. *obscura*, Haw. (*gemina*, Hb. 482).

Both Hampson and Warren-Seitz use the name *obscura*, Haw. for this species.

The *saturna* of the *Verz.* (1775) p. 84, is said to be the *gemina* form. It was described by Bork. *Naturges.*, IV. 377 (1792). Teste Wrbnrg. *Beitr.* II. 175 (1864). H.-S. *Bearb.* II. 24 (index) also teste.

Tutt *Ent.* XXII. 302 (1889): *Brit. Noct.* I. 87 (1891): *Smith Cat. Noct. N. Am.* 132 (1893): Barrett, *Lep. Br. Is.* IV. 386 (1897): *Stdgr. Cat.* III. ed. 175 (1901): *Splr. Schm. Eur.* I. 194 (1905): *South Moths. Br. Is.* I. 272 (1907): *Hamps. Cat. Lep. Phal.* VII. 180 (1908): *Warr.-Seitz, Pal. Noct.* III. 168 (1911): *Culot Noct. et. Geoms.* I(1). 162 (1909-13): *Draudt-Seitz Am. Noct.* VII. 214 (1925).

Ernst and Engr., *Pap. d' Eur.* VII. f. 471 depict a very brightly variegated form of *remissa* (1790).

Of his *obscura*, Haw. said, "Greatly allied to *remissa* and its affinities, and probably a variety."

Stephens, *Ill.* II. 181-184 treats *remissa*, *oblonga* and *obscura* as three separate species although with some doubt; and says of *oblonga*, Haw. "The resemblance between this and *remissa* is almost too close to warrant their separation."

Treit. *Schm.* V(1). 346, commends Hübner's fig. 482 as being good but the general colour too dark. He says that 483 is undoubtedly *thalassina*.

Dup. *Hist. Nat.* VI. plt. 91, has a very fair figure of *gemina* probably representing the *intermedia*, Tutt. On plt. 107, fig. 5 named *anceps*, is a very fair figure of *gemina* but too dark, black brown, for a British example.

Spuler figures *remissa*, *Schm. Eur.* plt. 40, 24 in which the sub-marginal area devoid of marking is rather too dark.

Culot *l.c.*, plt. 30 has good figures of the two dominant forms.

Freyer, *N. Beitr.* I. 49, says that Hüb. f. 483 labelled *gemina* is *thalassina* and notes the fig. of Hüb. 482 as too dark suffused. He says that Hübner's figure 423 *remissa* appears to have been drawn from an old and worn specimen whereas his own figure plt. 29 is from a fresh bred example. H.-S. says that Freyer's fig. plt. 29 is good but slightly too white in pts. and that the colour of Freyer plt. 29 is better than Hübner's 482.

Neither Hüb. nor Frey depict the uniform mottled form with lines and stigmata obscure, which we have been accustomed to call *gemina*, and which agrees so well with Haworth's description of *obscura*.

Wood, *Ind.* fig. 1663 figures *obscura* from Haworth's cabinet, p. 240, and fig. 237 depicts a *remissa* form without any lighter areas (whitish) as in the typical *genistae*-like typical fig. Hüb. 423. The black \equiv is present.

Her.-Schäf. *Bearb.* IV. fig. 584, has an exceedingly good figure of *remissa*, and, *l.c.*, IV. p. 280, says that Hübner's fig. 483 labelled

gemina is *thalassina*. He also says, *l.c.*, IV. p. 274 that he does not know an example so dark as Hübner's 482 (481 in error) and that the toothed marginal line is incorrect. He does not like the fig. 423 *remissa* of Hb. The wings are too long, the ground too light, the characteristic basal line is correct, but the central band too much emphasised and its border near the reniform far too pale.

Of the constantly recurrent "grey form with dark black blotch from \curvearrowright -like mark under stigmata, *remissa*," Barrett says—"In some examples the base of the costa is also clouded with pale grey down to the black central streak; but the central space around the stigmata and the greater portion of the basal hind marginal areas remain of the usual brown-black or purple-brown, and has a striking and distinct appearance, and is constantly mistaken for a different species or mistaken for *Hadena genistae*."

The *remissa* form "varies in shade of colour and all intermediate gradations between it and the type are met with; while in northern and western districts its peculiarities are intensified." Those from the Waterford area "unusually large, clouded with bright brown and the stigmata conspicuously yellowish-white."

Barrett records a very old example which, "has a broad and distinct stripe of pale ochreous down the median nervure, completely dividing the central dark colouring."

He also records "another of an almost unicolorous grey-brown."

And he reports a variety from Cork, "smaller dark grey, but the markings all traceable."

From near Waterford Barrett records "the more typical form tinged with red-brown, and with the stigmata yellow."

The two dominant forms *remissa* and *obscura* (*gemina*) are suggestive of two species at a glance and early authors all considered them as such; even H.-S. treats them as such.

The forms to be considered are:—

remissa, Hb. *Noct.* 423 (1808).

f. obscura, Haw. *Lep. Brit.* 189 (1806-10): Wood. *Ind.* 1663, pl. 52.

ab. *oblonga*, Haw. *l.c.*

gemina, Hb. *Noct.* 482 (1808-1818): Text p. 193.

ab. *submissa*, Tr. *Schm.* V(1). 346 (1816-25): Seitz *Pal. Noct.* III., pl. 40d.

? *anceps*, Dup. *Hist. Nat.* VII. 109 (1827) pl. 107, 5.

subsp. *indocilis*, Walk. *Cat. Noct. B.M.* IX. 178 (1856): Seitz *Am. Noct.* VII. pl. 31c.

ab. *intermedia-grisea*, Tutt *Ent.* XXII. 304 (1889): *Brit. Noct.* I. 89 (1891).

ab. *intermedia-rufa*, Tutt, *l.c.*

ab. *rufescens*, Tutt, *l.c.*

ab. *supermissa*, Splr. *Schm. Eur.* I. 194 (1905).

Tutt dealt with (1) *gemina* and (2) *obscura*, the obscure form; (3) the intermediate form *oblonga* with dark costa and fascia and pale stigmata; (4) and (5) *intermedia-grisea* and *intermedia-rufa* both with the dark \curvearrowright mark; (6) *remissa* the *genistae*-like form; (7) *rufescens*, a red or brown grey mottled form.

cinereous, with two transverse lines and very broad borders of a brownish hue." New York; Massachusetts.

ab. *supermissa*, Splr. *Schm. Eur.* I. 194 (1905).

ORIG. DESCRIP.—“The basal area on the inside of the transverse line, also frequently the costa, becomes considerably paler, and the greyish white or yellowish colour extends much forward, joining with the reniform, while the pale orbicular stands out in the dark central area and inside the waved line there is only the dark claviform near vein III. but the marginal area outside the waved line is much darkened.”

Apamea, Tr. (1816-25) Fr., Gn., New. [*Polia*, Tr. (1816-25) H.-S., Bdv.: *Trachea*, Tr. (1816-25) Hamps.: *Hadena*, Schrnk (1802) Fr. Stdgr., Splr.: *Parastichtis*, Hb. (1822) Warr.-Seitz.] *unanimis*, Hb. (1808-18).

Tutt. *Brit. Noct.* I. 90 (1891): Barr. *Lep. Br. Is.* IV. 387 (1897): Stdgr. *Cat.* IIIed. 175 (1901): Splr. *Schm. Eur.* I. 195 (1905): South *Moths Br. Is.* I. 273 (1907): Hamps. *Lep. Phal.* VII. 184 (1908): Warr.-Seitz. *Pal. Noct.* III. 168 (1911): Culot, *N. et G.* I(1). 163 (1909-13).

Hübner's fig. 556 the type is not a good one. The distinguishing characters of the species such as the reniform, are scarcely in evidence. H.-S. says it is recognisable.

Newman's figure, p. 305, is too large, and also depicts the reniform badly. Unaccountably the text says “larger” than *gemina*, whereas it should be “smaller.”

Guenée, V. 209 (1852), says that no good figure had yet been made of it.

Freyer, *N. Beitr.*, 144 says that because of the close resemblance of the larva of this species to those of *gemina* and *rurea* he thinks it would better be classified in the genus *Hadena* than in *Apamea*.

Freyer's fig. pl. 371, is good although the markings are somewhat too bold. H.-S. says this fig. is good.

Steph., *Ill.* III. 9 (1829), never having seen it, and trusting to Treit.'s remarks, doubts it as a species. He accepts, *l.c.* 8, the *secalina* of Haw. as a species.

Treit., *Schm.* X(2). 62 (1834), in a long dissertation suggests that *unanimis* is connected with *didyma* but, in his *Sys. Verz.* p. 250, places it as a var. of *gemina*.

Wood has a recognisable figure, *Ind.* 265 (1834).

Warr.-Seitz., *Pal. Noct.* pl. 40c has a good figure of the typical form and figs. of *secalina*, and of each of his three newly described forms (see below).

Of the Variation Barrett says—“A little variable in the depth of the ground colour, more so in the extent and intensity of the red-brown or dark marbling; this last being in some individuals almost absent from the dorsal margin and from a broad band beyond the second line, while in others it is uniform to the exclusion of central darker clouding.”

Barrett records "one having a broad pale yellow-brown band before the hind margin."

The forms to be considered are:—

unanymis. Hb. Noct. 556 (1808-18).

f. *secalina*, Haw. Lep. Brit. 210 (1806 10): Seitz l.c. pl. 4c (1911).

scortea, H.-S. (Led.), Sys. Bearb. II. Nach. I. 57, fig. 583 (1845).

ab. *rufithorax*, Warr.-Seitz, Pal. Noct. III. 168, pl. 40c. (1911).

ab. *fasciata*, Warr.-Seitz, l.c. pl. 40d.

ab. *semiochrea*, Warr.-Seitz, l.c. pl. 40d.

ab. *nigrobrunnea*, Hoffmn., Zt. Oest. Ent. Ver. I. 14 (1916).

Tutt dealt with the two forms (1) *unanymis* without the \neg mark and without central dark band. (2) *secalina* with the \neg mark and with a darker central area.

f. *scortea*, H.-S. (Led.).

Staudinger, Cat. IIIed. (1901), included the *scortea*, H.-S. fig. 583, as this species. H.-S. says, Nachtr. to vol. II. p. 57, that although Lederer considered figs. 482-483 as representing a new species which he named *scortea*, he himself considered that they were both forms of *gemina*. The figures are both a close approach to fig. 484 which is rightly named *remissa*, of which it is a good figure.

Hampson put *scortea* as a syn. of *unanymis*, and Warr.-Seitz does the same.

ab. *rufithorax*, Warr.-Seitz, Pal. Noct. III. 168 (1911).

FIG.—l.c. 40c.

ORIG. DESCRIP.—"With black streak on submedian fold, sometimes with paler basal and submarginal areas, and has the whole head and thorax including the patagia bright rufous." Wiesbaden.

ab. *fasciata*, Warr.-Seitz, l.c.

FIG.—l.c. 40d.

ORIG. DESCRIP.—"Has the median area filled up with dark fuscous, the pale upper stigmata and the inner and outer lines more conspicuous; the head and thorax blackish."

ab. *semiochrea*, Warr.-Seitz, l.c.

FIG.—l.c. 40d.

ORIG. DESCRIP.—"Has the postmedian area between outer and submarginal lines and the lower part of the median area pale ochreous, and might easily be mistaken for an example of *secalis* ab. *oculea*, Guen."

ab. *nigrobrunnea*, Hoffm. Zeit. Oest. Ent. Ver. I. 14 (1916).

ORIG. DESCRIP.—"Dark brown, almost without marking. The generally light transverse markings are not apparent. The most that can be distinguished is the outer line towards the inner margin. The stigma is outwardly—as in the typical form—finely white margined. This form corresponds to the *leucostigma* form of *H. secalis*." Bred from Krieglacher.

Apamea, Ochs. (1816-1825) Frr., Tutt, Barr., South. [*Hadena*, Schrnk. (1802) Stdgr., Splr., Cul., Meyr.: *Trachea*, Tr. (1816-25) Hamp.: *Polia*, Tr. (1816-25) Hb. (1806) H.-S.: *Parastichtis*, Hb. (1827) Warr.-Seitz,] *didyma*, Esp. (1786) = *oculea*, L. (1761) = ?? *secalis*, L. (1758).

The dates of the publication of the sections of Vol. IV. of Esper (*Noct.*) are unknown except that on the title-page of IV(1) is the date 1786. Most of the plates were issued long before the letterpress and descriptions, hence early authors attributed the name *didyma* to Borkhausen. Borkhausen himself refers to Esper's plate but not to the page, hence we may infer that Esper's text dealing with plate 126 was not issued until after Borkhausen's *Noctua* Vol. IV. was published. Esper has priority. And we find that Esper's text p. 378, to plate 126 f. 7, refers to Borkhausen's text, p. 465. Bork. calls 126, f. 7, *oculea*, Fb. but Esper says that cannot be as it has the characteristic black line of *didyma* above the inner margin.

Guenée says that *didyma* is the *oculea* of Linné and Fabricius. But we have shown ante p. (167). that *oculea*, L. is the prior name of *nictitans*, Linn. Hence *didyma*, Esp. is the priority name.

Werneburg *Stett. e. Zt.*, 52 (1858), identified *secalis*, L. as *stramentalis*, Tr. This, after becoming acquainted with the citation quoted by Linn., viz. Rolander in *Acta Holm.* 62 (1752), he considered an error, and said that on the evidence of all three stages it was the *ochrolenca*, Tr. cf. Fuess. *Nen. Mag.* II. 355.

Schöyen, *Stett. e. Zt.* 389 (1879) discusses the identity of *secalis*, L. at great length and finally decides that *didyma*, Esp. is *secalis*, L. in spite of Linné's own statement that it is a Pyrale. Stdgr., Hamp., South, and Warr.-Seitz use *secalis*, while Meyr. uses *didyma*.

Werneburg, ascribes the *brunnea*, Hüfn. to *didyma*, Tr. Hufnagel's description runs "Whitespot, dull brown with darkbrown shading and a white spot in the middle of the fore-wing," which Werneburg says denotes the lighter variety of *didyma*. He goes on to say that the citation of Kleemann. pl. X. fig. B. by Rottemburg to *brunnea*, Hüfn. is quite excusable, since the figure is so poor, but that the notes of Kleemann are quite conclusive that he was giving a figure of *nictitans*.

Tutt. *Brit. Noct.* I. 91. (1891): Barrett, *Lep. Br. Is.*, IV. 394 (1897): Stdgr. *Cat.* IIIed. 175 (1901): Splr. *Schn. Eur.* I. 195. (1905): South, *Moths. Br. Is.* I. 274 (1907): Hamp. *Lep. Phal.* VII. 211 (1908): Warr.-Seitz., *Pal. Noct.* III. 171 (1911): Culot *Noct. et G.* I(1). 163 (1909-13).

Ernst. and Engr. *Pap. d'Eur.* have 9 figs. on pls. 256-7 Vol. VI.

Treit. *l.c.* V(2) 87 points out that Hb. in his text cites *secalina* to no. 19 on p. 183 instead of to no. 18. the fig. Hb. 420 being *secalina*.

Freyer says, *Nen. Beitr.* I. 139, that Esper's fig. 6 on pl. 47 (126) as well as the accompanying description belong to true *nictitans* = *chrysographa*, Hb.; but that fig. 7. *l.c.* was certainly *didyma* to which Hübner's fig. 420 *secalina* was undoubtedly to be referred.

Freyer, *Nen. Beitr.*, pl. 443, has two figs. of *didyma* both good. The second is very comparable to the *vilis*, Hb., but has the white markings, lines and dots very delicately put in, while in Hb's fig. they are very thick and hard. The ground colour is the same.

H.-S., *Bearb.* II. 274, criticising figures of authors, says, Freyer. I. plt. 75 recognisable; Hb. 619, 620 (*nictitans*) usual red-brown specimens; Hb. 97 quite unrecognisable; Hb. 420 (*secalina*) a large fresh coloured example; Hb. 511 (*vilis*) "I can in no sense place it here." He puts *oculea*, Fb. and *leucostigma*, Esp. as synonyms of *didyma* (Bork.) Esp.

H.-S. says, *l.c.* II. 275, "The colour of *moderata* is brown-grey duller than that of all specimens of *didyma*. The reniform is smaller, narrower, without any appearance of white, the marking on the inner portion of the margin very sharp, veins 3 and 4 are somewhat lighter where they start from it." The example was supplied by Eversmann himself.

Warr.-Seitz. gives 12(10) figures. 1. *I-niger* should be *I-niger-albo*, 2. *didyma*, 3. *oculea*, 4. *rava* should be *rava-flavo*, 5. *grisea* probably *grisea-flavo*, 6. *reticulata* should be *reticulata-flavo*, 7. *nictitans* but does not show the black — characteristic of *nictitans*, 8. *leucostigma* should be *albostigma*, 9. *pulverosa*, and 10. *lilacina* both new forms, 11. *moderata* treated as a true species, 12. *struvei* also treated as a true species.

Culot, *N. et G.*, I(1), gives beautiful figures of *oculea*, Gn., *secalis*, *armoricæ*, *nictitans*, *leucostigma*, *lugens*, *struvei* (2). Neither of the two figures of *struvei* are pure white in the characteristic area, as descriptions in Hamp., Seitz and Culot state.

Barrett describes the variation thus:—"Variable in an extraordinary degree in all localities. The most abundant is that of those having the forewings brown in some shade, marbled or mottled *all over* with darker; but one of extreme frequency has also a faint or more distinct central band from a blackening of the space between the first and second lines; and another, also plentiful, has the dorsal margin and the broad band between the second and subterminal lines of some light bright brown, while the enclosed portion forms a very large, darker red-brown, purple brown, or umbreous triangle along the costal half of the wing; these characters are partially combined in those specimens which with the broad pale hinder band have a dark central space, and in these there is in some individuals a deep black horizontal bar, above the dorsal margin, joining the first and second lines.

"Another and rather different range of variation is of uniform deep purplish brown to brown black, or dull black, often with the subterminal line more visible and yellow, or dotted with yellow; often also with blacker marbling on the central band; very often with a brightly contrasting yellow, orange, or white reniform stigma. It may be remarked that this stigma is most eccentric in colour, varying through yellow, brown, and white, in every different form of the insect, and apparently in no way governed by any tendency in them to be darker or paler. In all varieties the thorax follows the colour of the forewings, except that the back crest, or the portion lying between its tufts is erratic in colour, usually not differing, but in some examples without reference to their colour, yellow, orange, reddish-brown, or even chestnut."

Barrett records a specimen, "of which the dorsal half of the wing and the broad hinder band are of a pale *cream* colour, with the costal region and hind marginal clouds blackish brown."

He also records another "from Ireland which is actually tinged with rosy-purple."

The names and forms to be considered are as follow.—

- [*secalis*, Linn. *Sys. Nat.* Xed. 519 (1758).]
 [*oculea*, Linn. *Fn. Suec.* 132 (1761)].
 ?? *bombycina*, Hufn. *Berl. Mag.* III. (1766).
didyma, Esp. *Abbild.* IV. 378. plt. 126. 7 (1786).
 ab. *lancea*, Esp. *l.c.* IV(2). 663. plt. 174 (1786?).
 ab. *nictitans*, Esp. *l.c.* IV. 375. plt. 126. 6 (1786).
 ab. *leucostigma*, Esp. *l.c.* IV(2). 542. plt. 159 (1786?).
lamda, View. *Tabell.* II. 81 (1790).
 ab. *secalina*, Hb. *Noct.* 420 (1808).
 ab. *I-niger*, Haw. *Lep. Brit.* 210 (1806-10).
 ab. *rava*, Haw. *l.c.* 209 (1806-10).
 [ab. *secalina*, Haw. *l.c.* 210 (1806-10).]
 ab. *furca*, Haw. *l.c.* 209 (1806-10).
 ab. *lugens*, Haw. *l.c.* 212 (1806-10).
 ab. *vilis*, Hb. *Noct.* 511 (1808-18).
 ab. *moderata*, Evers. *Bull. Mosc.* 547 (1843).
 ab. *oculea*, Gn. *Noct.* V. 210 (1852).
 ab. *struvei*, Rag. *Nat. Sicil.* IV. 274, plt. 4. f. 7 (1885). Culot *N. d*
G. I(1). 164 (1909).
 ab. *grisea-albo*, Tutt. *Brit. Noct.* I. 93 (1891).
 ab. *grisea-flavo*, Tutt. *l.c.*
 ab. *reticulata-albo*, Tutt. *l.c.*
 ab. *reticulata-flavo*, Tutt. *l.c.*
 ab. *secalina-albo*, Tutt. *l.c.*
 ab. *secalina-flavo*, Tutt. *l.c.*
 ab. *I-niger-albo*, Tutt. *l.c.*
 ab. *virgata-albo*, Tutt. *l.c.*
 ab. *virgata-flavo*, Tutt. *l.c.*
 ab. *oculea-flavo*, Tutt. *l.c.*
 ab. *rufa-albo*, Tutt. *l.c.*
 ab. *rufa-flavo*, Tutt. *l.c.*
 ab. *nictitans-linea*, Tutt. *l.c.*
 ab. *secalina-linea*, Tutt. *l.c.*
 ab. *rava-flavo*, Tutt. *l.c.*
 ab. *didyma-flavo*, Tutt. *l.c.*
 ab. *furca-flavo*, Tutt. *l.c.*
 ab. *nigra-albo*, Tutt. *l.c.*
 ab. *nigra-flavo*, Tutt. *l.c.*
 ab. *lugens-flavo*, Tutt. *l.c.*
 ab. *alhostigma*, Tutt. *l.c.*
 ab. *uniformis*, Spr. *Schm. Eur.* I. 195 (1905).
ochracea, n.ab. (Hamp.) *Cat. Lep. Ph.* VII. 212 (1908).
 ab. *atrocyanea*, Krul. *Rev. Russe.* IX. 307 (1909).
 ab. *armoricae*, Cul. (Obthr.) *Noct. et G.* I(1), 164. plt. XXX. f. 7
 (1909-13).
 ab. *lilacina*, Warr.-Seitz. *Pal. Noct.* III. 171. plt. 40b. (1911).
 ab. *pulverosa*, Warr.-Seitz. *l.c.*
 ab. **binota**, n.ab.
 ab. **albo-excessa**, n.ab.

Tutt dealt with the following forms:—

- A. Ground colour:—Whitish grey, grey, or yellowish grey.
- I. Unicolorous form.
1. Without \dashv mark $\left\{ \begin{array}{l} a. \text{ Whitish reniform} = \textit{grisea-albo.} \\ b. \text{ Ochreous reniform} = \textit{grisea-flavo.} \end{array} \right.$
- II. Reticulated form.
1. Without \dashv mark $\left\{ \begin{array}{l} a. \text{ Whitish reniform} = \textit{reticulata-albo.} \\ b. \text{ Ochreous reniform} = \textit{reticulata-flavo.} \end{array} \right.$
2. With \dashv mark $\left\{ \begin{array}{l} a. \text{ Whitish reniform} = \textit{secalina, var. \gamma, Haw.} \\ b. \text{ Ochreous reniform} = \textit{secalina-flava.} \end{array} \right.$
- III. Central banded form.
1. Without \dashv mark $\left\{ \begin{array}{l} a. \text{ Whitish reniform} = \textit{virgata-albo.} \\ b. \text{ Ochreous reniform} = \textit{virgata-flavo.} \end{array} \right.$
2. With \dashv mark $\left\{ \begin{array}{l} a. \text{ Whitish reniform} = \textit{I-niger-albo.} \\ b. \text{ Ochreous reniform} = \textit{I-niger, Haw.} \end{array} \right.$
- IV. Dark costal form.
1. Without \dashv mark $\left\{ \begin{array}{l} a. \text{ Whitish reniform} = \textit{oculea, Gn.} \\ b. \text{ Ochreous reniform} = \textit{oculea-flavo.} \end{array} \right.$
- B. Ground colour:—Ferruginous red, reddish brown, or purplish brown.
- I. Unicolorous form.
1. Without \dashv mark $\left\{ \begin{array}{l} a. \text{ Whitish reniform} = \textit{rufa-albo.} \\ b. \text{ Ochreous reniform} = \textit{rufa-flavo.} \end{array} \right.$
- II. Reticulated form.
1. Without \dashv mark $\left\{ \begin{array}{l} a. \text{ Whitish reniform} = \textit{nictitans, Esp. Hb.} \\ b. \text{ Ochreous reniform} = \textit{secalina, Hb.} \end{array} \right.$
2. With \dashv mark $\left\{ \begin{array}{l} a. \text{ Whitish reniform} = \textit{nictitans-linea.} \\ b. \text{ Ochreous reniform} = \textit{secalina-linea.} \end{array} \right.$
- III. Central-banded form.
1. Without \dashv mark $\left\{ \begin{array}{l} a. \text{ Whitish reniform} = \textit{rava, Haw.} \\ b. \text{ Ochreous reniform} = \textit{rava-flavo.} \end{array} \right.$
2. With \dashv mark $\left\{ \begin{array}{l} a. \text{ Whitish reniform} = \textit{didyma, Esp.} \\ b. \text{ Ochreous reniform} = \textit{didyma-flavo.} \end{array} \right.$
- IV. Dark costal form.
1. Without \dashv mark $\left\{ \begin{array}{l} a. \text{ Whitish reniform} = \textit{furva, Haw.} \\ b. \text{ Ochreous reniform} = \textit{furva-flavo.} \end{array} \right.$
- C. Ground colour:—Black.
- I. Unicolorous form.
1. Without \dashv mark $\left\{ \begin{array}{l} a. \text{ Whitish reniform} = \textit{nigra-albo.} \\ b. \text{ Ochreous reniform} = \textit{nigra-flavo.} \end{array} \right.$
- II. Reticulated form.
1. Without \dashv mark $\left\{ \begin{array}{l} a. \text{ Whitish reniform} = \textit{lugens, Haw.} \\ b. \text{ Ochreous reniform} = \textit{lugens-flavo.} \end{array} \right.$
2. With \dashv mark $\left\{ \begin{array}{l} a. \text{ Whitish reniform} = \textit{albistigma.} \\ b. \text{ Ochreous reniform} = \textit{leucostigma, Esp.} \end{array} \right.$
- Warr.-Seitz. says (1) *lauda*, View., *lancea*, Esp., *rilis*, Hb. are synonyms of *secalis*, L. (2) ab. *didyma*, Esp. is *secalina*, Hb. (3) ab. *oculea*, Gn. is doubtfully *oculea*, L. (4) ab. *reticulata*, Tutt is doubtfully ab. *uniformis*, Splr. (5) ab. *leucostigma*, Esp. is *lugens*, Haw. + *nigra*, Tutt, + *albistigma*, Tutt. (6) Treats *moderata*, Ev. as a true species, "Quite distinct from *secalis*," (7) Treats *struvei*, Ragusa as a true species.

Tutt considered *moderata* as doubtfully the same as ab. *grisea*.

secalis, Linn. *Sys. Nat.* Xed. 519 (1758).

ORIG. DESCRIPT.—“*Noctua spirilinguis cristata*, alis deflexis : superioribus griseo-fuscis striatis : macula reniformi A latino.”

This species was not included in the *Fn. Suec.* (1761) by Linn. but in the *Sys. Nat.* XIIed. 882 (1767) it was transferred to the Pyrales.

bombycina, Hüfn., *Berl. Mag.* III. 410 (1766).

Werneburg *Beitrag*e I. 252 (1864) says “Concerning *bombycina* of which Rottenburg found no longer in Hufnagel’s collection, the diagnosis runs “Grey with brown markings, a whitish encircled space and white reniform stigma. On the stems of trees. Rare.” Since this deals with a moderately large noctuid, and Hüfnagel mentions no transverse lines, which are certainly very non-apparent in *advena*, and for which also the rest of the diagnosis passes, I consider my determination as well grounded.” *i.e.* = *advena*.

ab. *lancea*, Esp. *Abbild.* IV(2). 663, pl. 174, 5 (1786?).

This figure may be anything. Werneburg says that this is *brunnea*, Hüfn. = *didyma*, Tr. From the description one infers that this *lancea* is none other than a variety of *didyma* with lighter suffused bands and coppery red terminations of the stigmata.

Esper’s description is a long one. The ground colour is reddish strewn with black spots and atoms. A light submarginal band bordered on both sides with a yellowish line, curved inwards and toothed near the costa outwardly. From this band extends above the inner margin a broad blacker streak, elongated both ways. The stigmata are also margined with yellowish. The reniform has two black dots towards the inner side and a similar black lunular-streak. The oval stigma is lengthened. The outer margin has yellowish dots and the edge is black brown. The hind wings and the undersides are of pale red-colour and only have an obsolescent blackish marginal area. Both sides are somewhat glossy.

The description and the figure do not agree, both being unsatisfactory.

landa, View. *Tabell.* II. 81 (1790).

ORIG. DESCRIPT.—“The fore-wings are yellowish brown on the outer margin. Across the disc runs a brown transverse line, margined on both sides by a pale line; on the outer side of this, there lies, towards the upper margin a brown whitish mixed reniform stigma, and before this another circular spot wholly brown and almost obsolete; under it lies a black longitudinal line running out to two points. On the outer margin stands a small black spot white in the middle just in front of which lies an angled pale transverse line. Besides this one finds a short black streak at its commencement. The body and hind wings are dark grey.” Berlin.

Werneburg, II. 216, says this is the *brunnea*, Hüfn, and the *didyma*, Tr. This is accepted by Hampson (*Lep. Phal.*)

ab. *vilis*, Hb. *Saml. Noct.* 511 (1808-18) *Text.* 175 (1805-18).

ORIG. DESCRIPT.—“Red brown : Head and thorax dark scaled : the forewings very dark, with chalk white reniform and waved-lines, which are mostly broken up : the lower wings and abdomen brownish grey,

S. Tyrol." This is an inadequate description of a very remarkable specimen (aberration) which H.-S. says he can under no consideration place here. Hampson accepts it as a synonym of *didyma*.

Description of *vitis*, Hb. fig. 511.

The size of *didyma*. Of a very dull uniform brown with a slight shade of chestnut in it. The markings, chalky white and very conspicuous, consist of 2 or 3 small white dots near base of costa, a line midway between base and reniform somewhat waved, a reniform a large white blotch with a dark curved line in the middle, the curve hollow outwards, a broken continuation of this stigma to costa and to inner margin, a few spots from costa parallel with the reniform, a row of submarginal dots, with lighter brown fringes. Possibly the spots outside the reniform and those below may represent the elbowed line much broken in the middle.—Hx. J.T.

ab. *moderata*, Evers. *Bull. Mosc.* III. 547 (1843).

FIG.—Seitz. *Pal. Noct.* III. pl. 40h.

ORIG. DESCRIP.—“*Alae anticae* olivaceo fuscae, nebulosae, fascia lata externa pallidiore unicolore;—*posticae* fuscescentes.”

“Of the same size and appearance as *didyma* and similar to it.

“*Alae anticae* a basi usque ad strigam seu lineam transversam externam ordinariam olivaceo-fuscae, nigro-nebulosae, linea transversa interna maculisque ordinariis pallidioribus, his fusco inscriptis: extra lineam externam sequitur, fascia seu spatium latum olivaceo-fuscescens unicolor, sine umbris, externe spatio angustissimo terminali bis sinuato limitatum; cilia fusca, pallido-varia. *Alae posticae* fuscae, aut fuscescentes, externe sensim obscuriores. Subtus *alae sericeo-nitidae*: antice e luteo et griseo fusconigricantes; *posticae* sordide lutescentes, pulvere fuscescenti paululum adpersae punctoque medio obsoleto: omne margine externo pallidiore strigae externa obsoleta obscuriore.”

Habitat in promontariis Uralensibus.

ab. *moderata*, Evers. *Fn. Volg.* 240 (1843-1844).

FURTHER NOTES.—A further description appeared in *Fn. Volg.* 1844 = 1843 (see back of title-page.)

“*Alae anticae* thoraci concolores, fusco-olivaceae, fusco-nebulosae, spatio submarginali latiusculo, olivaceo unicolore, spatio terminali angustissimo fusco, maculis ordinariis pallide circumscriptis;—*posticae* fuscescentes.”

“Very like *didyma*, differs by the olivaceous colour and by the submarginal area being devoid of clouding. Habitat in the Ural mountains, etc.”

In his 1856 notes he uses the word “pallidiore” of the subterminal area and adds “lineis medianis crenulatis fuscis” and “linea subterminali sinuata, edentata.” He adds “southern” to Ural Mts.

This seems to be exactly like *didyma* in disposition of marking, size, etc. but is of a distinct colour, suffused somewhat with olivaceous.

ab. *struvei*, Ragusa, *Nat. Sicil.* IV. 274 (1805) pl. 4.

The author does not describe the aberration but refers it to the description given by Berce, *Noct. France* III. p. 106 (1870).

ORIG. DESCRIP.—“Basal and subterminal areas white.” On his plate Ragusa figures a “*didyma*” form as *struvei* which does not agree with the above description at all and must be discarded. Its description

is "base dark mottled to the first transverse line or band which is white centred by a dark line, making really a doubled line. The discal area is similarly dark mottled, the reniform having a still darker centre with a well defined broad white line along its inner margin. The immediately succeeding white band is fairly wide but split up into three by two dark lines. Outside this the marginal ground is of the same mottling with a portion of a wide white line just below the apex losing itself in the ground about the middle of the margin." This figure certainly does not apply to the described *struvei*.

Hampson says "suffused with white." But the figure is *not* so.

Culot, *Noct. et G. I.* (1), pl. 30, 11, figures a specimen in Turati's collection sent to him by Ragusa himself in which the basal and subterminal areas are suffused with very light coloration and may be accepted as typical instead of the figure in *Nat. Sicil.*

ab. *uniformis*, Splr. *Schm. Eur. I.* 195 (1905).

ORIG. DESCRIP.—"A unicolorous, very slightly finely marked reddish yellow grey distinct form, which is found far and wide but very sparsely."

ab. *atrocyanea*, Krul. *Rev. Russe. IX.* 307 (1907).

ORIG. DESCRIP.—In Russian only "Alis anticis atris, cyaneo micantibus, picturis omnibus indistinctis, macula reniformi nivea." Very rare in the oriental provinces of Russia.

ab. Hamp. *Cat. Lep. Ph. VII.* 212 (1908).

ORIG. DESCRIP.—"Fore-wing rufous, the costal area to subterminal line, the cell and area below it to submedian fold, and the terminal area except at apex suffused with fuscous." This is very much like Tutt's *furca-flavo*.

ab. Hamp. *Cat. Lep. Ph. VII.* 212 (1908).

ORIG. DESCRIP.—"Forewing with the ground colour brownish ochreous, the costal area to subterminal line, the cell and area below it to submedian fold, and the terminal area except at apex suffused with fuscous." This does not appear to fall in Tutt's scheme, and I suggest the name ab. **ochracea**, ab. nov.

ab. *armoricae*, Obthr. *Culot. Noct. I.* 164 (1909-13).

FIG.—*l.c.* pl. XXX. f. 7.

ORIG. DESCRIP.—Culot does not describe in words this striking (*très claire*) aberration, but figures it on plate 30, of vol. I of his *Noct. et Geom.* fig. 7 under the name *armoricae*. The specimen was taken at Huelgoat, Finistère.

The coloration is of a very light ochreous sandy shade, the forewings somewhat darker basally, with blackish claviform tie to the two weakly expressed transverse lines, an orbicular defined by two oblique curves, a reniform less clearly defined but with a pure white centre, and a few scraps of marginal markings. The hindwings uniformly pale. I have not seen an example with the colour and markings so washed out as it were.

ab. *armoricae*, Obthr. var. taken by Dr. Cockayne.

ORIG. DESCRIP.—"A whitish insect, ground colour palest grey with

slight yellow or ochreous tint. The markings are very distinct, those limiting the orbicular and reniform nearly black and the bar posteriorly also nearly black, those below the stigmata and near the termen, very dark grey-brown, those at base and apex palish grey-brown." ♀ Oxshott.

This would appear to be a variation on *armoricae*, Culot, N. et. G. I(1). pl. 30. 7. in which the ground is paler and the marking more emphasised in black.

ab. *lilacina*, Warr.-Seitz *Pal. Noct.* III. 171 (1911).

FIG.—*l.c.* 40h.

ORIG. DESCIP.—“Has a dull lilac grey ground colour in basal and postmedian areas, with the median area and the terminal more diffusely dull rufous brown; the inner and outer lines and the reniform stigma filled up with lilac grey; pectus and legs paler but strongly tinged with violet; anal tufts fulvous.” *Silvaplana*, Engadine.

ab. *pulverosa*, Warr.-Seitz *Pal. Noct.* III. 171 (1911).

FIG.—*l.c.* 40h.

ORIG. DESCIP.—“Somewhat like ab. *reticulata*, Tutt, but darker, suffused with brown and clouded, especially along costa, with blackish fuscous, in places thickly irrorated with whitish scales; veins strongly dusted with dark and pale scales: inner and outer lines distinct, filled up with ochreous; subterminal line brownish ochreous preceded by a deep brown cloud and followed by dull blackish terminal blotches on both folds; claviform and orbicular dull, brown, with black edges; reniform large, the inner half dark with a dark edged central brown lunule, the external margin yellow ochreous, except at lower end, which is white; hindwing dark fuscous, head and thorax black brown.” *Pescocostanza*, Italy.

binota, n. ab*.

ORIG. DESCIP.—“The ground colour is nearly black. The reniform is white and there runs out from it to the line limiting the central area a further patch of white.” Forres. The appearance is as if the reniform were duplicated. Dr. Cockayne has seen two *rava* with the same additional white mark.

struvei-excessa, n. ab.

ORIG. DESCIP.—“Ground colour white, markings nearly black. The broad submarginal area is white, the basal area very largely white, and thus far resembling *struvei*, Ragusa, but in addition the area uniting these two areas along the inner margin is white and very wide, with only a thin irregular line crossing it, the vestiges of the transverse line.” ♀ Kingsgate.

Miana strigilis and *M. latruncula*.

For many years a number of named forms have been associated by most collectors with that known as *strigilis*. But now and again the real student of the lepidoptera felt that there were at least two species

* I think any form with the additional white should fall under this name. Mine happened to be blackish, but the two others were *rava*. All three were from Forres.—E.A.C.

associated together (1) that which was generally the larger and with chalky white colour and (2) that which was smaller and sturdy of a black, black brown, or reddish tinge usually. But not until the advent of the study of the genitalia was there any stable character to differentiate the two with certainty.

In 1907 in the *Schrift. Phys. oek. Ges. Konigs.* p. 75, Dampf differentiated the two species by their genitalia. And in the same year Petersen in a more detailed paper in the *Rev. Russe. d'Ent.* vol. VII. p. 206, showed definitely that *latruncula* was not a form of *strigilis*. Both the above communications appeared in local and little distributed publications, and the information was more or less hidden from general knowledge.

DIFFERENTIATION BY GENITALIA.

Genitalia of *Miana latruncula* and of *M. strigilis*.

Dampf. *Schrift. Phys. oek. Ges. Konigsb.* p. 75 (1907).—" *Latruncula* is not an ab. or a var. of *strigilis*, but a true species, as Rossler rightly conjectured. The examination of the genital organs give a constant difference between the two forms. The tooth on the lower margin of the valve in the ♂ of *M. strigilis* is long and pointed (bodkin-like), in *M. latruncula* shorter and conical; we also found a similar difference in the snout-like apex bent downwards at the free-end of the valva. The other differences are best seen on the attached figure. The ♀ of *M. strigilis* possesses a distinctly longer "ductus bursae" which before the ostium of the bursa is swollen out into a globular shape. In *M. latruncula* the ductus is shorter and shows no striking enlargement. Similarly constant distinctions are found between the outer genital-organs of the females of the two species." Figures of the male organs of the two species were given.

Petersen *Rev. Russe. d'Ent.* VII. 206 (1907).—After referring to Rossler's conjecture and to the discovery of Dampf that it was an actual fact that *latruncula* was neither an ab. nor a var. of *strigilis* but a good species, Petersen goes on to confirm the discovery, and gives figures of the organs of both sexes of both species more in detail than does Dampf. He says that the distinctions of the two species are so constant in a long series of examples without any intermediate occurring, that it leaves no doubt whatever but that there are two species. He has examined Estland, German and Tyrolese series. "The valve of the ♂ shows the *Hadena*-type of modification; the axe-shaped form of the distal end of the valve is rounded at the front angle, produced at the back angle into a continuation, which in profile looks not unlike the head of a bird; the "bill" in *strigilis* is distinctly longer than in *latruncula*, in the former 4 times, in the latter twice, as long as the width. The projection arising from the lower edge of the valve is in *strigilis*, as Dampf stated, bodkin-like and longer, in *latruncula* conical and shorter. At the base of this projection on the basal side of the upper margin of the pocket, one finds a projection in *strigilis*, which is absent in *latruncula*. At the foot of the penis-body in *latruncula* in front and below lies a strong conical tooth, while in the corresponding position in *strigilis* there is only to be seen a chitinous thickening with three fine points. In the ♀ the essentially distinctive character, by which one can with certainty distinguish the species, lies

in the surround of the ostium of the ductus bursae. In *strigilis* this is abruptly strongly widened, developed almost globular, deeply indented on the outer side, in *latruncula* it is only shallow and gradually runs into the ductus bursae. The inner chitinous plate margining the ostium ventrally is wide in *strigilis*, narrower in *latruncula*." There are further differences. Petersen based his results on the examination of at least 1700 examples.

Two years later we have the evidence of a British observer as follows:—

Genitalia of *Miana strigilis*, Pierce, *Noctuidae* p. 33, pl. xiii. (1909).

"I examined a great number of this, and the other species of the *Miana*, of every variety." "Harpe angulated, with corona; cucullus divided, the anal angle produced and lobed, the lobe being thickly clothed with spines; below the cucullus on the outer edge is a straight arm; clasper not produced; ampulla rounded; clavus peaked, bulbed at the base, and clothed with short hair; uncus narrow waist, diamond pointed; vesica with curved bulbed cornutus; juxta without side spines."

It is very remarkable that not a single *latruncula* was found in the great number examined. For the skill of the observer is unassailable.

At a meeting of the South London Entomological Society in April, 1930, Mr. W. H. T. Tams stated that he was convinced that under the name *strigilis* there were two definite species and illustrated his remarks by sketches of the genitalia.

Dr. E. A. Cockayne has independently confirmed the observations of Dampf and Petersen and has no doubt whatever that there are two species which he can readily distinguish by their facies.

DIFFERENTIATION BY MARKING, ETC.—Dr. Cockayne says "I have examined genitalia of many British specimens from various places and find no difficulty in dividing them correctly by eye first. There are no intermediate genitalia. Both have forms with and without the black bar as in *didyma*. (This is probably inherited as an independent character in these species and in *didyma*)."

"*Strigilis*. Almost always larger.

(1) Various black and white forms from very pale to very heavily and darkly marked.

(2) Suffused all over with grey—no brown tinge.

NOTE.—"I have two *strigilis* as black as the black *latruncula*, one with the black bar the other without, and two with the usual white markings somewhat suffused with grey.

"I have seen one British brown *strigilis* and such are said to occur on the continent." He further says (*in lit*).

"I see no clear cut division between the lightest *strigilis* and the darkest of these with white markings. Nor do I see any clean cut division between the various forms of *latruncula*."

"Both *strigilis* and *latruncula* have forms with and without the black bar below the stigmata.

"I have a *latruncula* with greyish white (nearly white) submarginal band but the stigmata are of the same colour as the ground, darkish grey brown and the other markings are not much darker; the termen is also bordered with uniform grey brown. It has none of the clean cut black and white of *strigilis*."

Latruncula. Smaller.

"All shades of brown to unicolorous black. The palest do show some definite markings much like those of pale *strigilis*.

"I have a single specimen with white and blackish markings rather like a *strigilis*."

In the *Proc. S. Lond. Ent. Soc.* p. 39 (1930-31) I have summed up the recorded differences between *strigilis* and *latruncula* as follows.—"*Strigilis* has a somewhat larger expanse than *latruncula*; ♂ up to 26 mm., ♀ 28 mm., against 24 mm., (*latruncula*) and has somewhat narrower and more pointed forewings. In typical *strigilis* the ground colour is a pure blackish grey without brown powdering, while *latruncula* is brown. The marginal area in *strigilis* has chalk white in it, replaced in *latruncula* with pale brown suffusion, although some may have impure white markings occasionally. The outer transverse line is in *strigilis* strongly bent inwards towards the inner margin, but is more straight in *latruncula*. In its upper part in *strigilis*, as a rule, on the outer side there are five distinct black streaks which in *latruncula* are very weakly developed or wholly wanting. In *latruncula* there stands almost always between the transverse line and the claviform a blacker streak-like spot, which unites with it to form a black bridge joining the two transverse lines. In *strigilis* this mark is absent or if present very obsolescent. The fact of both species having parallel series of similar variations emphasises the confusion."

Miana, Steph. (1829). Tutt, Gn., Barr., Splr. [*Oligia*, Hb. (1822) Hamps.: *Parastichtis*, Hb. (1822) Warr.-Seitz.: *Apamea*, Tr. (1816-25) Freyer, Tr.: *Hadena*, Schrnk. (1802) Meyr.] *strigilis*, L. (1758) and *latruncula*, Schiff. (1775).

Tutt's citing *strigilis* to Clerck was an error (*Brit. N.* p. 99). He quoted the description of *strigilis* from Linn. S.N. XIIed and did not refer to the prior works except Clerck's *Icones*. *Strigilis* was redescribed in the XIIed, S.N., from the *Fn. Suec.* p. 318. (1761). In *Sys. Nat.* (1758) p. 516 is the prior description, thus *strigilis* must be cited to L. and not to Clrk. In his descriptions subsequent to (1758) Linn. substituted "prior" for "fusca."

Strigilis, Linn. *Sys. N.* Xed. 516.

ORIG. DESCRIP.—"Alis deflexis nebulosis: denticulis setaceis intra fasciam albam terminalem." "Alae griseo-cinereae tribus annulis ovalibus nigris; facia alba alas terminans latior, intra quam area fusca inferit 5 vel 6 striae nigras fere ad ejus medium." The description of the type, and different from Clerck's description which is possibly that of a *latruncula* form.

Tutt does not place the *strigilis* of Linn. although he states it differs from that of Clerck, nor does he refer to the *strigilis* of Haw. According to Haw. himself he says that both his *praeduncula* and his *strigilis* are the same as the *strigilis*, Linn. of the *Fn. Suec.*, and that he hesitated whether he should unite the three slightly differing species (=forms) *praeduncula*, *strigilis* and *latruncula* into one species.

The descriptions of *strigilis*, Linn., *praeduncula*, Haw., and *strigilis*, Haw. are only very slight differences of the same form, and almost negligible for differentiation. *Strigilis*, Haw. is said to be a little

smaller than *praeduncula*, but scarcely differs except in the black connecting streak which is constant in all forms.

Tutt put Haw. as the authority for both *latruncula* and *praeduncula* whereas Schiff. *Verz.* p. 89 (1775) introduced both *latruncula* and *praeduncula* among their "Kleine Eulen" characterised by small size, having on the very dusky dependant forewings a transverse band which narrows inwardly and is narrowest on the inner margin, with a white waved little streak on its edge. On the abdomen stands a small single tuft. The *latruncula* has its narrow forewings brown varied with red: the *praeduncula* has its narrow forewings brown with white in the marginal area.

Tutt *Brit. Noct.* I. 99 (1891): Barrett *Lep. Br. Is.* V. 12, pl. 186 (1899): Stdgr. *Cat.* IIIed. 164 (1901): Splr. *Schm. Eur.* I. 181, pl. 41 (1905): South *Moths Br. Is.* I. 275, pl. 134, figs. 1, 4, 7, 10, 13, 16 (1907): Hamps. *Lep. Phal.* VII. 381, fig. 63 (1908): Culot *Noct. et. G.* I(1). 122, pl. 21, figs. 16-18 (1909-13).

Esper's figure, IV. pl. 146, 1, 2, 3? are bad portraits of *strigilis*; the figs. 4, 5, 6 Esper calls var. *aerata*. Werneburg calls the latter *strigilis* var. without comment.

Esper's figures 4, 5, 6 are quite distinct from one another, fig. 4 a very light brown form resembling *strigilis* without any white. Figs. 5, 6, both apparently "alis cupreo-micantibus" are more alike, while 5 has some of the marking clearly visible, fig. 6 has all but the outer waved line obsolescent, smooth shining brown. Freyer says that figs. 2 and 3 are more certainly *latruncula* than *strigilis*. Fig. 3 has the reddish coppery colour of *latruncula*.

Esp. *l.c.* re *aerata* pl. 146, figs. 4, 5, 6 in his *Text.* p. 469 calls fig. 6 *latruncula*.

Esper's fig. on pl. 162 called *latruncula* was corrected in the text p. 557 to *aerata*.

[It is noted in *Pap. d' Eur.* VIII. 38 that the description of Esper's fig. IV. pl. 146, (1786), had not been published in 1792.]

Ernst and Engramelle, *Pap. d' Eur.*, VIII. figs. 550-1, have 7 figures of *strigilis-latruncula*. In the text p. 38 the authors say that 551a, c are the *strigilis*, L. and they consider that the figures 550a, b, c, e, f, are so like *strigilis* in every respect but colour that they must be considered as varieties of it. Werneburg, *Beitr.* II. 123, says that 550a, b, c, are *latruncula*, Schiff. and that b. with whitish in the border is the form *rubeuncula*, H.-S.; 550e, f, are also *latruncula*, but e is an extraordinary figure, which may belong here as a rare form; and 551a, c, are *strigilis*, L. One would agree with this except that 550f, is *strigilis* rather than *latruncula*.

Borkhausen, IV., seems to have mixed up several species with *strigilis*, etc. Werneburg points out that on p. 174 his *latruncula* is *strigilis*, L. var. *latruncula*, Schiff.; on p. 175 his *praeduncula* is *fasciana*, L.; on p. 176 his *furuncula* is *latruncula*, Schiff. var.; on p. 187 his *meretricula* is *latruncula*, Schiff. var. (teste Bork. in *Rhein. Mag.* I); and on p. 188 his *versicolor* is *strigilis*, L.

Hübner has three figures, 94 *latruncula*, 95 *praeduncula*, and 776 *latruncula*. 94 and 776 have nothing in common as regards colour. In Hübner's *Text.* he alters *praeduncula* to *strigilis*, L., p. 183 and says that 94 *latruncula* is *aerata*, Esp. p. 184. To this latter Tutt agrees, but strangely does not refer to either of the other figures of

Hübner. Hübner's fig. 776 seems to be a small example of *aethiops*, Haw. [fig. 776 is Geyer's, after Hübner's death.]

Boisduval put *rubeuncula*, Ramb. as a form of *latruncula*, Ind. Meth. no. 901 (1840), but Donzel and Freyer both think it is a true species (Fr. N. Beitr. V. 143).

Wood. Ind. 274-6, has good figures of the same three.

Guenée recalls the fact that Freyer figures *strigilis* and *latruncula* with unlike larvae, but he (Guenée) states emphatically that he has observed no difference between the two and that Freyer's figures have not been verified in nature. Dr. Cockayne says (in lit.) "I agree with Guenée's statement. I can see no difference. If there be one it must be very slight indeed."

Like many continental lepidopterists Guenée puts *fasciuncula* as a form of the *strigilis-latruncula* complex. He recognises *praeduncula*, Schiff., etc., as *strigilis*.

Guenée points out that in *latruncula* the subterminal line is preceded by a ferruginous tint and also that in *aethiops* this tint is traceable.

Guenée describes *latruncula* "All individuals in which the grey-white of the subterminal space is replaced by grey-brownish. The subterminal is generally preceded by a ferruginous tint."

Werneberg, Beitr. I. 518, says "I accept the determination of Lederer that *latruncula*, Tr., is not specifically distinct from *strigilis*, L.; I have no hesitation in placing together *strigilis*, Fb., with *praeduncula*, W.V., which is certainly *latruncula*, Tr., the variety with more whitish mixed band."

Staudinger, Cat. IIIed. (1901), treated *latruncula* as an ab. of *strigilis*.

Spuler notes, Schm. Eur. I. 181, 1906, that Hormuzaki's *intermedia* is the dusky form of *latruncula* parallel to the *aethiops* of *strigilis*.

Rebel, Berge-Reb. (1909) treats *latruncula* as an ab. of *strigilis*, more reddish brown, the outer band pale brown (not white), mostly smaller but equally common.

Rebel says, Berge-Reb. (1909), p. 189, that *intermedia*, Hormuz., without the lighter area in the submarginal field, is identical with the *latruncula*, Haw., of Tutt's tabular scheme, Brit. Noct. I. 99. It would appear to be the var. β of Haw. named *unicolor* by Tutt.

Warr.-Seitz, l.c. pl. 40, gives eleven figures but not one of the typical *strigilis*, L. The nearest is that called *praeduncula*; *latruncula* is next, a brown form; *aerata*; *fasciata*, which agrees with Tutt's description; *suffumata*, an extreme form of the last; *virgata*; 2 of *aethiops*, one can be allotted to *latruncula* with just a shade of a brown outer marginal area, the other a *strigilis* form with a grey shade; *intermedia*, Hormuz.; *unicolor*; *terrea*, Warren.

Warr.-Seitz, Pal. Noct. III. (1911), treated *latruncula* as a form of *strigilis*, and *aerata* as an extreme form of *latruncula* with a more or less rufous tint, instead of the pale more or less luteous outer band.

Culot, Noct. et G. (1909-13) says on the authority of Stdgr. that *latruncula* is a local form of Sicily.

Culot, N. et G. I. pl. 21, has three figs. all very good, *strigilis*, a small one with only a few white markings, *latruncula* and a very small *aethiops*.

Barrett describes the Variation as follows—" Exceedingly variable the more typical form varies in the ground colour from greyish-white, through various shades of grey, grey-brown, whitish-brown, and pale reddish brown, even pale olive-brown, or tinted with fulvous, and has the described markings in various dark shades, varying with the ground colour, or becoming at times even dark purple-red.

" In other cases the ground colour assumes dark brown and dark red-brown shades, the white wholly obliterated, or the white crescent above the anal angle alone remaining; and the wings are then marbled with more monotonous tones of brown and red-brown, the central band is but little darker, or not so at all.

" But the most usual variation, and the most striking, which seems to accompany the type everywhere, except where it supersedes it, is deep black—wholly so—or else the thorax and ground colour of the forewings smoky black with a deep black central band; the stigmata often not visible.

" In all the forms the thorax follows in colour the darker portion of the forewings; and the hindwings are darker or paler in unison.

Barrett records a specimen " large, of the typical colouring, with the markings grey-black, and of so bright a colour as almost to appear blue."

The names and forms to be considered are:—

strigilis, L., *Sys. Nat.* Xed. 516 (1758).

strigilis, Clerck., *Icones*, pl. IX. 6 (1759).

latruncula, Schiff., *Verz.* 89 (1775). Warr.-Seitz, *Pal. Noct.* III., pl. 40i.

praeduncula, Schiff., *l.c.*; Warr.-Seitz, *l.c.*

aerata, Esp., *Schm. Abbild.* IV(2). 466, pl. 146, f. 4-6 (1786 etc.); Warr.-Seitz, *l.c.*

meretricula, Bork., *Naturg.* IV., 187 (1792).

versicolor, Bork., *l.c.*, 188 (1792).

praeduncula, Haw., *Lep. Brit.* 213 (1806-10).

latruncula, Haw., *l.c.* 214 (1806-10).

aethiops, Haw., *l.c.* 215 (1806-10); Warr.-Seitz, *l.c.*

suffuruncula, Frr., *N. Beitr.* V. 148, pl. 471 (1845).

?*rubeuncula*, Ramb. Donz., *Ann. Soc. ent Fr.* 430, pl. 12, 3-4 (1838).

invisa, Walk., *Cat. Noct. B.M.* X., 259 (1856).

ab. *virgata*, Tutt, *Brit. Noct.* I., 99 (1891); Warr.-Seitz, *l.c.*

ab. *nigro-rufa*, Tutt, *l.c.*

ab. *rufa*, Tutt, *l.c.*

ab. *unicolor*, Tutt, *l.c.*; Warr.-Seitz, *l.c.*

ab. *fasciata*, Tutt, *l.c.*; Warr.-Seitz, *l.c.*

ab. *anoena*, Krul., *Soc. Ent.* XXIII., 11 (1908).

ab. *intermedia*, Horm., ; Warr.-Seitz, *l.c.*

ab. *suffumata*, Warr.-Seitz, *Pal. Noct.* III., 172, pl. 40 k, i (1911).

ab. *tercea*, Warr.-Seitz, *l.c.*

ab. *fasciata*, Lenz., *Oesth. Sudbay.* II(2)., 269 (1927), pl. XIV. 19.

Tutt treats of *praeduncula* which is *strigilis*, L.; ashy grey ground with reddish grey outer fascia, *suffuruncula*; ditto with reddish median band, *virgata* (both *latruncula* forms); ground reddish-grey or -brown with whitish or whitish grey outer fascia, *strigilis*, Clk. (a *latruncula*

form); ditto with pale reddish outer fascia, *aerata* (a *latruncula* form); ditto unicolorous, *latrucula*, Haw.; ground blackish or reddish-brown with whitish outer fascia, *nigro-rufa* (a *strigilis* form); ditto with red outer fascia, *rufa*, (a *latruncula* form); ditto unicolorous, *unicolor* (a *latruncula* form); ground black with white outer fascia, *fasciata* (a *strigilis* form); ditto unicolorous, *aethiops* (a *strigilis* form deep black, a *latruncula* form a paler slightly brown black).

The allocation of these forms and names between the two species is a difficult matter and quite open to criticism. The attempt is below.

Miana strigilis, L. (1758).

praedumcula, Schiff. (1775): Haw. (1806-10).

versicolor, Bork. (1792).

ab. *aethiops*, Haw. (1806-10) very black form.

ab. *nigro-rufa*, Tutt (1891).

ab. *fasciata*, Tutt (1891).

r. *amoena*, Krul. (1908).

ab. *suffumata*, Warr.-Seitz (1911).

ab. *terrea*, Warr.-Seitz (1911).

ab. *fasciata*, Lenz. (1927) = *fasciata*, Tutt.

versicolor, Bork., *Naturg.* IV., 188 (1792).

ORIG. DESCRIP.—“This Noctua has the size and appearance of *strigilis*. The forewings have a reddish-brown ground colour which is mixed with blackish brown chequered with whitish markings. At the base there is a trace of a whitish transverse line, then follows a whiter transparent streak. Next following there are the usual stigmata of which the orbicular is first, the reniform beyond, both of these are white edged, and below the orbicular there is a small claviform stigma of similar character. Beyond these stigmata is a white transverse band, in which blackish hairlike projections extend from the ground. The fringes are chequered white and black. The costa is black spotted and towards the apex of the wing white dotted. The hindwings are brown-grey; darker scaled on the outer margin.”

This appears to be none other than the usual *strigilis*: Werneburg, *l.c.* is of this opinion. Bork. refers to Esper's pl. 146, fig. 3, labelled *strigilis* var.

ab. *amoena*, Krul., *Soc. Ent.* XXIII. 11 (1908).

ORIG. DESCRIP.—“The whitish colour in the marginal area of the forewings has a distinctly greenish tone.” Very scarce. Eastern Russia (Wiatka and Kasan).

ab. *terrea*, Warr.-Seitz, *Pal. Noct.* III. 172 (1911).

FIG.—*l.c.* pl. 40k.

ORIG. DESCRIP.—“A dull grey unicolorous form, with the lines, the outlines of stigmata, and the teeth of outer line finely black.” Tring.

ab. *suffumata*, Warr.-Seitz, *Pal. Noct.* III. 172 (1911).

FIG.—*l.c.* pl. 40i.

ORIG. DESCRIP.—“Has the white areas of *fasciata*, Tutt, still farther reduced.”

ab. *fasciata*, Lenz., *Osth. Schm. Sudbay.* II. (2), 269 (1927).

FIG.—*l.c.* plt. XIV. 19.

ORIG. DESCRIP.—“Suffused to the white marginal area.”

[*Miana strigilis*, Clrk. (1759).]?

latruncula, Schiff. (1775).

aerata, Esp. (1786).

meretricula, Bork. (1792).

ab. *aethiops*, Haw. (1806-10), paler form.

latruncula, Haw. (1806-10), var. *a.*

ab. *suffuruncula*, Tr. (1816-25).

ab. *rubeuncula*, Ramb. (1838).

r. *inrisa*, Walk. (1856).

ab. *virgata*, Tutt (1891).

ab. *unicolor*, Tutt (1891), = *latruncula*, Haw. var. *β.*

ab. *rufa*, Tutt (1891).

ab. *intermedia*, Hormuz., teste Splr.

meretricula, Bork., *Naturg.* IV. 187 (1792).

ORIG. DESCRIP.—“It is somewhat smaller than *strigilis*. which it resembles in shape and also much in marking. The ground colour of the forewing is brown and somewhat suffused with red-yellow scaling. The usual spots (stigmata) are yellow with brownish centres. Before these are a few yellowish wavy lines, and beyond them a yellow somewhat obsolete band, in which five or six black streaks run over into the brown area to the middle. Inside the fringes lies a yellow line; and the fringes are yellowish and black spotted. The hindwings are ashy-grey with yellow margin.” This seems to indicate a *latruncula* form.

Werneburg, *Beitr.* II. 171, says this is *latruncula* and notes that Bork. himself in the *Rhien. Mag.* subsequently explained that this was a variety of *latruncula*.

ab. *suffuruncula*, Treit. *Schm. Eur.* V(2). 97 (1816-25).

Tutt gave Freyer plt. 471 as the original of *suffuruncula*. This is not so as Freyer gives a reference to Treit.

FIGS.—Freyer. *Nen. Beitr.* II. plt. 142, 471. Freyer says his first figure was from a not quite fresh example.

ORIG. DESCRIP.—“The forewings have three distinct areas, of which the first near the base and particularly the third are wide. These two are a shiny and near the second area a more silvery, and towards the base and fringes of a more coppery suffusion. The first area extends to the orbicular. A black streak lies towards the costa which ends at the orbicular. Then follows the stigma itself, and a longish, black streak, emphasised with silver and coppery colour. Under it lies a strong black square in place of the claviform. Beyond the orbicular and claviform the third area begins which contains the reniform which is wholly filled with silvery powdering. The waved line contains fine black dots and is coppery coloured. The fringes are dark brown and double edged.” Vienna (Frr.).

rubeuncula, Ramb., *Ann. Fr.* (1838), 430-1.

FIG.—*l.c.* plt. XII. f. 3-4.

ORIG. DESCRIP.—“ Like *latruncula* but smaller. It is a brick-red, while that is black brown. The forewings have a brick-red ground lighter transverse sinuous wavy lines. The most notable is the third, which, before reaching the inner margin, takes the form of a white crescent of which the points are turned to the outer margin. On the inside of this, is seen a squared space of a red brown; the stigmata are scarcely apparent; they are paler than the ground upon which they rest; the fringe is pale reddish streaked with brown.

“ The hindwings are blackish with the fringes of a reddish white.”
Pyrénées Orientales.

The inner half length of the 2nd line is well marked by white in the figure.

I note that Bdv. and Dup., attributes *rubemcula* to Donzel and not to Rambur [*Ind. Meth.* no. 901 (1840) and *Cat.* 126 (1844)]

Guenée describes *aethiops*. “ The brown colour has become blackish and has invaded almost the entire wings: the subterminal space remains, however, just a little lighter, with a trace of a little ferruginous before the subterminal line. The other lines are almost entirely lost in the colour of the ground.” Hb.-Gey. 776. Haworth's var. *a*. “ totus niger ” would be the ab. *aethiops* of *strigilis*.

race *invisa*, Walk. X. 259 (1856).

ORIG. DESCRIP.—“ Pallide fusca: thorax fasciis obscurioribus cristaque postica nigricante; abdomen cinereum, cristatum; alae anticae gutta basali nigricante, lineis transversis undulatis pallidis fusco marginatis, fascia cervina exterioré punctisque marginalibus obscure fuscis; posticae cinerae, ciliis testaceis interlineatis.”

“ Pale brown. Thorax with darker bands, and with a blackish hind crest. Abdomen cinereous, crested. Forewings with a blackish discal dot near the base, with transverse undulating pale dark brown bordered lines, with a fawn coloured exterior band and with dark brown marginal points. Hind wings cinereous, with testaceous interlined ciliae.” Turkestan.

Miana, Steph. (1829) Stdgr., Tutt, Barrett, Splr., South. [*Hadena*, Schrnk. (1802) Meyr., H.-S.,: *Oligia*, Hb. (1822) Hamp. Warr.-Stz.: *Apamea*, Ochs. (1816-25)] *fasciuncula*, Haw. (1806-10).

This species has been so confused on the continent with *strigilis-latruncula* that it is difficult to trace its history. Speyer, however, *Stett. e. Zt.* 126 (1867), with English examples before him considers that the British judgment is correct, less on account of the differences of colour and marking than in the shape of the wings, the straighter costa, less concave beyond the middle, the apex more produced and sharper, the border area, the narrowness of the median area on the inner margin, etc. H.-S. even put *fasciuncula* as a var. of *latruncula*.

Tutt remarked in 1891 that “ This species (*fasciuncula*) which is generally treated as a variety of *M. strigilis* by the Continental authors,* is so exactly like that species in shape and markings, that, besides

* Stdgr. *Cat. Hæd.* (1871) treated *fasciuncula* as a species.

colour there appears to be no distinguishing mark in the imago state by which it can be separated." [*Brit. Noct. I. 102.*]

Pierce in *Genitalia of the Noctuidae*, p. 33, figs. on pl. XIII., gives the following definite differences:—

Strigilis. (1) LOBE of the anal angle of the cucullus thickly clothed with spines. (2) CLAVUS peaked, bulbed at the base, and clothed with short hairs. (3) UNCUS narrow waist, diamond pointed. (4) JUXTA without side spines. (5) AMPULLA rounded.

Fasciuncula. (1) LOBE of the anal angle of the cucullus thinly clothed with spines. (2) CLAVUS peaked and clothed with short hair. (3) UNCUS broad without waist and pointed. (4) JUXTA two arms surmounted with a bunch of spines on each. (5) AMPULLA stout and rounded.

These differences are well shown on the plate.

In addition the terminal portion of the valve is produced in a "bird's head" in profile but the beak portion is still longer than in *strigilis*, and quite distinctive (teste Dr. Cockayne *in lit.*).

Tutt *Brit. Noct. I. 101* (1891): *Barr. Lep. Brit. Is. V. 15*, pl. 186 (1899): *Stdgr. Cat. III* ed. 165 (1901): *Splr. Schm. Eur. I. 181*, pl. 41 (1905): *South Moths. B. I. I. 275*, pl. 134 (1907): *Hamp. Lep. Phal. VII. 377* (1908): *Warr.-Seitz. Pal. Noct. III. 172*, pl. 40k (1911): *Culot Noct. et. G. I(1). 122*, pl. XXII. 1-2 (1909-13).

Figure 550b of Ernst. and Engram. *Pap. d'Eur. VII. (1792)* is that of a *fasciuncula* form possibly Donzel's *rubeuncula*.

Hubner's *erraticula* 537 does not belong here. The central fascia unites it undoubtedly with *bicoloria*. There are no traces of the white characters on the inner margin. Warr. in Seitz place it to *bicoloria*.

Wood, *Ind.* pl. 13, figs. 279-280, figures two forms, the former named *rufuncula*, reniform red not so red as the typical and with the fascia "Plain red minor," only showing on inner margin and the latter a typical form. The fig. 279 of Wood is a *fasciuncula* form undoubtedly and not the *rufuncula* of Haw. and Steph. Haworth's description of "strigis duabus rectis medio" undoubtedly refers to *bicoloria*. Fig. 279 has the med. fascia identical with that of the normal fasc. albeit somewhat wider on the inner margin.

H.-S's. figures are all three much like *erraticula* of Rambur but of normal size; all are characterised by the central area (fascia) being darker on the inner margin and contracted to half its width above and bordered there by a conspicuous curve of white.

Spuler's figure is a very red-brown colour, pl. 40, f. 8.

Warr.-Seitz, *l.c.* pl. 40k figures the grey and the red forms.

Culot, *l.c.* I(1), pl. 22 figures a typical form with an intermediate without very suppressed red colouring.

Guenée treats *erraticula*, Hb. nec Fr., as a species and states the essential characteristics as a ground colour of grey-violet, with the narrow median area of a decided black.

He describes a form of it (A) much mixed with reddish, the median area being of an agatha red. Thorax of a decided red with the black line of the collar very feeble.

Of the Variation Barrett says—"There is a constantly recurrent variety of the male, often common, which bears a far greater resem-

blance to the female—of a pale brownish-drab or yellow-brown, clouded with dull umbreous, and having the central band of a very soft umbreous, the markings normal except that the white edges to the transverse lines are less distinct, and the stigmata sometimes dusky white. Intermediates occur much more rarely. In all the colour of the thorax follows that of the central band of the forewings. In the North of Ireland and in Scotland the red forms are sometimes brighter red and the drab-brown rather darker, while some take a smoky tinge.”

Barrett records a specimen having “the central band of a rich purple-red, with shading of the same on both base and apex of the wings.”

He also records a specimen “Entirely suffused with golden-yellow, through which the darker markings are perceptible.”

The names and forms to be considered are—

fasciuncula, Haw. *Lep. Brit.* 215-16 (1806-10).

ab. *rubeuncula*, Donz. *Ann. Soc. ent. Fr.* 430. pl. XII. 3-4 (1838).

ab. *erratricula*, Rambr. *Cat. Sys. Lep. And.* pl. XVI. 1-2 (1858).

ab. *cana*, Stdgr. *Cat. Hed.* 102 (1871) [*Haw. Lep. Brit.* 216 (1806-10)].

ab. *pallida*, Tutt *Brit. Noct.* I. 101.

ab. *extrema*, Tutt *l.c.*

ab. *suffusa*, Tutt *l.c.*

ab. *brunneata*, Warr.-Seitz. *Pal. Noct.* III. 172. pl. 40k (1911) [*Hamp. Lep. Phal.* VII. 377 (1908)].

ab. **grandis**, n. ab.

Tutt dealt with (1) *fasciuncula* typical; (2) *rubeuncula*, Frr. (not of Donz.) almost unicolorous, less red, band not developed; (3) *cana*, Stdgr. Haworth's var. B. the ground pale, with distinct fascia (red or dark fuscous); (4) *pallida* pale all over, fascia only on inner margin; (5) (*pallida*) *extrema* pale, entire absence of fascia; (6) *suffusa* dark greyish black with obsolescence of markings.

Tutt gives ab. *rubeuncula* as of Freyer (1845) whereas it should have been of Donzel (1838) as Freyer states. Tutt's description of the figure is wrong from my copy of Freyer. The figure is not “almost unicolorous.” The usual markings of *fasciuncula* are quite apparent and the arrangement of markings well defined.

Freyer, *N. Beitr.*, V. 143 (1845), considers this, as did Donzel, a true species, whereas Bdv., *Ind. Meth.* (1840), placed it as a form of *latruncula*. No doubt this last opinion was in accord with the generally received continental view that *fasciuncula* was a form of *strigilis*.

H.-S. treats *rubeuncula* as a species only separable from *latruncula* with difficulty by the outer transverse line being cut through or not by the black veins, the appearance of the stigmata as lighter spots without sharp dark margins, the colour either clear cinnamon red (both sexes) or pale ochre-yellow at the base, in area 2 and beyond the elbowed line most red.

Warr.-Seitz. gives *rubeuncula*, Donz. and *erratricula*, Hb. and *suffuruncula*, Tr. as synonyms of *literosa*.

ab. *rubeuncula*, Donz. *Ann. Soc. ent. France*. VII. p. 429 (1838).

FIG.—*l.c.* plt. 12.

ORIG. DESCRIP.—“It has the appearance of *latruncula*, but is smaller. It is of a brick red, while that is a blackish brown. The fore-wings are a brick red ground with the sinuous transverse lines lighter. The most notable is the third, which before reaching the inner margin takes the form of a white crescent of which the points are directed to the outer margin. Within this crescent one sees a small square space of a red brown. The stigmata are obsolescent; they are paler than the ground on which they stand. The fringe is pale reddish cut into by brown. The lower-wings are blackish with the fringes of a reddish-white. The female is of a paler tint, tending to soiled yellow; the lines are better indicated. Some males are the colour of the females.”
Mont-Louis. Pyrenées Orientales.

ab. *grandis*, n. ab.

FIG.—Ramb. *l.c.*, plt. XVI. 1-2 (*erratricula*, Hb. ? error).

ORIG. DESCRIP.—No letterpress.

Ramber, *Cat. Sys. Lep. And.* plt. XVI. f. 1-2 (1858) figures an insect under the name *erratricula*, Hb. ? A careful comparison of the figures show complete dissimilarity. There is no letterpress.

Hübner's fig. 437, *erratricula* is certainly a bad figure to represent any form of *fasciuncula* with which I am acquainted. It is smaller than Rambur's figure and the markings are not comparable, all being more or less regularly transverse and the general colour is not the beautiful red of *fasciuncula*, of which Rambur's figure certainly partakes. Warr.-Seitz. places it to *liverosa* and I think rightly so, and Rambur's figures they place to *fasciuncula*.

In this case Rambur's fig. is without a name and as it is nearly twice the size of typical *fasciuncula* it might be called *grandis*.

ab. *brunneata*, Warr.-Seitz. *Pal. Noct.* III. 172 (1911) [*Hamp. Lep. Phal.* VII. 378 (1908)].

ORIG. DESCRIP.—Hamp. Ab. 1. “Darker brown,” Scotland.

Warr.-Seitz. “Scotch form browner, especially the lower half of median area.”

ab. (ssp.) *abiluna*, Kozhants. *Jahr. Martian. Minussinsk.* VI. 76 (1929).

ORIG. DESCRIP.—“This was placed to the species *Oligia leuconephra*, Hamp. The determination of it as that species arose from an error since *leuconephra* does not belong to the genus *Oligia*. But the species which we included under the name *leuconephra* is a true *Oligia* which obviously possessed the habitus and the marking of *O. fasciuncula*. The distinction from the typical form consists only in the golden reflection from the brown forewings and the clear white half moon-shaped spot in place of the indefinite reniform stigma.”

Miana, Steph. (1829) Gn. New. Barrett, Stdgr. Splr. Cul. [*Hadena*, Schrnk. (1802), Meyr. : *Apamea*, Tr. (1816-25). Bdv. : *Oligia*, Hb. (1822) Hamp., Warr.-S.] *bicoloria*, Vill. (1789) = *furuncula*, Schiff. (1775).

Tutt took Villars's name for this species viz. *bicoloria*, Linn. *Entomologia*, II. 288 (1789), which name Bork. used *Schn.* IV. 190 (1792). Treit. *Schn. Eur.* V(2). 94 (1825), discusses the name and points out the agreement of Hübner's fig. 545, the specimens in Schiffermüller's collection, and the German description in the *Verz.*, p. 89, 1775, that *furuncula* is the prior name for *bicoloria*, Vill.

Hüb. *Text-Noct.*, 184 (1805-18) gives *bicoloria*, Bork. and *meretricula*, Bork. as synonyms of *furuncula*, Schiff.

Villars gives a reference for *bicoloria* to "*Entomologia Parisiensis*, 194," which I have failed to trace. It would appear to refer to Fourcroy or to Geoffroy, but I fail to find the name in either of these books.

furuncula, Schiff. *Verz.* 89 (1775).

ORIG. DESCRIP.—"Small Noctua, has a transverse band on the dependent very dusky forewings, which narrows inwards, is least on the inner margin and is margined with a white wavy contour line. There stands a few tufts of hair on the body. Braune Weissstreifigte Eule." It is classified with *latruncula*, *praedumena* (*strigilis*), etc.

There seems great uncertainty among earlier authors what is the colour and marking of the earliest named form, *i.e.*, of *furuncula*, Schiff. If we may depend on the remarks of Treit., *l.c.*, 94, this fig. 545 is of the typical form, which Hb. describes, *Text* p. 184, as "reddish brown, the outer half of the wings pale in colour, with whitish reniform and wavy line, the body and abdomen grey. Syn, *furuncula*, Treit., *bicoloria*, Bork. and *meretricula*, Bork."

Tutt *Brit. Noct.* I. 103 (1891) : Barrett *Lep. Br. Is.* V. 20, pl. 187 (1899) : Stdgr. *Cat.* IIIed., 165 (1901) : Splr. *Schn. Eur.* I. 181, pl. 41 (1905) : South *M. Br. Is.* I. 277, pl. 134 (1907) : Hamp. *Lep. Phal.* VII. 393 (1908) : Warr.-Seitz. *Pal. Lep. Noct.* III. 173, pl. 41 (1911) : Culot *N. et G.* I(1). 122, pl. 22 (1909-13).

Esper's fig. *asiata* pl. 146, 5, which is sometimes referred to this species is undoubtedly a *strigilis* form.

The figures of Ernst. and Engr. *Pap. d'Eur.* VIII. are very mixed and difficult to elucidate. Werneburg says 548*a* small and light clay yellow *furuncula* ; 548*b-e*, he also calls *furuncula*. Probably correctly except that *b* is exceptionally large for this species, 549*a-c* he calls *furuncula*. I would only call *a* this species. 550*f* he calls *strigilis*, but I should certainly agree with Guenée and call it *furuncula*.

Hübner's *Noct.* 96 (1808) shows the characteristic transverse line of *vinctuncula* very clearly. 545 (1808-18) has a uniform strongly dark mahogany brown base with ochreous brown ground. Tutt calls this the typical figure of *furuncula*, and thus does not agree with Gn. who gives Ernst. and Engr. fig. 550*f* which has no shade of reddish or brown in it. Hübner's fig. therefore does not represent the *bicoloria* as described by Villars. But Borkhausen IV. 190, however, describes the

basal half as either brighter or darker red-brown. Hence Gn. has not indicated the typical *furuncula* but the *bicoloria* form. Goetze calls it the "white streaked brown." *Ent. Beitr.* III(3). 222.

Dup. *Hist. Nat.* VI. pl. CI. f. 3 is of a very dark form of two main shades of dark reddish-grey, the basal half being of a deep brown (VII. 1).

Wood. *Index.* figs. 277 and 278 pl. 13, are *humeralis* and *terminalis*. He does not figure the very light form with which one is so familiar on the sea coast, sandhills, etc. His figure 279 labelled *rufuncula* is not this species but a *fasciuncula* form.

South. *M. Br. Is.* I. pl. 134. gives five figures not one of which is typical *furuncula* as depicted by Hb. Fig. 3, is probably the *bicoloria*, Villars, ground colour greyish fuscous with outer half paler than basal half.

Warr.-Seitz figures *bicoloria*, Vill. pl. 401, *furuncula*, Hb. pl. 401, *rufuncula*, Haw. 2 figs. 401, *terminalis*, Haw. pl. 401, *vinctuncula*, Hb. pl. 41a, *unicolor*, Warr.-S. pl. 41a, *pallidior*, Stdgr. pl. 401, *reticulata*, Tutt. pl. 401, *brunneo-reticulata*, Tutt. pl. 401, *longistriata*, Warr. S. pl. 401. Yet none of the really pale forms are figured, all are what I should call dominantly dark.

Culot figures, *l.c.* pl. XXII. f.3. *bicoloria*; f.4. *furuncula*; f.5. *insulicola*; and f.6. *vinctuncula*; as usual all are quite excellent figures.

Of the Variation Barrett says.—"A form which instead of having the colours of the forewings equally divided [as in typically marked forms] has them completely marbled with some shade of brown or reddish-brown, is in many districts even more plentiful, and in this the perpendicular line is usually obliterated. Intermediate forms retaining the division, but having the outer portion almost any shade of brown paler than the inner are not infrequent."

"In some parts of the South Coast and especially in the Isle of Wight, the brown of the basal half is invaded with white, so as in some instances to leave a darker central band and even to furnish its lower half with a dark brown or black bar, while in others the orbicular stigma and an oblique blotch below it become white; in all these the white outside the perpendicular line has a chalky tint. In these localities the female in some instances has similarly divided colouring.

"In Berkshire and elsewhere inland the basal half is not seldom of a rich purple-red or purple-brown, and the hind marginal cloud similar or darker."

Barrett records a form in great abundance from some parts of the Irish coast, "having the forewings unicolorous yellowish-drab, varying but little darker or paler." "This form stands broadly out from the rest, but language altogether fails to express the intermingling of all these variations."

Barrett adds "Various names have been given to these forms, in the first place under the impression that they formed distinct species, more recently as varieties:—from our great knowledge of the intermediates, these have lost all definite meaning and seem to be of little value."

The Names and Forms to be considered are:—
furuncula, Schiff. *Verz.* 89 (1775).
f. *bicoloria*, Vill. *Linn. Ent.* 288 (1789).

- ab. *terminalis*, Haw. *Lep. Brit.* 215 (1806-10).
 ab. *rufuncula*, Haw. *l.c.*
 ab. *humeralis*, Haw. *l.c.* var. γ .
 ab. *vinctuncula*, Hb., *Noct.* 96 (1802).
furuncula, Hb., *l.c.* 545 (1808-18) = *furuncula*, Schiff.
furuncula, Tr., *Schm.* V(2). 52 (1816-25).
 ab. *pulmonariae*, Dup., *Hist. Nat.* VI. 47 (1826) pl. 75.
erratricula, Freyer, *Neu. Beitr.* II. 81, pl. 142, 3 (1836).
furuncula, H.-S., *Neu. Schm.* p. 4, figs. 19, 22, 23 (1856) = *insulicola*,

Stdgr.

- subsp. *insulicola*, Stdgr., *Cat.* IIed. 103 (1871).
 subsp. *pallidior*, Stdgr. *Stett. e. Zt.* XLIII. 42 (1882).
 ab. *pallida*, Tutt, *Brit. N. I.* 105 (1891).
 ab. *albicans*, Tutt, *l.c.*
 ab. *reticulata*, Tutt, *l.c.*
 ab. *fusca-reticulata*, Tutt, *l.c.*
 ab. *brunnea-reticulata*, Tutt *l.c.*
 ab. *rufa-reticulata*, Tutt *l.c.*
 ab. *grisea-reticulata*, Tutt *l.c.*
 ab. *semicretacea*, Alph. *Mem. Rom.* IX. 29 (1897).
 ab. *albimacula*, Splr. *Schm. Eur.* I. 181. pl. 41 (1905).
 ab. *unicolor*, Warr.-Seitz. *Pal. Noct.* III. 173. pl. 41a (1911).
 ab. *longistriata*, Warr.-Seitz. *l.c.*

Tutt dealt with *pallida*, whitish grey of two shades, the basal half slightly darker: subsp. *insulicola* the mottled whitish grey form; the unicolorous whitish grey, *albicans*; *bicoloria* the grey fuscous with outer half paler = *humeralis*, Haw.; *reticulata*, the mottled fuscous grey with distinct markings; *humeralis*, var. γ , Haw., the unicolorous fuscous grey; the reddish-or ochreous-brown form, *furuncula*, Hb. (Haw. ?); the mottled ochreous- or reddish-brown, *brunnea-reticulata*; the unicolorous ochreous- or reddish-brown, *terminalis*, Haw. *a* and *b*.; pale reddish ochreous with outer half pale reddish grey, *pulmonariae*; the mottled pale reddish ochreous, *rufa-reticulata*; the unicolorous pale reddish-ochreous, *rufuncula*, Haw.; *vinctuncula*, the narrow banded (black) form; and in the Appendix Vol. IV. *pallidior*, a paler form with basal half rufous, terminal half whitish, hindwings white. He also refers to *fusca-reticulata* and *grisea-reticulata*, neither of which he otherwise mentions. Probably the former refers to *reticulata* above and the latter *insulicola* above.

Haworth evidently did not consider his *rufuncula* related closely to his *humeralis* and *terminalis* as he separated them by his *fasciuncula*, and if Wood's fig. 279 of *rufuncula* be correct it certainly is not a form of *furuncula* as the outer limit of the fascia of *fasciuncula* form, outside the reniform, is double curved and not straight. The colour also is the red of the latter and not the red with pubescent white surface of the former. Stephens only had one poor example.

Freyer, *Neu Beitr.* II. p. 81. pl. 142. 3 (1836) *erratricula* does not belong here nor is it the *erratricula*, Hb. It has been put here by some authors.

Guenée considers the typical form to be the bipartite brown and white form, as figured in Ernst and Engr. VIII. fig. 550 f. This figure

is too large and also too clearly and brightly marked and has a much better appearance for *strigilis*. Werneburg considers it to be *strigilis*. Guenée says:—typical form: half brown, half white, (*i.e. bicoloria* form).

terminalis, A: white half replaced (=548 d. e.) with division line still distinct by a. brown, b. reddish.

rufuncula, B: whole wing uniform tint, one sees only the division line, the basal line and black traces in the terminal space.

vinctuncula, A: whole wing uniform tint, line very pronounced black.

pulmonariae, C: ground yellow-ochre, stigmata clear, obsolescent central line = Engr. 548a b.

pulmonariae, D: grey black, extra basal area brown mixed with yellow to base.

Stdgr. *Cat. IIed.*, 103, gives var. et ab. *insulicola* with reference to H.-S. *Neu Schm.* 4, figs. 19, 22, 23, (al. ant., griseis, albido, nigroque, strigulosis) thus naming the form of *furuncula* figured by H.-S.

Newman, *Brit. Moths*, 309 (1869) points out that Haworth's *humeralis*, *terminalis*, and *rufuncula* are the 3 chief forms of *furuncula*, and he (Newman) figures all three rather crudely.

Tutt quotes Stdgr. (IIed.) for the typical form "ab. ant. usque ad medium fuscis." (iisque is a printer's error, *B. N. I.* p. 103) as describing the typical form. In IIIed. Stdgr. adds "deinde albicantibus."

Tutt says 4 ground colours, white, fuscous grey, pale reddish, dark reddish, and of each. (1) unicolorous (2) mottled with transverse whitish lines (3) basal half dark, outer pale grey or white. *a.* unicolorous base. *b.* mottled base.

Stdgr., *Cat. IIIed.* 165, lists *semicretacea*, Alph. as his *pallidior* (dilutior, al. ant. dimidio basali rufescenti, dimid. exter. subalbido, al. post. sordide albidis).

He lists the *rufuncula*, Gn. as the *vinctuncula*, Hb. (ut *rufuncula* sed al. ant. fasci media tenui nigra; ab. rarissima).

He says that the *furuncula*, H.-S. *Neu Schm.* is the same as his *insulicola* (alis ant. griseis, albido nigroque strigulosis).

He says that the *erratricula*, Frr. is the same as the *rufuncula*, Haw. (alis ant. fere unicoloribus rufescenti-griseis) see ante.

He lists *terminalis*, Haw. as the *furuncula*, Hb. 545.

He omits all reference to the *pulmonariae*, Dup.

Splr. takes *bicoloria*, Vill. as the type, where the basal half of the forewing is brown and the outer-marginal half whitish. If the base be very pale it is ab. *pallida*. If the outer half is reddish or brownish, it is ab. *furuncula*. When the forewings are unicolorous red-grey it is ab. *rufuncula*, and with white reniform is ab. *albimacula*. If similarly coloured with narrower black brown transverse bands it is the rare form ab. *vinctuncula*. The var. (race) *insulicola* has greyish forewings, which are marked by whitish and brown-grey, and come from Helgoland. In sandy steppe-like areas occurs *rufuncula*, with reddish base, lighter and whiter marginal half of forewing and dusky whitish hindwings, which form is paler further east as var. *pallidior* (*Schm. Eur.*, I. 181-2).

Hamp., *l.c.*, adopts *furuncula*, Schiff., he treats *erratricula*, Frr. (nec. Hb.) as synonymous as well as *suffuruncula*, Bdv., *Ind.* 116.

Warr.-Seitz uses *bicoloria*, Vill., and states that "typical *bicoloria*

has the outer area whitish or grey with a rufous tinge." Of *furuncula*, Hb., he says, "the outer half is reddish-brown approaching the colour of the basal half," with which his fig. pl. 401, somewhat agrees, but does not agree with Hübner's fig. 545, which is remarkably rich in colour.

He puts *humeralis*, Haw., as a syn. of *bicoloria*; *rufuncula*, Haw. is the *erraticula* of Freyer, nec. Hb.; *insulicola*, Stdgr. is *furuncula*, H.-S. (nec. Hb.).

Dup. *Hist. Nat.* VI. 47, pl. 75, f. 3, has described and figured his form *pulmonariae*, in proximity with *Caradrina* in which he followed Ochs.-Treit. *Gn. Noct.* V. 217, draws attention to the yellow-ochreous ground and the very slight separation into the two shade areas of the usual forms. He says that fig. 548 *a, b*, Engram. is the same, but the colours of this insect in my copy of the latter work are much too bright and *b* has the separation very well defined.

subsp. *insulicola*, Stdgr. *Cat. Hed.* 103 (1871).

H.-S. *Neu Schmett.* p. 4, 1856, writes the following note concerning figs. 19, 22, 23 on his plate.

"I consider there is almost a specific difference from *A. furuncula*; it appears somewhat more slender, the colour not so reddish, but brownish yellow, the reniform more distinct, smaller, and whiter.

"One example as pale as fig. 23 has the basal half of the forewing and the marginal area beyond the waved line as dark as typical *furuncula*."

From the Island of Norderney, in numbers, where no ordinary *furuncula* occur.

These three figs. 19, 22, 23 may be described—

19 has a darker ground, more dark ochraceous, but the markings are quite distinct.

22 is very uniform grey, with suppressed markings just visible, the most apparent being the submarginal.

23 has the upper $\frac{2}{3}$ of the f.w. very whitish and also a thin whitish inner margin. A darker chevron before the apex. The remaining $\frac{1}{3}$ being darker still, forming a long wedge from submarginal near inner angle to the base in a blunt point.

Culot, *N. et. G.* I(1). 123 remarks, "The example which has served me as a copy was furnished by Stdgr. to the old collection of Pictet, forming now a part of the Museum of Geneva; thus one may assume that the determination is correct." However, there seems to me but little agreement with Stdgr's description, which reads thus, *Alis ant. griseis albido nigroque strigulosis*. In my opinion it belongs to the ab. *rufuncula*, Hw.

subsp. *semicretacea*, Alph., *Mem. Rom.* IX. 29 (1897).

ORIG. DESCRIP.—"Var. major, pagina postica anticarum albidiore. ♂ = 26mm. A single ♂ larger than the European type, with the exterior half of the forewings whiter, appears sufficient to me to form a characteristic geographical race of *bicoloria*, Vill." Cent. Asia near Moudjik.

ab. *albimacula*, Sprl., *Schm. Eur.* I. 181 (1905).

ORIG. DESCRIP.—"When the unicolorous red-grey form has a white reniform it is ab. *albimacula*."

ab. *unicolor*, Warr.-Seitz, *Pal. Noct.* III. 173 (1911).

FIG.—*l.c.* plt. 41a.

ORIG. DESCRIPT.—“Differs from *vinctuncula*, Hb. in being unicolorous fawn brown with a slightly darker band instead of the black band.”

ab. *longistriata*, Warr.-Seitz *Pal. Noct.* III. 173 (1911).

FIG.—*l.c.* plt. 40l.

ORIG. DESCRIPT.—“In which a straight black streak runs along the submedian fold from base to termen; the ground colour is pale grey, suffused with rufous-brown except at base of costa and beyond the pale grey reniform stigma, the terminal area being paler rufous-brown; hindwings grey.” Bilbao, Spain.

ADDENDA.

var. *reisseri*, Schawerda, *Zeit. Oestr. Ent. Ver.* XVII. 13 (1932).

FIGS.—Plt. III. 5, 6.

ORIG. DESCRIPT.—“The ground colour of the forewings is grey-brown. The central area is dark brown, in the small examples almost black brown. The central area is margined both on the outside and inside by a white double line. The outer white double line is conspicuously scalloped on the inner margin in both specimens bow-formed. The orbicular is clearly visible, with light margin. The reniform large, distinctly white, and since it reaches a white larger costal marginal spot, appears conspicuously larger and whiter. Three very small white spots on the costa towards the apex. An indistinct whitish premarginal transverse line. Blackish marginal lunules. Light and dark chequered fringes on the forewing. The outer area between the light curved lines and the outer margin darker. In and near the white of the marking a lighter variegated tone. In the larger ♂ there is a darker cell space on the hindwing very clearly defined. Thorax the colour of the forewing, along the abdomen more dark grey than the hindwing and the unicolorous underside.” High Mountains of Corsica. Nearest to ab. *reticulata*, Tutt, and ab. *brunneo-reticulata*, Tutt.

ab *minor*, Cabeau, *Lamb.* XXXII. 82 (1932).

ORIG. DESCRIPT.—“Very small, 17mm., but in coloration as in ab. *bicoloria*, Vill. Framièrés.”

ab. *minuscula*, Cabeau, *l.c.*

ORIG. DESCRIPT.—“Small as in ab. *minor*, but the coloration of ab. *rufuncula*, Haw. Framièrés.”

Miana, Steph. (1829), Gn., Barr., Stdgr., Splr., Cul. [*Hadena*, Schrnk. (1802) Meyr.: *Apamea*, Ochs. (1816-25) Fr.: *Oligia*, Hb. (1822) Warr.-S., Hamp.] *literosa*, Haw. (1809).

Gn. *Noct.* V. 216, like many continental authors, says that *literosa* is the *erraticula*, Hb., but not of Freyer. His var. A “Of a rosy-grey, much suffused with reddish” may represent *literosa*. Warr.-Seitz gives this latter varietal status under the name *subrosea*. Hamp. *Lep. Phal.* VII. 389, treats *erraticula*, Hb. as synonymous.

Although Tutt does not refer to *erratricula*, Hb. under *bicoloria* = *furuncula*, under *literosa* he expresses the opinion that *erratricula* is a form of *bicoloria*, although on the continent *literosa* has always been included with it. I am in agreement with Tutt here for all the *literosa* I have seen and all those recorded have a peculiar rosy coloration which is unmistakable.

Reference to the figures of the genitalia of *literosa* and *furuncula* in Pierce *Gen. Noct.* pl. XIII. is quite convincing as to their specific distinctness. The text *l.c.*, p. 32, 33 is rather meagre and not sufficiently comparative.

Tutt, *Brit. Noct.* I. 106 (1891): *Barr. Lep. Br. Is.* V. 8, pl. 185, 2 (1899): *Stdgr. Cat.* III. ed. 164 (1901): *Splr. Schm. Eur.* I., 180, pl. 41 (1905): *South Moths Br. Is.* I. 276, pl. 134 (1907): *Hamp. Lep. Phal.* VII. 389 (1908): *Warr.-S. Pal. Noct.* III. 172, pl. 40k (1911): *Culot N. and G.* I(1). 121, pl. 21, f. 15 (1909-13).

Stephens has a good figure but somewhat larger than average examples. *Ill.* III. pl. 25, fig. 1 (1829).

Warr.-Seitz includes the *erratricula* of Hb. and the *suffuruncula*, Tr. as synonyms.

He figures ♂ and ♀, typical markings but the rosy flush practically suppressed; *constricta*; *subarcta* with no red tints; *subrosea*, the whole forewing suffused rosy brown; and *onychina*, reduction of dark tints, the whole forewing creamy grey, a striking ab. Ab. *subrosea* is var. A of Guenée.

Culot *N. et G.* I(1). pl. 21, fig. 15 has a very good figure of the typical form.

Oberthür (1918) treats *literosa* as the same as the *erratricula*, Hb. 537.

Barrett says of the Variation—"Very slightly variable in the general colour of the forewings, from purplish-red to purple-grey, and in the degree of silvery-grey clouding."

Barrett records a specimen which "has these wings entirely dark purple, without any pale clouding; from Essex."

He also records another "strongly tinged with rusty-red and has no pale clouding."

Tutt notes, "rather paler" specimens from Forres, Scotland, "variation in the width of the median band," "also its intensity," and the "development of the longitudinal \equiv mark under the stigmata." "It is the most constant of all the British species of *Miana*."

The Names and Forms to be reviewed are:—

literosa, Haw. (1809) *Lep. Br.* 213.

erratricula, Hb. (1808-18) *Noct.* 537, Text 184.

ab. *suffuruncula*, Tr. (1816-25) *Schm.* V(2). 97.

ab. *suffuruncula*, (Frr.) (1825) *Neu. Beitr.* II. pl. 142, 4.

subsp. *onychina*, H.-S. (1856) *Neu. Schm.* 4, figs. 20-21.

race *subarcta*, Stdgr. (1897) *Iris.* X. 283, pl. IX. 14.

ab. *constricta*, Warr.-S. (1911) *Pal. Noct.* III. 172, pl. 40k.

ab. *subrosea*, Warr.-S. = Gn. (1911) *l.c.*

race *powelli*, Obthr. (1918) *Lep. Comp.* XVI., 135, pl. 496, f. 417.

Of *erraticula* Hübner, *Text Noct.* p. 184, says, "brownish red, grey shading; the wings dusky, marked with pale yellowish-brown centered stigmata." This cannot be *literosa*, which is "violet grey with a partial rosy brown flush" (Warr.-S.). Stdgr. also queries the identity, *Cat.* 165.

ab. ? *suffuruncula*, Tr. *Schm. Eur.* V(2). 97 (1816-25).

FIG.—Freyer, *Neu. Beitr.* II. pl. 142, f. 4.

ORIG. DESCRIP.—"Fresh specimens are very bright and shine with a mixture of silver and coppery colour on the forewings. This feature is sufficient to distinguish it from the other species, even if no other character is to be found.

"Head, neck and thorax grey with reddish and white hairs. The neck is darker edged, the thorax crested. The abdomen ashy coloured. The antennae clear brown, not toothed in the male. The feet grey, white ringed.

"The forewings have three areas, of which the first at the base and especially the third are very wide. They are both very glossy, towards the second area more silvery, towards the base and fringes more suffused copper colour. The first area reaches up to the orbicular. Towards the costa there lies a black streak, which ends before the orbicular. Then follow the orbicular itself as a longish blacker marking filled in with silvery and coppery colour. Under it lies a strong black square in place of the claviform. Beyond the orbicular and reniform stigma the third area begins; the reniform is wholly suffused with silvery. The waved band is fine, black points and finally there comes coppery colour. The fringes are double-edged dark-brown. The hindwings are uniform grey somewhat darker towards the outer margin and strongly glossy. The fringes again are brighter."

Hamps., *Lep. Phal.* VII. 389, treats *suffuruncula*, Ochs. and Treit. as well as *erraticula*, Hb. as synonyms of *literosa*.

Freyer, *Neu. Beitr.* II. 81, pl. 142, f. 4, figures the *suffuruncula*, Tr. from the actual specimen from which Treit. made his description many years before, *Schm.* V(2). 97. The figure wants the peculiar rosy colour of *literosa* and if that species, must be considered as a form of it. The band is certainly like that of typical *literosa* and not comparable with either *erraticula* or *fasciuncula* or *bicoloria* (*furmen'la*). The example would not be a fresh specimen and therefore would not be "sehr schön und frangen mit einer silber—und kupferfarbigen Mischung auf den Vorderflügeln."

race *onychiona*, H.-S. *Neu. Schm.* 4 (1856).

FIGS.—*l.c.*, 20-21.

ORIG. DESCRIP.—"The more unicolorous the specimen is and the more indistinct all the marking is, the more sharp do the veins stand out, while in the darkest example they are resolved into small dots; the central area is always broader than in *erraticula*, the orbicular is more oblique and more produced, the black streak in cell 1b of the central area is always wanting."

"Compared with *erraticula*(sic): 23 examples which I have before me are quite different from that. There is wanting the bright cinnamon-brown suffusion, the ground colour is a pale red grey mixed with

shining grey, the latter colour being most apparent on the reniform and on the veins."

Hamp. *Cat. Lep. Ph.* VII., 389 (1908) "Much paler; forewing grey white, the marking obsolescent."

Oberthür says, *Lep. Comp.* XVI. 135. "With wings unicolorous and of a uniform clear ochre tint. None of the ordinary spots or lines are present on the forewings above. Of a uniform clay or dust colour." Heligoland.

race *subarcta*, Stdgr. *Iris.* X. 283 (1897).

FIG.—*l.c.* pl. 9, f. 14.

ORIG. DESCRIP.—"Herr J. Paulus sent me a tolerably fresh (only somewhat damaged) example, 28mm. in expanse, a ♀ caught at light on June 11th at Jerusalem, to which a ♂ sent much later by him measuring 25mm. belongs. I see now that both these insects can only be a local form of *H. literosa*, to which a tolerably perfect ♀ 30mm. in expanse caught in Sicily by Herr Kalchberg and one found by Haberhauer in mid August at Lepsa in N.W. Central Asia belong. I have described the last in the *Stett. Ent. Zeit.* 1882, p. 41, as "*Literosa* with very little reddish suffusion." Thus it is apparent, that these var. *subarcta* on the average are larger than *literosa*. A chief point of distinction from typical English and German *literosa* is the obsolescent nature of the reddish suffusion of the forewings, which in the Palestine specimen is quite absent. This absence of the reddish coloration mislead me especially to identify (compare) the large female from Palestine with the somewhat larger *arcta*, Led., and the equally large *arctides*, Stdgr., from the Amur area. From both these forms very similar to one another *literosa* is to be distinguished, and also from *subarcta* by the lighter almost markingless underside. There shows in the first two forms distinctly, broad, dark transverse lines particularly on the lighter hindwings which also bears a sharp, dark discal spot, while the almost white-grey underside of the wings of *literosa* is mostly not marked, or only on the hindwing bears a very obsolescent dark discal spot and traces of an obsolete transverse line. The v. *subarcta* differs from the confusedly tolerably variable Central-Asian *literosa* (unter eiander), moreover by no constant difference; the middle area of the forewing between the two transverse lines, is mostly wider and produced somewhat blacker or black margined, by which *subarcta* appears very like the *arcta* form."

Hamp. says, *l.c.* 389, "Larger; forewing not tinged with rufous."—Sicily, Palestine, Ala Tau.

ab. *constricta*, Warr.-Seitz *Pal. Noct.* III. 173 (1911).

FIG.—*l.c.* pl. 40k.

ORIG. DESCRIP.—"Principally confined to the ♂♂; the median area between the two lines is narrowed and much darker, especially in the two folds, and the red flush is less developed."

ab. *subrosea*, Warr.-Seitz. *Pal. Noct.* III. 173 (1911).

FIG.—*l.c.* pl. 40k.

ORIG. DESCRIP.—"The darker grey and fuscous tints may be reduced and the whole forewing suffused with rosy brown, the whole thorax also showing rufous." A common form in England.

The ab. A. of Gn. is this form (1925) *Noct. V. 216* "of a rosy grey, much suffused with reddish."

race *powellii*, *Obthr. Lep. Comp. XVI. 135* (1918).

FIG.—*l.c.* plt. 496, f. 4117.

ORIG. DESCRIP.—"The Algerian race is more uniformly grey and the appearance more frail. Divested of all trace of red." Greyville. "It is not exactly referable to the Sicilian *subareta*, Stdgr."

The figure is larger than the average British races and the colour is quite distinctive dull orange apparent even through the markings. The stigmata are somewhat lighter. There is a transverse narrow dark band inside the orbicular, a similar but wider band between the orbicular and reniform which is curiously but clearly interrupted by the lighter claviform, also a slight dark chevron lies on the costa behind the apex. The hindwing has a dark marginal band of some width; the ground colour is not a shade lighter than on the forewing.

Phoethedes, *Led. (1857) New., Stdgr., Tutt, South. [Hadena, Schrnk. (1802) Meyr.: Apamea B. Treit. (1816-25), Bdv., Dup., H.-S., Evers.: Oligia; Hb. (1822), Warr.-S., Hamp.: Miana, Steph. (1829), Dbldy., Stain., Stdgr., Barr., Splr., Culot.] captiuucula, Tr. (1816-25).*

Tutt Br. Noct. I. 107 (1891): Barr. Lep. Br. Is. V. 24, plt. 188 (1899): Stdgr. Cat. IIed. 165 (1901): Splr. Schm. Eur. I. 182, plt. 51, 45 (1906): South Moths Br. Is. I. 277, plt. 134, figs. 17-18 (1907): Hamp. Lep. Phal. VII. 394 (1908): Warr.-Seitz. Pal. Noct. III. 174, plt. 41b (1911): Culot N. et G. I(1). 123, plt. 23, f. 7-9 (1909-13).

Dup. Hist. Nat. Noct. VII.(1), has a good fig. of the variegated continental form.

H.-S. Noct. II., figs. 173, 174, are very variegated forms of the purple-red continental suffused form.

Meyr. Hand. Ied. 136, places *expolita* as not differing from *captiuucula*, and also refers it to *Stain.*, possibly correctly in part.

Warr.-Seitz, l.c. plt. 41b, figures the typical form and *expolita*, *Dbldy.* In the typical figure the purple-red colour predominates, but in that of *expolita* it is completely absent.

Culot, N. et G. I(1). plt. XXII. figs. 7, 8, 9, gives 3 very good figures of the variegated purple-red continental form.

The Forms and Names for consideration are:—

captiuucula, *Tr. (1825) Schm. V(2), 96.*

subsp. *expolita*, *Dbldy.-Stain. (1855), Stain. Ann. I. 41 (63).*

ab. *unica*, *Frr. (1858), Neu. Beitr. VII. 68, plt. 640.*

subsp. *tineta*, *Kane (1895), Ent. 165.*

ab. *captiuuculoides*, *Hamp. [Strand] (1908-1915), Lep. Phal. VII. 394 [Arch. Nat. ges. LXXXI. 154. Abt. A. Heft. 11.]*

ab. *albosuffusana*, *Hamp. [Strand] (1908-1915) l.c.*

Tutt dealt with (1) *captiuucula* the purple-red continental type, (2) the grey British form *expolita*.

Barrett says of the Variation—"Not very variable, but there is a tendency in the male to the brighter purple-red colour of the female; and in the West of Ireland this is accentuated, so that all the specimens from that district are of a much richer, brighter red colour.

He records an example from Durham which "has the reniform stigma distinct with white margins and a broadly white second line."

He also records another which "has a rich red central band and a white stripe on each side of it."

And of another he says "has the second line, not only broadly white, but strongly angulated."

The Russian race described by Eversman, *Noct.* pt. IV. 41 (1856), has no purple-red and from the description more resembles the British dark grey form.

ab. *unica*, Fr. *Neu. Beit.* VII. p. 68 (1858).

FIG.—*l.c.* pl. 640, f. 1.

ORIG. DESCRIPT.—"This striking little Lepidopteron stands nearest to *N. latruncula*. It is smaller and smoother than *latruncula*. Thorax and forewing black with purple-red suffusion. The stigmata are purple-red and fairly distinct. From the base runs a purple-red thin streak through the first paler scarcely visible band. Beyond the reniform lies a white narrow band toothed on the outer edge across the whole breadth of the wing up to the inner margin, which divides the forewing into two areas. To this white band succeeds a purple-red dark marbled area. The fringes are black grey. The abdomen and the hindwings as well as the whole underside is dark, black-brown."

The figure and description only agree in a general way. The detail is partly incorrect in either figure or description. More probably the figure wants the delicate detail of the description. Warr.-Seitz, *l.c.* p. 174, treats *unica*, Fr., as of the type form.

subsp. *tincta*, Kane, *Ent.* 155 (1895).

ORIG. DESCRIPT.—"A richly coloured form found by Mr. Birchall. Forewings: basal third of a warm grey, somewhat mottled followed by a deep rose-coloured band reaching from costa to inner margin, bordered interiorly by a very sinuous festooned line of purple-brown, edged externally with grey, and exteriorly by one of similar colours, deeply elbowed towards the outer margin of the wing; the outer third of the wing is of a shining pink, with a dark ruddy patch along the costa, but not reaching to the apex, and a clear whitish suffusion along the lower and outer portion of the red central band, corresponding to the whitish patch shown in the same position in *M. strigilis* and *M. fasciuncula*. Hindwings of a sooty-brown, shot with a ruddy reflection. All fringes of a dirty grey. Thorax of a dingy brown; abdomen paler." Local but plentiful. Ardrahan, Ireland.

Hamp., *Cat. Lep. Ph.* VII. 395 (1908), "Forewing with the basal area grey, the medial area deep pink, the terminal area pale glossy pink."—Ireland.

ab. *captiunculoides*, Strand, *Hamp. Cat. Lep. Ph.* VII. 394 (1908-1915).

ORIG. DESCRIPT.—"Forewing with the postmedial area rufous without white beyond the postmedial line."

ab. *albosuffusana*, Strand, *Hamp. Cat. Lep. Ph.* VII. 395 (1908-1915).

ORIG. DESCRIPT.—“Forewing with the ante- and postmedial areas largely suffused with white.”

Celaena, Steph. 1829: Gn., *Stdgr.*, Barrett, *Splr.*, South, *Hamp.*, *Cul.* [*Hadena*, Schrnk. (1802), *Meyr.*: *Apamea*, Ochs. and Tr. (1816-25), *Curt.*, *Fr.*: *Oligia*, Hb. (1822), *Hamp.*, *Warr.-S.*, *Matsu.*: *Gortyna*, Hb. (1822), *Evers.*: *Luperina*, *Bdv.* (1829), *Hoffm.*: *Neuria*, Gn. (1841), *H.S.*] *haworthii*, *Curt.*, 1829.*

Tutt, *B.N.* I. 107 (1891): Barrett, *Lep. B.I.* V. 1, pl. 185 (1899): *Stdgr. Cat.* III ed. 169 (1901): *Splr. Schm. Eur.* I. 186, pl. 39 (1905): *South Moths Br. Is.* I. 269, pl. 128 (1907): *Hamps. Lep. Ph.* VII. 195 (1908): *Warr.-Seitz. Pal. Noct.* III. 174, pl. 41b (1911): *Culot, N. et G.* I. (1), 142, pl. 26 (1909-13).

Steph. *Cat.* II. 87, gives *Esp. Abbild.* IV. pl. 166, f. 7, for *lancea*. However there is no fig. 7 to pl. 166, nor can I trace the name in *Werneberg's Beitr.*

Eversmann in *Bull. Mosc.* p. 550 (1842) and in *Fn. Volg.* p. 72 (1846) described a species *morio*, which in his subsequent *Noctuities Bull. Cazan*, pt. II. p. 395 (1855) he identified with typical *haworthii*, and also with *Freyer's erupta*.

Wood's figures, *Ind.* 283, is fairly typical, but not variegated as much as the usually occurring type; 284 is *lancea* of a lighter brown with light hindwings; 285 is *hibernica* a darker, richer brown; both the last are more uniform in coloration with suppression of the orbicular.

Freyer's fig. of *morio*, *N. Beitr.* V. 388, 1, is a uniformly red brown with white-ringed reniform stigma from which a few white lines run outwards, a white submarginal line, and marginal white dots. This is much like one of the figures of *Graslin*, *Ann. Soc. ent. Fr.* (1848). It is of good size. His fig. 472, *l.c. erupta*, has a similar reniform but white inside, a white orbicular, a white inner marginal line and numerous white transverse lines along the submarginal area. This is smaller. Neither is like typical *haworthii*.

H.-S. says that the *morio* of *Freyer* pl. 388, 1, is unrecognisable. In his *Synonymic Catalog-Index*, he cites *lyncea*, *Steph.* (recte *lancea*) but omits it in the text.

Graslin, *Ann. Soc. ent. Fr.*, p. 58 (1848) gives 4 good figures. 3, no veins white; 5, veins in submargin only white; 4, veins generally white but not continuous; 6, veining white continuously.

Tutt says *morio* runs *Freyer's erupta* closely (*B.N.* 109).

H.-S., *Sys. Bearb.* figs. 467-8, has two excellent figures of the typical form, ♂ and ♀.

Fig. 14 in *Humph. and Westw.* is an average well marked example of the typical form and of good size. None of the marking in either fig. is white, all are rich yellow.

* *Hampson* gives the weird spelling *havorthii*.

The fig. of *tripuncta* in H. and W., plt. 38, f. 15, does not agree with the description, p. 182; it does not show the subapical blotch near the apex below the costa.

The fig. of *lancea* in H. and W., plt. 38, f. 16, also is defective, only the R. forewing being nearly uniformly coloured.

South, *Moths Br. Is.*, I., plt. 128, has a very good typical figure.

Seitz, *l.c.* p. 174, figures typical *haworthii*, plt. 41b, *erupta*, plt. 41b, and *hibernica*, plt. 41b, all good figures.

Warr.-Seitz treats *tripuncta* as a synonym of *haworthii*; *morio* a synonym of *erupta* and *lancea* a synonym of *hibernica*.

Culot, *N. et. G.* I(1). plt. 26, gives two figs., 1 a very poorly marked, typical devoid of much light markings, and which in the text he says agrees with *erupta*.

In describing the Variation Barrett says—"Not usually very variable, except in the degree of whiteness of the nervures, which sometimes is much obscured or even obliterated. This in some instances extends to the whiteness of the orbicular stigma. There is a little difference also in the ground colour, which sometimes is of a redder chocolate."

Barrett records a specimen "of a pale grey, but with the paler markings quite normal."

He records also one "of a very rich purple-red and another extremely pale olive-brown."

Dr. Cockayne says (in lit.) "On some of my York specimens the ground colour is very pale brown or buff. In East Aberdeenshire ones it is nearly black. The orbicular varies much in size and shape (and in colour) and it and the reniform are very white, in most ones."

The forms to be discussed are—

haworthii, Curtis (1829) *Br. Ent.* VI. 260.

subsp. *hibernica*, Steph. (1829) *Ill.* III. 16. pl. 25.

ab. *lancea*, Steph. (1829) *l.c.*

ab. *tripuncta*, Curt. (1829) *l.c.*; H. and W., I. plt. 38, f. 16.

ab. *erupta*, Freyer (1845) *Neu. Beitr.* V. 150, plt. 472.

race *morio*, Evers. (1842) *Bull. Mosc.* III. 550; Freyr. *l.c.* plt. 388.

ssp. *sachelinensis*, Matsu. (1925) *Jr. Coll. Agr.* XV. 140. plt. 11.

Tutt treats of (1) the typical *haworthii*: (2) *hibernica* the Irish form very red: (3) *lancea* of small size nearly uniform in coloration: (4) *tripuncta* both stigmata distinct and pale, and a pale patch near the subapical costa: (5) *morio* the Volga form: (6) *erupta* with reniform and orbicular and with numerous other white markings.

Tutt gave Freyer's description and figure as the original of *erupta*, but Germar's figure and description in 1827 was the original.

ab. *erupta*, Germar. Ahrens' *Fn. Insect. Eur.* XXI. (1827).

FIG.—*l.c.* plt. 15.

ORIG. DESCRIP.—"Affinis *Agrotis celtæ* (*Fn. Eur. fasc.* IV. Hb. 16); *A. lidea*, Hb. Tr.; *minime*, Cram. sed minor. Caput et thorax nigra, antennis setaceis. Abdomine cinereum. Alae anticae atomiis cinereis basi et ad costam adspersis, maculis ordinariis albis, fascia postica repando-dentata, squamis fuscis et maculis sagittatis nigris variegata

albida. Costa maculis aliquot albis. Ciliae nigrae, griseo-maculatae. Pagina inferior alarum anticarum nigro-fusca maculis et fusca paginae superiores. Alae posticae nigricantes, basi dilutiores, subtus concolores."

subsp. *sachalinensis*, Matsu. *Jn. Coll. Agri. Sapporo*. XV. 140 (1924-5).

FIG.—*l.c.* pl. XI. 16, ♂ (a very bad indistinguishable figure in black and white).

ORIG. DESCRIP.—"Reniform much larger, being bifid at the veins 3 and 4, and on its outside with a broad, oblique, fuscous patch; at the termen in each interspace of 4 and 5 with a fuscous patch; marginal band relatively broad, and of a blackish colour; fringe yellowish, traversed by a fuscous line." S. Saghalien.

I am indebted to Dr. Cockayne for pointing out that "*Helotropha leucostigma* is congeneric with *Celaena haworthi* both by larval characters and by genitalia."

Mamestra (Ochs. and Tr. 1816) Hb. (1822) Tr. (1825).

The genus name *Mamestra* was proposed by Ochs. and Tr. in 1816 (*Schm.* IV. 76) but not described. In 1825 Treit. (*Schm.* V(2), 127) described the genus quite fully. But in 1822 (*Verz.* 214) Hübner had adopted the genus name and described it briefly (but inadequately). Hence it seems that the genus should date from 1822.

One finds the utmost divergence of opinion as to the contents of this genus and the more modern systematists discard the use of it. The six species included by Tutt have been shifted about singly or in groups in at least 14 different genera.

In 1816 Ochs. and Tr. proposed the following species for *Mamestra*—*pisi*, *splendens*, *oleracea*, *suasa*, *aliena*, *abjecta* (*nigricans*, View.), *chenopodii*, *albicolon*, *brassicae*, *furva* and *persicariae* (*Schm.* IV. p. 76). In 1825 Treit adequately described the genus and added *rubrivena* the 12th species. (*Schm.* V(2). p. 127). But in the meantime Hübner (*Verz.* p. 214) in 1822 had adopted and described the genus including in it the 3 species *pisi*, *unanimis* and *leucophaea* only, of which *pisi* alone was in the original genus proposed by Ochs. and Tr. Hence it seems that the genus should date from Hb. (1822).

Herr.-Schäff., *Sys. Bearb.* (1845) suppressed the name *Mamestra* and placed the 6 species we are concerned with in his huge omnibus genus *Polia*.

Guenée in 1852 (*Noct.* V.=I. p. 188), places about 25 species in the genus including our six species, *abjecta*, *anceps* (*sordida*), and *albicolon* in his group II.; *furva*, *brassicae* and *persicariae* in his group III.

Stdgr. in 1861 (*Cat. Ied.* 39) places *brassicae*, *persicariae* and *albicolon* in *Mamestra*, and *furva*, *abjecta* and *infesta* = *sordida* in *Hadena*. In 1871 (*Cat. Iled.* 101) he copied this arrangement.

South in the *Entomologist Syn. List.* (1884) placed the whole 6 in the genus *Mamestra*. Although his List was mainly an adaptation of Stdgr. *Cat.* 1871, he was no doubt influenced by the Doubleday List,

which British collectors of the day used almost exclusively, and accepted *Mamestra* as in that List. Doubleday no doubt, based his arrangement on the work of Guenée. This List took the place of Doubleday's List and it was from it that Tutt selected his genera and species.

Meyrick (*Hand.* 79) in 1895, did not use *Mamestra*, but put *brassicæ*, *persicariæ* and *albicolon* in the genus *Melanchra*, Hb. and the other three species in *Hadena*.

Stdgr. in 1901 simply copied his own List of 1871.

In his *Moth of the Brit. Is.*, South (I. 270) in 1907, retained the 2 species *persicariæ* and *albicolon* only for *Mamestra*, selected *abjecta*, *sordida* and *furva* for the *Hama* of Stephens, and *brassicæ* he put in *Barathra* as Hübner had done.

Pierce in the following year 1908 (*Gen. Noct.* 38) placed *abjecta* in the genus *Nemria*, Gn. and the other five of Tutt's species with *saponariæ* in *Mamestra* remarking that from a genitalic view, *Mamestra* as constituted by him was not separable from *Apamea* and all should be included with *Xylophasia*.

Hampson, *Lep. Phal.* (VII. 208) in 1908, suppressed *Mamestra* and used the genus *Trachea*, (Ochs. and Treit) Hb. for *abjecta* = *nigricans* = *oblonga*, Haw., *sordida* = *anceps* and *furva*, placed *albicolon* in the *Trichoclea*, Grote, *brassicæ* in *Barathra*, and *persicariæ* in *Polia*, Ochs. and Treit.

Warren in Seitz in 1911 (*Pal. Noct.* III. 167) placed *abjecta* and *sordida* in *Parastictis*, Hb., *furva* in *Crymodes*, the other three as in Hampson, the name *Mamestra* being completely ignored.

Meyr. *Revised Brit. Lep.* (1927), repeated his action of 1895.

Evidently with so many diverse views we are far from stability in this group of our Noctuids.

Mamestra, Ochs.-Treit. (Hb.) Treit. (1816-1822-1825), Tutt, South. [*Hadena*, Schrnk. (1802), Hb., Stdgr., Cul., Meyr.: *Polia*, Ochs.-Treit. (1816-25), H.-S.: *Trachea*, Ochs.-Tr. (1816-25), Hb. (1822), Hamp.: *Hama*, Steph. (1829), South: *Nemria*, Gn. (1841-52), Dup. (1844).] *abjecta*, Hb. (1818) = [*nigricans*, View. (1789), nec. f'b., Hb. (preoc.).]

Tutt describes Hübner's figure, "Anterior wings of deep, but clear brown (almost reddish) grey, an abbreviated basal transverse line and a complete one in contact with the inner edge of the orbicular, both double; a short dark (black) longitudinal streak under base of median nervure, orbicular distinct, reniform outlined in white (lightish); an oblique line from costa to median nervure between stigmata; a wavy transverse line just beyond reniform, followed by four (five) short longitudinal wedge-shaped spots. The dark longitudinal mark under the stigmata in Newman's figure. (*British Moths*, p. 298) is absent. The hindwing dark grey on outer edge, with pale base and indistinct (no) lunule." The interpolations are mine from my copy of Hübner's *Noctua*.

nigricans, Vieweg. *Tabell. Verz.* II. 66 (1789) [placed between *pisi* and *persicariae* and thus shows the relationship as interpreted by Vieweg].

ORIG. DESCIP.—“Antennae, head, thorax and fore-wings are blackish. The last have a few paler transverse lines, and the usual spots depicted only very indistinctly. On the outer margin and parallel with it lies a row of dark black, separate triangular spots, and on the costa away from the apex stand four small whitish dots. The hindwings and the body are grey,” Mark Brandenburg. He refers to Fab. *Sys. Ent.* 616, whose short Latin description he copies.

Fab. *Sys. Ins.* II. 238 (1781) gives *Fb. Sys. Ent.* 616; Linn. *Sys. Nat.* XIIIed. 855; and *Fn. Suec.* no. 1220 as references to *nigricans*. The description in Latin in these authors “*Alis nigricantibus, maculis ordinariis pallidioribus*” with the added comment of Linné “*fusco-nigricantes magis quam in alia ulla nostratum*; cannot refer to *abjecta*, Hb., 539, (= *nigricans*, View.)

Werneburg, *Beitr.* II. 215, agrees that *abjecta*, Hb. is *nigricans*, View.

Many authors have mixed the *nigricans*, View. with the *nigricans*, Linn. and Fab. as did Vieweg himself, although his description is undoubtedly that of *abjecta*, Hb. The *nigricans* of the other early authors are emphasised “black” and have no triangular black spots in the submargin.

Treit. *Schm.* V(1). 141, puts *nigricans*, View. under *fumosa*, Hb. = *nigricans*, L. in *Fn. S.* and again on p. 186 under *aethiops* = *nigricans*, Hb. touches on this intricate complex in the application of the name *nigricans* by Linn., Schiff., Fab., Esp., de Vill., View., Hb., and Ochs. Then in *l.c.* V(2). he very exhaustively and clearly states the case with the following results.—I. That the *nigricans*, Schiff. and Fab., Illiger, Götze and Rossi belongs to *fumosa*. II. That *nigricans*, Esp. goes best with *fumosa* and is much too small for *abjecta*. III. That *nigricans*, Linn. agrees less with *abjecta* than with *fumosa*. Treit goes on to say that he cancels his citation of *nigricans*, View. to *fumosa* as held by Ochsenheimer, and confirms the citation to *abjecta*, Hb. 539, noting that *nigricans*, Schiff. is cited to *abjecta*, in error.

Stephens, *Ill.* II. 193, describes and figures, *plt.* XXIV. 2, *nigricans*, which he ascribes to Vieweg. The figure is a very fair representation of our ordinary obscurely marked *abjecta*. There is a blue mother-of-pearl sheen on all 3 figures on the plate, which no doubt is not intended.

Wood's figure of *nigricans* (after Steph.) is a very poor unrecognisable one. *Index*, *plt.* XII., f. 254.

Freyer, *Neu. Beitr.* II. 92, calls attention to the many authors who have used the name *nigricans*, which, as Treitschke had stated after full examination, that *abjecta*, Hb. 539 and *nigricans*, View. referred to the same species, and that the other authors' *nigricans*, should be referred to *fumosa* and *aethiops*, the *nigricans*, Hb. 709.

Hampson, *l.c.* 208, identifies *nigricans*, View. as this species as well as the *oblonga*, Haw. *Lep. Brit.*, 188 (1899). As the name *nigricans* is not available, he uses *oblonga*, Haw. as the prior specific name. In this last action he is followed by Warr.-Seitz. *Pal. Noct.* III. but not by Meyr. in using *oblonga* as the name of this species.

SPECIAL INDEX.

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

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The Entomologist's Record & Journal of Variation.

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.

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CORRECTIONS.

- p. 7. After " p. 167 " insert " Vol. 43. "
- p. 33. Insert author's name " H. Donisthorpe, F.Z.S., F.E.S. "
- p. 60. Correct " C. " Mosley to " S. L. " Mosley in title of article.
- p. 60. Insert (line 6 from bottom) *aestiva* the name of the 2nd brood of *medon*.
- p. 73. Line 9 from bottom read *orion* in place of *arion*.
- p. 156. In title insert date " 1932. "
- p. 157. Correct *viridior* to *viridior*.
- p. 164. Correct *Aglaiia* to *Aglia*.



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