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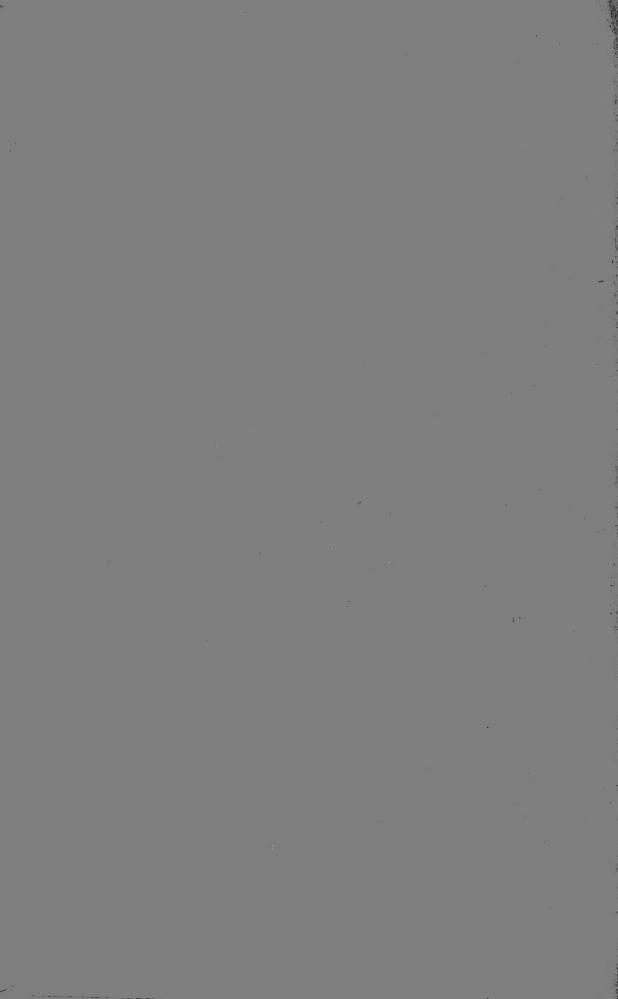
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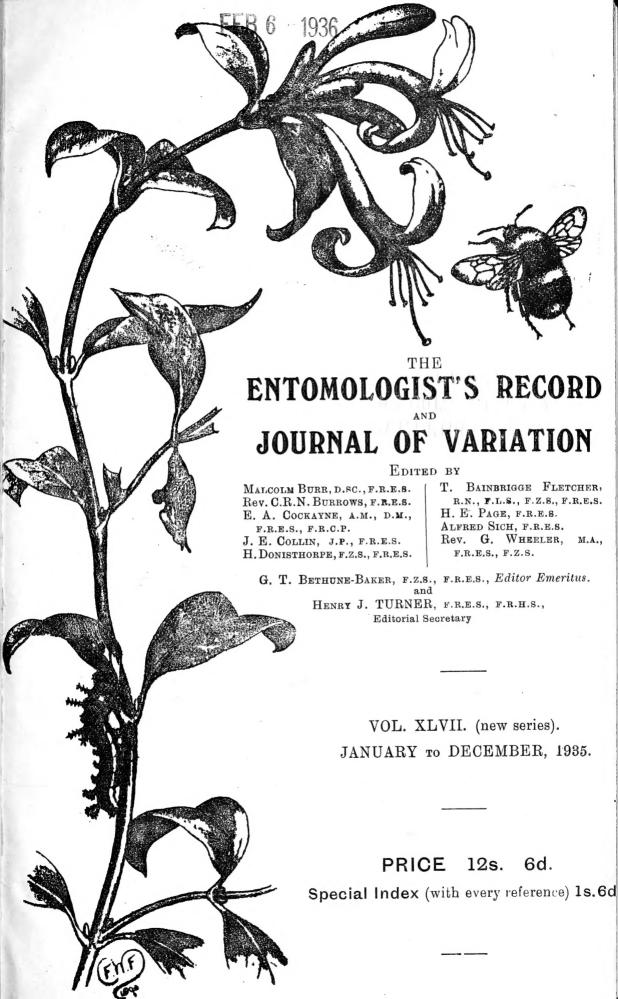
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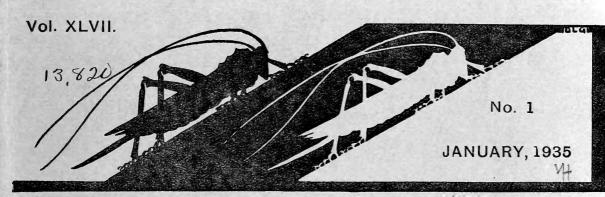






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# ENTOMOLOGIST'S RECORD AND JOURNAL OF VARIATION

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# The Entomologist's Recond

## JOURNAL OF VARIATION.

Vol. XLVII. No. 1.

JANUARY 15TH, 1935.

### Wicken Revisited.

By HORACE DONISTHORPE, F.Z.S., F.R.E.S., etc. (Department of Entomology. British Museum. Natural History.)

My first visit to Wicken Fen was in July, 1888, and I stayed at The "Lord Nelson" Inn "Five Miles from Anywhere" "No Hurry" at Upware. It then belonged to the Densons, who also owned the Fishing Rights and the Ferry, etc. The youngest Denson boy was told off to show me the way to the Fen, carry the lunch and apparatus, etc. His name as far as I could gather was Gaston, and they called him "Gas." I called him "Gaston de Foix," which seemed to puzzle him very much. I remember he had an adversion to water, as when I dropped my collecting bottle in one of the dykes, though I offered him half-a-crown to get it out, he replied "No! Sir, I can't abear the water"!

Since then I have visited Wicken Fen every year from 1890-1910; then from 1923-1925; then in 1929; and 1934. From 1923 onwards Miss Kirk has accompanied me. From 1893 I have always stayed at Marshalls', the old Post Office. From 6th to 22nd September, 1934 Miss Kirk, Miss Irene Kirk, and I, stayed there and enjoyed the generous fare, Wicken ducks, etc., and the kind attentions of Mrs. Jenkinson and her daughter. The former is a daughter of old Mr. Marshall, who is still alive, aged 82, strong and hearty. We went to see Mrs. Houghton the widow of the bootmaker so well known to Lepidopterists. She is 86, and she showed us with pride some drawers of Lepidoptera taken by her late husband. Mrs. Rix, the mother of Mr. Wentworth Day the editor of the "Illustrated Sporting and Dramatic News," came to see us; and the Vicar took us for drives in his car, on one occasion to Newmarket, where we called upon Mr. J. Collin; and we also inspected a very interesting goat farm. We also motored to March to see Mrs. Norman, another of Marshall's daughters. The third daughter, whom I remember as a little girl who used to help bring the lunch to the Fen, is married to Mr. Bailey at the Hall, and has a numerous family.

Collecting was not at its best, on account of the drought, but we had most beautiful weather the whole fortnight, and secured a large number of insects in most Orders.

I propose to publish the names of all such as have been identified, as accurate lists of the fauna of Wicken Fen are being kept.

### Coleoptera.

Carabidae.—Carabus granulatus, L. W.; Dyschirius globosus, Hbst. W.; Bradycellus placidus, Gyll. W.; Amara aulica, Pz. W.; Anchomenus puellus, Dj. B.; Lebia chlorocephala, Hoff. W., several in sedge refuse; Demetrias monostigma, Sam.

Haliplidae.—Haliplus flavicollis, Stm. B., H. ruficollis, De G. B.;

H. lineatocollis, Marsh, B.

Dytiscidae.—Agabus sturmi, Gyll. B., A. bipustulatus, L. B.; Rhantus grapii, Gyll. B.W.

Gyrinidae.—Gyrinus natator, Scop. W.

Staphylinidae.—\*Aleochara tristis, Gr. B.; Atheta graminicola, Gr. U.; A. nigella, Er. W.; A. vaga, Heer. U.; A. palustris, Kies. U.; A. laticollis, Steph. U.; \*A. granigera, Kies. U.; Gnypeta labilis, Er. U.; Tachyusa atra, Gr. U.; Hypocyptus longicornis, Pk. W.; H. discoideus, Er. W.; Mycetoporus splendidus, Gr. W.; Heterothops praevia, Er. W.; Quedius picipes, Man. W.; Lathrobium geminum, Kr.; Stilicus fragilis, Gr. W., sparingly in sedge refuse; Stenus ossium, Steph. B.; S. solutus, Er. D.W.; Phloeobium clypeatum, Mull. W.

Silphidae.—Agathidium atrum, Pk. W.; A. laevigatum, Er. W.;

Silpha tristis, Ill. W.; Cholera nigricans, Spence B.W.

Scydmaenidae.—Eumicrus tarsatus, Müll. W. Pselaphidae.—Euplectus sanguineus, Den. W.

Corylophidae. - Corylophus cassidioides, Marsh. B., abundant in

sedge refuse.

Phalacridae.—Phalacrus corruscus, Pk. B.; P. caricis, Stm. W.B.; and ab. \* dalabyi, Guiel. W.; Stilbus atomarius, L. B., and S. oblongus, Er. B., abundant in sedge refuse.

Coccinellidae. - \*Subcoccinella 24-punctata, L. B., common by

sweeping in one spot; \*Scymnus scutellaris, Muls. W.

Nitidulidae.—\*Meligethes lugubris, Stm. B.; \*Ips quadripunctata, Hbst. W.

Lathridiidae.—Lathridius lardarius, De G. W.; Corticaria pubescens, Gyll. W., abundant in bundles of reeds.

Cucujidae.—Psammoechus bipunctatus, F. B.

Cryptophagidae.—Telmatophilus typhae, Fall. B.

Parnidae.—Parnus luridus, Er.

Telephoridae.—Anthocomus rufus, Hbst. B.W., very abundant by sweeping.

Bruchidae.—Bruchus atomarius, L. B.

Chrysomelidae.—Donacia sparganii, Ahr. B., rather late for a Donacia; Lema cyanella, L. W.; L. melanopa, L. W.; Crioceris asparagi, L. W; \*Chrysomela varians, Schal. B.; \*Phaedon tumidulus, Germ. copper coloured abs. W.; Galerucella pusilla, Weise. W.; \*Adimonia tanaceti, L. B., some half-dozen swollen  $\mathcal{P}$  on Scabious flowers. The larva feeds on Scabious; Sermyla halensis, L. W.; \*Longitarsus suturellus, Duft. W., \*L. rubiginosa, Faud. W., L. pellucidus, Faud.; Haltica

lythri, Aub. W. abundant on Lythrus salicariae; \*Phyllotreta undulata, Kuts. W.; Apthona lutescens, Gyll. W., abundant sweeping, A. nonstriata, Goez. and ab. \*aenescens, Weise. W.; Crepidodera transversa. Marsh. B.W., C. ferruginea, Scop. B.W.; Psylliodes cuprea, Koch. W.; Cassida vibex, L. B.W., C. nobilis, L. B.

Anthicidae.—Anthicus antherinus, L. W. in one specimen the elytra are all black with the exception of a red spot on each shoulder, this appears to be the var "d" of Gyllenhal, and may be called ireneae n.

ab. Taken by beating bundles of cut reeds.

It is best even in the case of vars. and abs. not to use a name already in existence for species in the genus and as there are species called bipustulata, elegans, and other componds with bi, and in fact anything that seems suitable, I have named this aberration after Miss Irene Kirk who assisted at the capture of the insect.

Curculionidae.—Apion miniatum, Germ. W., a very brightly coloured specimen; Erirhinus scirpi, F., B.; Thryogenes festucae, Hbst. B.; Miccotrogus picirostris, F. W.; Centhorhynchus litura, F. W., dark ab.

**B.** stands for Burwell Fen, **W.** for Wicken Fen and **U.** for Upware. Those marked with an asterisk are new to Omer-Cooper and Tottenham's list of the Coleoptera in the "Natural History of Wicken Fen." Since that list they have themselves added Atheta vaga, Heer. Cassida nobilis, L. is queried in that list.

(To be continued)

### Notes on a new Subspecies of Erebia callias.

By B. C. S. WARREN, F.R.E.S.

Many years ago the late Dr. Chapman suggested that *E. callias* and *E. tyndarus* were probably distinct species; but he did not carry his researches far enough to make certain of the fact. For a long time past I have been in possession of anatomical data, which proved that his suggestion was indeed correct, but in view of the necessity for extensive illustration to demonstrate the matter clearly I have left it stand over, hoping that sometime it may be possible to get my work on

the genus published in full.

During the summer of 1933, however, when Sheljuzhko was collecting in the Caucasus, he came on two tyndarus-like insects on Mt. Chatipara. I received some of these specimens from Staudinger's, while Sheljuzhko sent me a number of damaged specimens for further anatomical examination. The result of this examination enables me to record the very interesting fact that on this mountain there fly races of both tyndarus and callias in such close proximity that they actually intermingle on occasions. This remarkable proof of the specific standing of these two insects seems worthy of recording without further delay; it also confirms the value of my anatomical data in a manner which few entomologists would have anticipated.

Of the two insects captured by Sheljuzhko, that referable to tyndarus was the ssp. graucasica, Jachontov, which is a very striking race, by far the largest known race of the species; it often attains a size equal to some of the smaller races of ottomana. Anatomically it is also a clearly defined race, most nearly related to the ssp. dromulus, Stg. and ssp.

murina, Rev.

The second, as already stated, was a race of callias, most nearly connected—as is natural considering the habitat—to the ssp. iranica of the latter. This race has so far remained unrecognised, and I am glad to have the permission of its discoverer to name it after him.

E. callias ssp. sheljuzhkoi ssp. nov.

In size and shape of wings, this subspecies resembles the Persian ssp. iranica very closely, both sharing the very remarkable tyndarus-like characteristic, that the third spot from the anal angle on the upperside of the hindwings is of the same size as the first and second and in line with these; rather than being decidedly larger and set further in on the wings as in other callias races. Further, like iranica, two small extra spots are often present on the forewings below the apical ones; though they are as often wanting. The chief characteristics which distinguish sheljuzhkoi from iranica are that the bands on upperside are broader than in the latter; slightly on the forewing but very markedly on the hindwing, where a continuous band is present in place of the small separated spots in iranica; and the underside of the hindwing, where the nervures are clearly outlined in pale yellowish-white in iranica but practically invisible in sheljuzhkoi, only a few 2 s showing traces of them on the outer margin of the wing. From tyndarus ssp. dromulus, sheljuzhkoi is distinguished by the more pointed and angular forewings; the frequent absence of the sub-apical spots\* on the forewings; the broader bands on the upperside of the hindwings, and the more sharply marked underside of the latter, where the antemarginal band contrasts very markedly with the remaining area of the wing, more as in iranica.

I have not seen a sufficient number of dromulus to be sure of the variation natural to it, but it seems probable that in some cases specimens might be close enough to sheljuzhkoi to make identification difficult. The genitalia, however, can always be relied on to distinguish the two very obviously, dromulus being closely related to the ssp. murina and

ssp. carmenta of tyndarus.

For the reasons already given I do not now include any description of the genitalia of this new race. Sheljuzhko at the time of collecting thought it was confined to higher levels on Chatipara than tyndarus ssp. grancasica; giving the heights of 2,200-2,400m. for the latter, and 2,400-2,800m. for sheljuzhkoi. Further examination of his material, however, shows that grancasica at times rises to 2,700m., thus proving that the two mingle, for the flight period of both practically coincides, though the higher-flying sheljuzhkoi appears earlier than grancasica at lower levels, on the whole. The types of sheljuzhkoi are in the collection of the writer.

### Brithys crini, Fab., in Britain.

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

The brief note on the occurrence of B. crini for the first time in this country, which appeared in this periodical (1934, 46, 131-2) is misleading in some respects. An accurate and fuller account is given in the Proc. Roy. Ent. Soc. 1934, 51. In October, 1933, Mr. J. A. C. Greenwood found 24 larvae feeding on the leaves of Zephyranthes

<sup>\*</sup> i.e., the spots below the usual apical pair.

candida in a walled-in garden near the Curator's house in Kew Gardens and two others were found subsequently by one of the staff. Imagines from pupae kept at Kew in a glasshouse emerged on 27th and 28th March, but the two females which paired laid infertile eggs. From pupae kept cool imagines emerged from June 10th onwards, and batches of fertile eggs were laid. The eggs, of typical noctuid form, are orange without markings, and are laid in large batches, each egg spaced equidistantly from its neighbours in a similar way to those of Miltochrista miniata.

Mr. Greenwood kindly gave me a batch and the larvae, which hatched on 28th June immediately bored through the cuticle and disappeared into the soft tissue of one of the long fleshy leaves of Zephyranthes. After they had hollowed out the whole interior they reappeared and ate their way into another, collecting together in numbers to change skin. I lost the majority of my larvae at about the third instar, but Mr. Greenwood had much greater success by giving the larvae Narcissus bulbs. Following his advice I gave my surviving larvae bulbs of Zephyranthes with the leaves cut down to about three inches. The larvae bored into the leaves and made their way down to the bulbs, which they hollowed out completely. grew rather slowly and the first was full-grown and went into the earth to pupate on 14th August, but on 22nd August the smallest was still in the last instar but two, when it died. Several were pupating, when I left Scotland at the end of the month, and died owing to disturbance on the journey. I bred two males and five females between 20th and 27th September, the two males emerging last, and two are remaining in the pupal stage for the winter.

Mr. Greenwood's larvae were full-fed at the end of July and remained only a fortnight in the pupal stage, and he bred about fifty moths. He kindly gave me his last half dozen larvae and as they were pupating when I left home went to Scotland I left them at home and found on my return that they had emerged and were spoilt. The handsome larva is black and white with orange ground colour on the last abdominal somite and on the prolegs, and the head is also orange with a black spot on each lobe. There is a good figure in Spuler

Nachtrag, Taf. 3, fig. 3.

My larvae ate bulbs of snowdrop, Galanthus nivalis, as well as Zephyranus, but refused to touch bulbs of Bluebell, Scilla nutans, and roots of Solomon-seal, Polygonatum. Apparently they choose Amaryllidaceae rather than Liliaceae.

According to Mr. Tams, Brithys pancratii, from the South of France is specifically indentical with B. crini from India, Ceylon, and Java. Zephyranthes candida has been established and used as a border in Kew Gardens for many years and as it is an Argentine species the insect cannot have been introduced with bulbs of this plant. No other Amaryllid has been planted in the walled-in garden for the last two years, so that a moth from some other part of the Gardens or an immigrant must have laid the eggs, which produced the larvae found by Mr. Greenwood. Sir Arthur Hill says that no larvae were found in 1934.

No moth has ever been taken in this country and the species is not known to be migratory on the continent. On the other hand if young larvae were introduced in the gregarious stage the bulb containing them

must have been imported at an unusual time of year and not during the quiescent period in late autumn, if it came from a temperate climate. In a tropical climate the insect is continuously brooded and a bulb collected at almost any time of year might contain young larvae.

### Nomenclature. The List.

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

(Continued from Vol. XLVI. page 131.)

Zephyrus, Dalm. betulae, L., becomes Thecla, Fb. betulae, L. Zephyrus, Dalm. quercus, L. becomes Thecla, Fb. quercus, L.

Zephyrus, Dalm. type betulae (1816) could not stand against Thecla,

Fab. (1807).

Tutt in his Brit. Lep. VIII. (= B. Butt. I.) 298 et seq. went very thoroughly into the synonymy of the hairstreaks and pointed out that Barbut, Gen. Ins. Linné. 1781, had given betulae as a species typical of the genus Ruralis, p. 173, which genus had been described on p. 163 (adequately for the time) under the section "Plebeians" as "whose larva is often contracted" and the imago "with darkish spots on their wings." This is the loose translation of Sys. Nat. 1767 "alis maculis obscurioribus."

Ruralis(es) was used by Linnaeus as a section of his genus Plebeius (see above) and Barbut was the first to select a British species which he considered typical of it and that was the species betulae. But Barbut's action has been ignored and his work generally decried.

I have looked carefully into Barbut's book and am more convinced than ever that our modern conception of a genus does not coincide with the modern use of the word "genus" in many books even up to the time of Hübner. Our modern conception was being gradually evolved and that we are justified in considering the prior generic name to be that which is first used in a classificatory sense immediately before the species name. On p. 74 Barbut speaking of the genus Dytiscus says it "is divided into two families." Similarly with Carabus, "2 families"; Tenebrio "2 families"; Buprestis "3 families," etc. There is a vast number of binomial names throughout the book, e.g., Vespa crabro, Chrysis ignita, Ichneumon luteus, Sirex gigas, Ephemera vulgata, Tortrix prasinana, Cimex lectularius, etc., etc. It was an age when locusts, crickets, cockroaches, etc., were Hemiptera with Notonecta, etc.

To be exact, Barbut puts "P(apilio), P(lebeius), Ruralis Betulae" and is the first to use Ruralis as a genus name. Linnaeus put the name as P(apilio), P(lebeius) Betulae, calling P(lebeius) a "phalanx"

name (i.e. in the sense of genus).

Bethune-Baker in his "Synonymic Notes on the Ruralidae," Ent. Record XXV. (1913) p. 133, etc., points out that Ruralis should be used as the generic name for betulae and quercus and all allied species "including the beautiful Eastern green species classed as Zephyrus by de Nicéville, Leech and other authors," and he subsequently gave me the following list of typical species his investigation led him to place in the genus Ruralis, viz. betulae, quercus, smaragdina, brillantina, taxila, butleri, enthea, attilia, orientalis, sophirina, quercivora, lutea, saepistriata, michaelis, raphaelis, jonasi and betulina. Of course there are other

species allied to these, which will be found to be in the *Ruralis* group. It is shown in the above notes that *Bithys* which Tutt used for *quercus* is impossible as *quercus* was not in the original list of *Bithys* species. This magazine has used *Ruralis betulae* for a long period.

(To be continued.)

# Coutrexéville, Vosges, France, in June, 1934, and Locquignol, Forest of Mormale, France, in July, 1934.

By Rev. E. B. ASHBY, F.R.E.S., F.Z.S.

Leaving London at 11.0 p.m. on the night of 7th June I reached Coutrexéville Station via Folkestone, Dunkirk, and Nancy, at 5.30 I had never visited this part of France before, and I p.m. on the 8th. had heard that Coutrexéville was rather addicted to rain, but my forebodings were soon dissipated by the spell of splendidly fine weather, which lasted until the 19th when there was a temporary break of thundery weather. I stayed at the Hotel de l'Etablissement in the centre of this fashionable spa on the river Vair. The altitude of Contrexéville is 1,155 ft., and its winter population of about 800 people swells to about 2000 during the season, which lasts from 20th May to 20th Sept. Apparently hardly any English naturalists, and, according to Monsieur Léon Lhomme, possibly very few French entomologists have been known to visit Contrexéville, although some of our British entomologists have in previous years visited the Vosges mountains further east.

I found the Hotel de l'Etablissement very excellent in every way; it adjoins the beautiful Park and there are numerous other hotels,

several of which are only opened during the season.

During my first week I collected on the road leading to the pretty Lac de la Folie and around it, and also on a profitable strip of waste land to the right of the short road, which leads to the lake, after leaving the main road. I also found a wide ride in a large wood a little distance behind and to the left of the "Cosmos" Hotel, very productive. The road to it passes to the left of the "Cosmos" Hotel, behind the railway line, and shortly afterwards a short avenue of trees on both sides of the road is passed. The ride in question then opens out in a wood almost immediately on the right of the road; many small paths run out from this long ride, which are laid out as walks, with direction posts and a number of seats. Towards the end of June I made my way out to the Ferme des Evêques, about two miles from the village of Contrexéville. The best way is to follow the track indicated towards one end of the above mentioned wide ride. There is another way by road, but I found it unproductive and it is rather longer. Lunch or tea can be served in the above mentioned "Bishop's" Farm. lunch there once but found it frightfully dear. Apaturids are abundant in the courtyard of the Farm, especially in the morning following a previous day's heavy rain, when they and other species are numerous and settled on the damp courtyard and are easy to take. are also numerous on the way to the Lac de la Folie and around it. Dragonflies swarm by the lakeside. There were several species, but I was obliged to leave them on account of setting accommodation.

I found a few imagines of Coenonyupha hero, the "Silver Ringlet,"

in two sections of the above mentioned long ride, but they were quite passés, and I should imagine that 25th May would be a good average date to capture this insect at its best. Above the Ferme des Evêques, on the Contrexéville side, approaching it through the woods, is a long pasture with a few small mounds in it. The top of this pasture along by an old wire strand, is an excellent collecting ground for Lycaena arion and Coenonympha iphis towards the end of June.

I did not visit any other districts of the Vosges Dept., as the autobuses do not commence to run until the beginning of July, when I left Contrexéville. There is, however, a daily bus in June which runs to the village and Forêt de Darney. This is a large Forest not far from Contrexéville, and I should advise any entomologist who follows me and can spare the time, to try it. There is a bus on the return

journey, which gets you back in time for dinner.

The following insects were captured by me at Contrexéville from 9th June until 29th June inclusive. I left the place for Locquignol early on 2nd July. The weather generally at Contrexéville was very fine and hot, thunder rain occurring on three days only.

Rhopalocera:—Aporia crataegi, L.; Pieris napi, L.; Pieris rapae, L.; Pieris brassicae, L.; Euchloë cardamines, L.; Leucophasia sinapis; Colias hyale, L.; Gonepteryx rhamni, L. (hybernated specimens); Callophrys (Thecla) rubi, L., worn; Thecla ilicis, E.; Chrysophanus hippothoë, L. and E. = eurydice, Rott. = chryseis, Hb. and Godt., one ? only; Rumicia phlaeas, L.; Polyommatus icarus, Rott.; Plebeius aegon, Schiff.; L. arion, L.; Hamearis lucina, L., worn; Apaturo iris, L., and ab. iole, Schiff.; Apatura ilia, Hb., and ab. clytie, Hb.; Limenitis populi, L.; Limenitis camilla, L., 1764; Polygonia c-album, L.; Eugonia polychloros, L.; Aglais urticae, L.; Pyrameis atalanta, L.; Melitaea aurinia, Rott.; Melitaea maturna, L.; M. didyma, O.; Melitaea aurelia, Nick.; Melitaea athalia, Rott.; Argynnis paphia, L.; Argynnis aglaia, L.; Brenthis euphrosyne, L.; B. selene, Schiff.; B. dia, L.; B. ino, E.; Melanargia galathea, L.; Pararge aegeria, L., var. egerides, Stgr.; Pararge achine, Sc.; Aphantopus hyperantus, L.; E. jurtina, L.; Coenonympha hero, L., quite worn. First found about 14th June in the wide ride in two places. Coenonympha iphis, Schiff.; Coenonympha pamphilus, L.; Coenonympha arcania, L.; Adopoea flava, Brun. (linea); Augiades sylvanus, Esp. = venata, Br. and Gry. I also observed one or two specimens of Papilio machaon, L. not in very good condition, and a specimen of Erebia medusa, Hb. almost in rags. This list does not exhaust the complete list of Rhopalocera of Contrexéville, even for June.

(To be continued.)

### British Orthoptera.

With a view to preparing a new handbook on our British Orthoptera, information is badly needed on the following points (1) the status of the Field-Cricket in this country; (adult in early summer): (2) where do the Mole- and Wood-Crickets occur outside Hampshire? (3) does the genuine Acrydium bipunctatum occur here, or should all records be referred to A. kiefferi? (4) Does Stauroderus vagans occur here? (5) Does Phaneroptera falcata really occur in Cornwall? There are two

records, but no specimens; I see no reason why this handsome insect should not be there, (6) northerly range of our Decticids, (7) Orthoptera of Ireland, Wales, and above all, Scotland, where there are scarcely any records, and boreal forms may be expected. (8) does Apterygida albipennis occur away from hop gardens? (9) is Labidura riparia confined to Boscombe?—Marcolm Burr, United University Club, Pall Mall East, S.W.1.

### QURRENT NOTES AND SHORT NOTICES.

All entomologists will unite with us in according the heartiest of congratulations to Sir E. B. Poulton, F.R.S., on the official recognition of his long tenure of Professorship at Oxford University by the bestowal of a Knighthood. Known throughout the world for his active exposition of modern thoughts on natural science, he has long been worthy of honour, and we all wish that he may enjoy the freedom of

his retirment for years to come.

Four personal separates have just reached us. (1) From C. Nicholson, giving an account of the attractiveness of the Asclepiad, Araujia sericifera in his garden at Tresillian, Cornwall, detailing and figuring the method of abstraction of the "sweets" by the visitors. (2) Dr. Zerny, a paper describing the new lepidopterous forms met with by himself in his holiday in Morocco in 1933, with 3 plates. (3) Notes on two species of Erebia by F. v. d. Goltz, one on the benacensis race or subspecies of E. tyndarus and the other on the race or subspecies sajanensis of E. sedakovii. (4) From Dr. M. Draudt, "A Revision of some of the groups of the genus Dianthoecia," consisting of a series of articles published in the Ent. Rundschau during the past year, the detailed work undertaken by the author in preparation for his summary in the Supplement to Seitz. It is illustrated by 35 text figures and 2 plates, and is an admirable example of how such revision work should be done. Prof. Draudt divides the included species intoseven groups. 1. The lepida (=carpophaga) silenes Grp. 2. The filigramma Grp. 3. The luteocincta Grp. 4. The nana Grp. 5. The tephroleuca Grp. 6. The pumila Grp. 7. The luteago Grp. British entomologists are interested in at least three of these groups and it is not unlikely that new forms may be found here. The investigations carried on by workers in Grp. 7 in the Ent. Record are duly summarized and acknowledged in the text.

The "fairy tales" told by current newspapers on anything relating to natural history are usually astounding in their ignorance. In one lying before us a caterpillar is described as a "strange reptile" like a "baby prehistoric monster." "It has two heads one of which seems to fit in the other like a cork in a bottle." "It has six eyes." "There is a nasty looking spike which now and again rears up from the top of the tail." "The reptile is hairless." "It is very ferocious looking and resents being interfered with." "Cabbage leaves, broken biscuits, apples, turf, etc. have been placed in the box but the reptile does not appear to have touched any of them." It was discovered in the clay hole 100 feet below the surface at Longford Brickworks, according to a local paper. A letter correcting such nonsense in a mild way was

editorially turned down.

The Report of the Eton College N.H.Socy., always contains an interesting account of the year's doings of its members both at home and in the field. About seventy species of Macro-lepidoptera, additional to previous species recorded have been added to the local list. An article is included written by one of the members "Notes on the Lepidoptera for the Season 1933," in which the writer records Apatura iris for Sussex, Colias croceus for Perthshire, Aporia crataegi for the West of England, Hyloicus pinastri from Dorset, Nonagria sparganii and N. geminipuncta from Romney and Leucania vitellina from Dorset. Special field meetings were held at the Frensham Ponds, Swinley

Woods, etc. and lectures were given in the winter season.

My attention has been called, by a valued correspondent, to the Report, in a Bournemouth paper, of the Annual Meeting of the New Forest Association, and also to the recently published Report of the Association itself. It is surprising that men of education and supposed intelligence should lend themselves to make such erroneous, misleading and scare statements as those published in the two records mentioned above. The Report says, "The attention of the Council has frequently been called to the increasing scarcity of butterflies and moths in the Forest," and without inquiring for scientific reasons for such alleged scarcity, such as extensive fires, the afforestry action in introducing fir trees, the successive dry seasons, the less amount of undergrowth present of late years, etc., it goes on to say "caused undoubtedly by their wanton destruction by over zealous Entomologists." A gross assumption without any basis whatever. One would think the Forest was "peppered" with butterfly catchers. Not half those few collectors seen care a jot about butterflies, but are seeking beetles, flies, and insects of other Orders, mostly destructive to forest products. details, upon which the random statements are made, are given in the Report itself but at the meeting one of the speakers let himself go and we get one or two facts(!!) "At one time the very rare "Painted Lady" was quite common in Roe Wood," he said. This is a very excellent example of the ignorance upon which these assumptions are based. This species is an annual immigrant and may be absent, rare, or plentiful according to climatal circumstances whose detailed influences we have not yet fully explored. The larvae feed upon thistles mainly, which of course these visitors sedulously seek. May it be suggested, that the local scarcity so averred is partially the result of the annual destruction of these weeds by urgent command of the Ministry of Agriculture? References were made to the "Purple Emperor" always a rare species and extremely local, and from its habits of seeking the highest placed oaks most difficult to capture. can well take care of itself. The growth of pines in place of oaks, and the increasing scarcity of the association of oak and sallow in the Forest, may be a factor in its supposed absence as well as changed climatal circumstances. No doubt the whole Forest, since the advent of the motor-car, has far less secluded spots than of old, and very few portions but are increasingly visited by humans all summer long. However, since Mr. Wm. Fassnidge, M.A., F.R.E.S., will now represent the Royal Entomological Society on the Forest Association, it may be assumed that no such random statements will be made in the future with consequent scare headlines in the local press.—Hy. J. TURNER.

### BITUARY,

### J. C. Haggart.

James Crerar Haggart died on the 30th May, 1934, at Glasgow, aged 60 years.

Haggart was a regular contributor to the magazines, reporting captures in South West Scotland, and particularly in his favourite locality of Garelochhead in Dumbartonshire. His notes reveal the habit of close and critical observation, the results of which were always so readily at the disposal of his friends. In Entom. LXIV. he reports Dysstroma truncata as double-brooded in Scotland, and in the same volume he describes the life history of Aporophyla nigra, as observed by him in breeding this insect from the egg, a feat which he was the first to record.

In Ent. Rec. XIV. 130, he recorded the capture of extraordinary, black specimens of Monima (Taeniocampa) pulverulenta, a form which was named ab. haggarti by Tutt (ib. 183) and which occurred in two successive years on the same sallow bush at Galashiels.

He also investigated the remarkable light form of *Boarmia rhomboidaria*, which occurs on the Ayrshire coast, and which he recognised as new when the first specimens were taken some years ago by his son, Mr. G. D. Haggart, who is carrying on his father's work and collections.

A wide circle of entomological friends will find a gap in their correspondence with the passing of this keen and careful worker, whose untimely death is a very real loss to science.—H.B.W.

### George Bell Routledge, J.P., F.R.E.S.

This well-known Cumbrian entomologist passed away on 19th December, 1934, a few days after his 70th birthday. Never a very robust man, he had been in failing health for several years and his death was not unexpected.

Up to the last, however, he maintained his interests in Entomology and so recently as 22nd November, attended a meeting of the Carlisle Natural History Society to give a lantern lecture on "Insect Life," in the course of which he referred to his varied experiences over a period of well over half a century. Attracted to the study of Entomology through the influence of his mother, whom the writer remembers as a collector of much enthusiasm, he devoted a considerable part of his abundant leisure to the study and collection of Insects of all Orders with, however, a preference for the Lepidoptera. His early years were spent in London where he lived in Russell Square near the British He became acquainted with many of the members of the South London Entomological and Natural History Society-Farn, Barrett, South, Tutt and Step, as well as others happily still with us. He joined this Society in 1887 and would therefore be among the oldest To the Entomological Society of London he was elected in 1890 and was also a member of other Societies in the London area. In the affairs of these he took the keenest interest even though for many years he was unable to attend their meetings, but the perusal of their Transactions was always a pleasure to him.

His father was George Routledge, a Cumbrian native, and the founder of the well known publishing house of George Routledge & Sons. After a brief period in a printing business in Edinburgh, the subject of this notice returned to Cumberland and eventually settled down at Tarn Lodge, a charmingly situated country house under the shadow of the Pennines about 10 miles east of Carlisle. Here for about 40 years he worked assiduously at the insect fauna of his immediate neighbourhood, a most productive area of woodland, meadow and mossland, a good deal of which was his own property.

It was always a delight to him to welcome a brother collector on

his estate and to join in the investigation of its fauna.

While working hard himself in his own intensive way, he kept himself fully informed of the work of others further afield in the county and also extracted all references and records of Cumberland insects in magazines and other literature for nearly a hundred years back. When he joined the recently-formed Carlisle Natural History Society in 1897 he entered with zeal into its project of publishing lists and data of the various Orders of Insects found in Cumberland, and himself undertook the Lepidoptera. This appeared in due course in the various volumes of Transactions the Society has published and deals in all with 1036 species, a remarkably good total for a northern county.

He also published in the same medium lists and notes on the Orthoptera and the Aculeata Hymenoptera of Cumberland, while with the Trichoptera, Neuroptera, etc., he extended his area and included

Westmorland and North Lancashire.

These lists are monuments to his industry but in addition he did much work at the Coleoptera and Hemiptera which he placed at the disposal of the writer and which has been duly put on record. He has left records and notes on Diptera and Sawflies which it is hoped will eventually be made use of by the Society.

Apart from his work in the Society's Transactions, Routledge published very little—a few odd notes in the *Ent. Record* and the *Entomologist* being all I am aware of. Of a most modest and unassuming disposition he preferred to work quietly in his own way,

content to leave to others the editing of his notes for printing.

To the Carlisle Natural History Society he was ever a good friend and did much to establish it upon its present sound foundation. He seldom missed a meeting for many years, although before the present facilities for travel made things easier, it meant to him a 3 mile walk out and home to his nearest station to get a train in and out of Carlisle. Although he left no wishes regarding the disposition of his collections and extensive library, by arrangement with his sister, it is expected that these will pass into the custody of the Museum at Carlisle. He had been a co-opted member of the Museum Committee for a number a years and took a deep interest in its work.

The loss of a man of his modest and lovable temperament is a severe one to local naturalists, but his memory will always be revered, especially by those who had worked with him side by side in the field,

and in the study, and who knew him best.—F.H.D.

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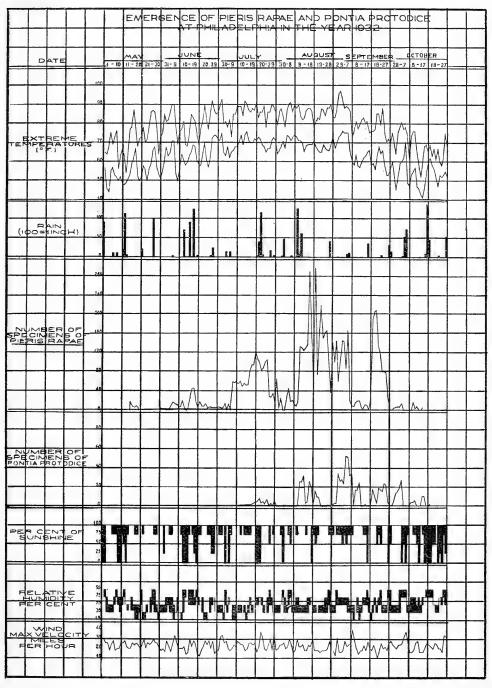
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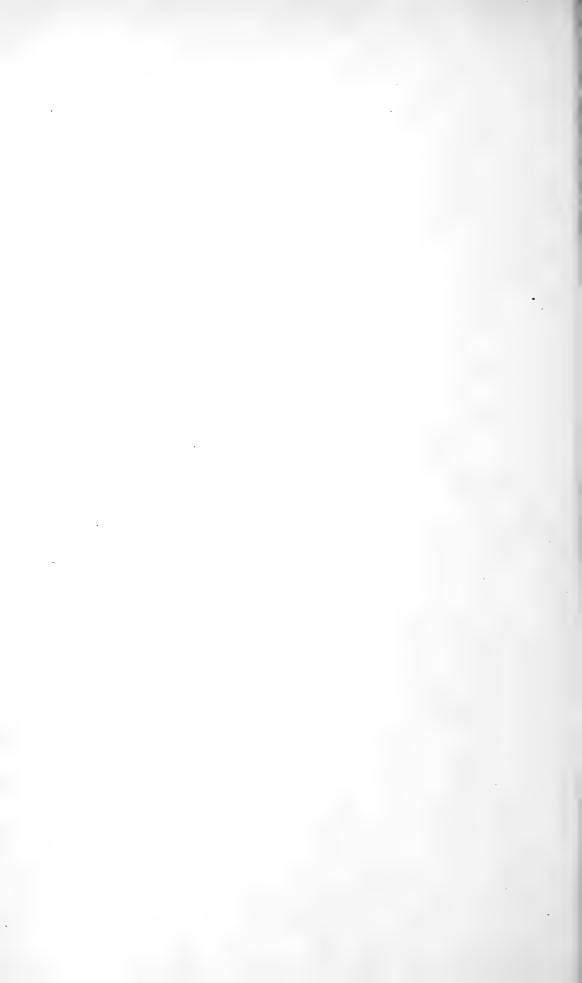
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BIOLOGY OF PIERIS RAPAE.



### Wicken Revisited.

By HORACE DONISTHORPE, F.Z.S., F.R.E.S., etc. (Department of Entomology. British Museum. Natural History.)

(Continued from p. 3.)

### LEPIDOPTERA.

The Lepidoptera noted were the Peacock, Vanessa io, the Red Admiral, Pyrameis atalanta, and the small Tortoiseshell, Aglais urticae, in some numbers in the Fen. In the village of Wicken the Red Underwing, Catocala nupta, was seen flying about and settling on the walls of a cottage in the sun and the Humming Bird Hawk Moth, Macroglossum stellatarum was hovering about the flowers in a garden. A moth that seemed rather common in the Fen was Lygris pyraliata, and a "Plume" was noticed several times.

### DIPTERA.

A few small flies were taken in sedge refuse including Madiza glabra, Fl., Discomyza incurva, Fl., of which there are only 2 examples in the British Collection at the Museum, and Tachista arroyans, L. Several of the little short winged fly Elachiptera brevipennis, Mg., were beaten out of bundles of reeds.

### NEUROPTERA.

The best capture of the trip consisted of a specimen of the very rare *Psectra diptera*, Burm., family, *Hemerobiidae*, which was taken in sedge refuse in Wicken Fen. It has only been recorded from three localities previously in Britain; one specimen was taken by Dale at Langport, Somerset; two near Wexford, Ireland (Halbert); and one in Dumfries (McGowan). There was no specimen in the British Museum collections, either British or General.

### HEMIPTERA (HETEROPTERA).

Pentatomidae.—Eurygaster testudinaria, Geoff. 8 examples. This bug has not been recorded for Wicken Fen before, though Bedwell has taken it there. I took it in Wicken Fen 19th Sept., 1909, 11th Sept., 1923, and seven specimens Sept. 1934. One specimen in Burwell Fen, Sept. 1934. The other species, E. maura, with which it was confused, I took at Otford in Sept. 1922. Picromerus bidens, L. 1 ex. Podops inuncta, F. 8 ex. Aelia acuminata, L. 2 ex.

Coreidae.—Myrmus miriformis, Fall. 1 ex.

Lygaeidae.—Heterogaster urticae, F. 15 ex., abundant in bundles of cut reeds. Stygnocoris rusticus, Fall. 11 ex. S. pedestris, Fall. 6 ex. Peritrechus geniculatus, Hhn. 4 ex. Drymus brunneus, Sahlb. 10 ex. D. sylvaticus, F. 3 ex., and var. ryei, D. & S. 1 ex. Scolopstethus affinis, Schill. 9 ex. Pamera fracticollis, Schill. 1 ex.

Tingitidae.—Monanthia ampliata, H.S. 1 ex. M. humuli, F. 1 ex.

Acalypta parvula, Fall. 2 ex.

Anthocoridae.—Triphleps majuscula, Reut. 4 ex.

Capsidae.—Calocoris ticinensis, Mey. 4 ex. Lygus kalmi, L. 2 ex. L. campestris, L. 2 ex. L. pratensis, L. 1 ex. Phytocoris varipes, Boh. 1 ex. Stenodema calcaratum, Fall. 1 ex. Notostira erratica, L. 1 ex.

Cyrtorrhinus geminus, Flor. 3 ex. (uncommon and new to the Wicken List). Until recently only a very few specimens had been taken in Britain, one at Broxborne, Herts (Butler), several in Delamere Forest (Edwards) and one without locality, probably Surrey (Capron). Last year Dalby took it at Madely, Staffs.

Reduvidae.—Empicoris culiciformis, DeG. Four specimens of this delicate "gnat-like" bug were taken by beating bundles of cut reeds.

Nabidae.—Nabis major, Costa, 3 ex. N. flavomarginatus, Schltz. ex. N. limbatus, Dhlb. 2 ex. N. lineatus, Dhlb. 1 ex.

Notonectidae.—Notonecta glauca, L. 2 ex.

Corixidae.—Corixa geoffroyi, Leach, 5 ex. C. sahlbergi, Fieb. 3 ex. C. linnaei, Fieb. 3 ex. C. limitata, Fieb. 1 ex. new to the Wicken List. C. fossarum, Leach, 3 ex.

(To be continued)

# An Account of my Studies in the Biology of Pieris rapae. III. By ORAZIO QUERCI.

In the Entomologist's Record, XLIV. pp. 168-176 (1932), and XLV. pp. 65-70 (1933), I gave particulars of a research made at Philadelphia, Pa., where my wife and I collected adults and reared larvae of Pieris rapae for the whole season of 1932. In those papers I gave only a summary account of the life-history of that species; however the matter is complex, and I believe that the best manner to make it clear is to explain, day by day, by means of annotated graphs, what, probably, happened in the meadow of the Park Way of Philadelphia, which was our collecting field. The following graphs have been made with the support of the notes which I took daily, and of the large series of Pieris rapae, which I possess, and which have been useful to solve some doubts by looking over the specimens.

The data concerning the climate are those of the Monthly Meteorological Summary of the Weather Bureau of Philadelphia. Some of those

data are represented by the graph on the Plate. (Plt. I.)

Since we have returned to Europe, we have continued the study of the insect life in Portugal, Spain and Morocco, where *Pieris rapae* develops in a very different manner from that at Philadelphia,\* as I shall relate in a further paper.

Now, we are going to Macedonia, and if anybody wishes some more detailed news about what I have written in this paper, my address is:

O. Querci, 3, Lysimaxoy, Salonika, Greece.

Tangier, 6th January, 1935.

(To be continued.)

### Leucania I-album, Linn.

By G. W. WYNN.

In September, 1933, I captured at sugar on the South Devon Coast, three specimens of this rare species (a 3 and 2 ??).

I secured about 50 ova from one 2, and with the exception of six,

<sup>\*</sup> At Philadelphia the whole life-cycle never was shorter than 18 days nor longer than 28. At Tangier we have reared thousands of larvae of *Pieris rapae* and the whole life-cycle never was *shorter in summer* than 28 days.

which were infertile, all had hatched by 18th October, 16 days after the ova were first noticed.

The entire eggshell was eaten by the young larva.

I made no attempt to force the larvae, my object being to gain, if possible, some knowledge of their natural development, and with this end in view I placed them in small glass-topped tin boxes, each box containing not more than 3 larvae. Small pieces of well dried stems of Arundo phragmites were provided for shelter.

I was thereby enabled to keep a daily watch on these small individual

groups.

They were kept in a cool room, the night temperature occasionally falling to 45°F. I numbered the boxes and kept individual records. About half the larvae never left their shelter and I subsequently found they had died. A few escaped.

Of the others, I noticed individuals feeding at intervals throughout November. I gave them tender shoots of *Poa annua*, of which I had

a supply under glass as an emergency measure.

When newly hatched they are gregarious, usually concealing themselves in the curled tip of a blade, feeding on the cuticle in a straight line. Later, they forsook their retreat and fed at night on the edge of a blade. When disturbed they curled in a ring and hung suspended by a thread if they fell.

The early part of December was very cold, day temperature generally being about 38°, falling at night to 36°. I noticed certain

larvae feeding, but never more than three at a time.

On the 20th it became much warmer and during the next few days they beame more active, the number feeding simultaneously varying from 6 to 11.

They continued to feed from this time in small numbers up till the middle of February, although the weather was frequently very cold.

From the 16th to the 20th of that month there was a sharp night

frost which seemed to prove fatal to a large number.

More frost early in March no doubt accounted for more casualties, and I never afterwards saw evidence of more than 5 living larvae. These larvae fed at intervals during April, but two must have died

early in May, when the nights were very cold.

The three survivors now made good progress, the largest commencing its last instar on 13th May and going down on the 28th, the other two following on June 9th. Before going down all three rested for 2 days on the sides and top of the breeding cage and during this period lost colour, the longitudinal lines being only just discernible. They were also somewhat shrunk.

The larva forms a small earthen brittle cocoon just under the

surface of the soil.

The pupa is mahogany brown, from 12 to 13mm. in length, tapering rather sharply from the tips of the wing-cases toward the anal extremity. Wing-cases at first pale yellowish brown, darkening later. The anal extremity has two rather large spines, and on the outside of these two bristles, all curling outwards at the tips.

I felt doubtful as to what would be the duration of the pupal period, but this uncertainty was removed when on 6th July the first image emerged. It had not entirely detached itself from the pupa case and

was a cripple. The other two emerged on 9th and 10th July. Both

were perfect.

Anticipating a Summer emergence, I visited the Devon locality immediately afterwards and was successful in capturing one specimen, fortunately a ?. It had apparently already oviposited, for only 50 ova were obtained. Of these, 26 were infertile, a number either escaped or were accidentally killed when opening the small tin box in which they were kept.

Incredible as it may seem, the newly hatched larva can crawl between the cover and lid of the containing box and indeed escape. I have proved this by trapping larvae in a covering box. These mishaps left me with 13 larvae which I reared, the moths emerging in Septem-

ber.

This Summer brood fed up remarkably rapidly. Hatching on 30th and 31st July most of them changed skin on 6th August and by 4th September all but two had passed through all their instars and gone down. These two were backward and delicate but were eventually reared. The moths emerged towards the end of September and were perfect specimens.

At this time I was again on the South Devon coast and at the same spot was very pleased to find *l-album* had become well established. No doubt the very dry and mild winter and spring in South Devon had contributed to this result and a repetition of these favourable conditions during the next few months might complete the acclimitization

of the species at this particular locality.

It is possible that it was present in some numbers in September, 1933. Local weather conditions at that time were unfavourable and very few moths came to the sugars; in fact the only insects I brought away were the three *l-album!* 

This scarcity of even common species showed that artificial bait was unattractive and suggests that these three specimens represented

only a small proportion of the total number on the spot.

I have so far found them very local, in private grounds where they will be well preserved and have every opportunity to get a footing.

Two  $\mathfrak{P}$   $\mathfrak{P}$  taken last September oviposited freely in sheathing leaves of Dactylis glomerata, and the large number of ova obtained (about 200) afforded a better opportunity than I had hitherto secured

for observing the wonderful way in which they were laid.

The ova were occasionally found at the axil of the sheath, but as a general rule were in single and sometimes double rows along the centre of a curled up blade, the edges of which had been glued together. This shelter would, in a natural state, give protection to the young larvae from the weather and enemies.

The ova were, unless laid singly or in very small clusters, thinly covered with a transparent secretion which kept them firmly fixed to the blade.

I feel some diffidence in adding a description of the beautiful larva and freely admit its limitations.

My notes were taken when breeding July larvae.

The young larva is very small and delicate, sluggish in habit, of a dull leaden grey colour, the front segments being darker than the others. As they grew, these six segments indicated by their dark green colour that alimentation had commenced. The longitudinal lines

became plainly visible in the seventh and following segments. From the commencement of the second instar there is, in many respects, a

great resemblance to its congener L. albipuncta.

The following observations were made during the third instar. I noticed little change in coloration and markings until the penultimate instar. Head light greyish brown, faintly reticulated with darker brown; almost as broad as the second segment. Lobes well rounded, with a brown streak down the centre of each. There are a few bristles.

The body is uniformly cylindrical, excepting that it is tapered

towards the anal extremity.

There is a very light greenish dorsal stripe bordered olive brown, with a broad band of diffused lighter brown markings beneath having a somewhat irregular lower outline, followed by an equally broad stripe similar in colour to the dorsal.

The subdorsal region comprises several longitudinal lines. The first and most conspicuous is olive brown. Following this are thin lines of very pale green, pink outlined with brown, very light bluish green and lastly brown, in that order. The bottom line is broader than the others and has a dark edging above and below. Then follows the very light greenish ochreous spiracular stripe which is rather broad and has a streak of a slightly darker shade running through the centre.

The legs and anal legs are pale olive green and all have two black

spots on the outside.

The third and following five segments are divided by orange red folds which are very noticeable. The remaining segmental divisions are only faintly discernible.

On each segment are fourteen dots; a pair on each side of the back, placed obliquely, a triangular group of three, the largest being

the spiracle, and two on each side of the belly.

For two and sometimes three days before and after the moult, the colouring was considerably reduced, the ground colour being a very light whitish brown and the stripes a pale ochreous brown. In the penultimate instar there was a greater depth of colour in the bluish white stripes, the dark brown stripes had a purplish tinge and the pink subdorsal line was now light ochreous brown.

In the last instar the stripes and lines are not so distinctly defined as before and the general colouring is much paler. The dorsal stripe is pale ochreous brown with a darker edging. Between it and the subdorsal lines are two stripes of light ochreous brown divided by an

irregular and poorly defined brown line.

The subdorsal lines are shades of olive brown with darker outlines. The spiracular which follows is of a slightly paler shade and is outlined above and below with a narrow band of pale ochreous brown. The belly and legs are greyish drab.

The chief points of difference between this larva and that of L. albi-

puncta would appear to be

- (1) In general appearance, the longitudinal stripes being much more clearly defined in *l-album*, especially the one below the dorsal which in *albipuncta* is very suffused and broader than the corresponding stripe in *l-album*.
- (2) The orange red segmental folds confined in *l-album* to the third and following five segments, extend in *albipuncta* from the second to the eleventh segment.

(3) The presence of a collar or plate in albipuncta which l-album does not possess\*. This plate has the dorsal stripe carried through the

centre and a smaller stripe on either side.

It might be of interest to mention that these larvae, when artificially reared, are in their early stages sometimes cannibalistic; but I must qualify this by adding that the larvae in question were suffering from a disease, the nature of which I was unable to determine, and it is possible that the cannibalism may have been induced by this condition.

### Early Stages of Indian Lepidoptera.

By D. G. SEVASTOPULO, F.R.E.S.

(Continued from Vol. XLV., p. 148.)

Euploea core, Cr., core.

Head shining black edged with white, a white mark above the jaws and a white line running from the side of the mandibles to the median suture forming a triangle. Body chocolate brown ringed with white, a brick-red line edged below with white along the spiracles, which are black. Paired black subdorsal fleshy filaments on the 2nd, 3rd, 5th and 11th somites, those on the second being the longest. A transverse black line on the 2nd and 3rd somites joining the base of the filaments. Ventral surface dark brown. Anal plate black. There is another form of the larva in which the chocolate and white markings are replaced by a dark and light shade of purplish-grey.

Pupa brilliantly gilded with fawn-coloured markings. Cremaster and last abdominal somite black. Suspended from the underside of a leaf and somewhat resembling a drop of water shining in the sun. The fawn markings are more pronounced in those pupae that develop

in shady places.

Foodplant .- Oleander and "Peepul" (Ficus religiosa), vide Ento-

mologist, LXVI. p. 118.

Described from a full fed larva found in Calcutta 30.ix.30, pupated

5.x.30 and a male emerged 12.x.30.

Seitz mentions an emerald-green form of the pupa with a brilliant metallic gloss on the head, but I have never come across it.

### SATYRIDAE.

Elymnias hypermnestra, L., ssp. undularis, Drury.

Head square, pinkish brown outlined with yellow, and divided into a pair of horns. Skin rough and pubescent. Body bright apple-green with a fine double yellow dorsal line, a subdorsal yellow line bearing a red spot on the 8th, 9th and 10th somites and a blue dot on the 8th and 9th. A thin yellow line running along just above the spiracles with another below it. The last somite produced into a pair of processes about  $\frac{1}{4}$  inch long, yellow at the base and shading into reddish at the apex. In some examples the red dorsal spots are obsolete.

Pupa apple-green. The head divided into two short horns marked at the base with pink. The upper edge of the wing-cases marked with

<sup>\*</sup> This awaits confirmation as regards the fourth and following instars of l-album.

pink and with a pink spot in the cell. Thorax keeled, the keel yellow outlined in pink, with two subdorsal pink spots. The abdomen with a subdorsal line broken up into yellow and pink spots. Trace of a similar lateral line. The last abdominal somites strongly curved so that the pupa, instead of hanging, lies parallel to the leaf to which it is attached. Fixed to the underside of a leaf of the foodplant by the cremaster.

Foodplant.—Palms of various species.

Described from a full fed larva found in Calcutta 14.x.30, pupated 18.x.30 and a female emerged 26.x.30.

Seitz does not mention the long anal processes.

(To be continued.)

# Lepidoptera at Jaca, Alto Aragon, Spain, in August, 1931 and 1933. By Wm. FASSNIDGE, M.A., F.R.E.S.

(Continued from Vol. XLVI. page 129.)

ADDOMINATION Server their rate was a server A for

Sarrothripus revayana, Scop.—A few dark forms. S. degenerana, Hb.—Imagines and larvae.

Nolidae.—Celama subchlamydula, Stgr.—Fairly common at light. \*Roeselia albula, S. and D.—One at light, 2.viii.33. Nola tutulella,

Zerny.—Four specimens (genitalia not examined).

ARCTIDAE: — Phragmatobia fuliginosa, L. Diacrisia sanio, L.—One 3 26. viii.33. \*Arctia caja, L.—A few. Callimorpha quadripunctaria, Poda. Coscinia striata, L.—Fairly common on Oruel. C. cribrum, L. ab. punctigera, Frr.—Rare. Hypocrita jacobaeae, L.—Imagines and larvae. Apaidia mesogona, God.—Rare. Paidia murina, Hb.—Common. Lithosia complana, L.—Fairly common. L. lutarella, L.—A few. L. pallifrons, Zell.—A few. \*L. caniola, Hb.—A few.

Heterogynis penella, Hb.—A few & &; old

cocoons abundant.

Zygaenidae:—Zygaena fausta, L.—A very bright form, common. Z. carniolica, Scop.—A few worn specimens, 31.vii.33. \*Z. occitanica, Vill.—Fairly common. Z. filipendulae, L. \*Z. ephialtes, L.—Two worn specimens of the form medusa, Pallas, 2.viii.33. Z. lonicerae, Esp.—Two small specimens. \*Z. trifolii, Esp.—One specimen with spots confluent. Procris globulariae, Hb. P. geryon, Hb.

Psychidae:—Cochliotheca crenulella, Br.—One 3.

AEGERIIDAE:—Dipsosphecia ichneumoniformis, Fb. \*Synanthedon spuleri, Fuchs.—Several bred from galls in stems of Juniperus found at San Juan de la Peña, 1931.

Cossidae: —Zeuzera pyrina, L.

Pyralidae:—Aphomia sociella, L. \*Achroia grisella, Fb.—One specimen at light 20 viii.33. Galleria mellonella, L.—Two specimens. Crambus inquinatellus, Schiff.—Common. C. geniculeus, Hw. C. contaminellus, Hb. C. tristellus, Fb.—Fairly common. C. selasellus, Hb. C. perlellus, Scop. and ab. warringtonellus, Stt. C. saxonellus, Zinck.—Fairly rare. C. fulgidellus, Hb.—Rare. C. pinellus, L. C. staudingeri, Zell.—Rare. C. falsellus, Schiff.—Common. C. culmellus, L. C. pratellus, L. \*C. alpinellus, Hb.—One small specimen. \*C. carectellus, Zell.—One specimen, 11.viii.33. Eromene superbella, Zell.—Abundant among Scabiosa columbaria, L. \*Ancylomyia contritella, Zell.—A few. \*A. tentaculella, Hb.—A few. Homeosoma sinuella,

Fb.—Rare. H. nebulella, Hb.—Common at light. Ephestia elutella, Hb. Ancylosis cinnamomella, Dup. Psorosa dahliella, Tr.—Fairly common. P. albariella, Zell.—A few. Pempelia italogallicella, Mill. -Fairly common at light. Etiella zinckenella, Tr.-Fairly common. Selagia spadicella, Hb.—Fairly common by day locally in dry places where Genista scorpius grows. Salebria palumbella, Fb.—A few. S. semirubella, Scop. Pristophora florella, Mn. Acrobasis porphyrella, Dnp.—One specimen. A. glaucella, Stgr.—One specimen. formosa, Hw.—One specimen. \*A. sodalella, Zell.—Three specimens. Rhodophaea suavella, Zinck.—A few; larval tubes common. \*R. advenella, Zinck.—Fairly common. \*R. rosella, Scop.—One specimen, 17.viii.33. Aglossa cuprealis, Hb.—A few. Actenia borgialis, Dup.— Common. \*Cledeobia brunnealis, Tr.—Common. C. angustalis, Schiff.—Common. Stenia punctalis, Schiff. Scoparia frequentella, Stt.—Common. \*Mesographe forficalis, L. Margaronia unionalis, Hb.—One specimen. Hellula undalis, Fb.—Rare. Evergestis sophialis, Fb.—Rare. E. politalis, Schiff.—Fairly common; beaten out from Clematis. Nomophila noctuella, Schiff.—Fairly common. Loxostege palealis, Schiff.—Rare. L. sticticalis, L.—Fairly common at light. Diasemia ramburialis, Dup.—One specimen. \*D. litterata, Scop.—One specimen, 8. viii. 33. Mecyna polygonalis, Hb.—One specimen, 25. viii. 33. Cynaeda dentalis, Schiff. Metasia suppandalis, Hb.—Fairly common. M. corsicalis, Dup.—Fairly common. M. ophialis, Tr.—Fairly common. Pionea institulis, Hb.—A few; pupae fairly common in rolled leaves of Eryngium. P. ferrugalis, Hb.—Common. Pyrausta repandalis, Schiff.—Larvae and pupae (badly ichneumoned) fairly common in seed heads of Verbascum. P. nubilalis, Hb.—Fairly common at light. P. caespitalis, Schiff.—Common. P. sanguinalis, L.—Rare. castalis, Tr.—Rare. P. purpuralis, L. P. aurata, Scop. P. cingulata, L.—Common at light. Noctuelia floralis, Hb.—Rare. Botys ruralis, Scop.—Fairly common.

(To be concluded.)

### Nomenclature. The List.

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

(Continued from p. 7.)

Thecla, Fb. w-album, Knoch. becomes Strymon, Hb. w-album, Knoch. Thecla, Fb. pruni, L. becomes Strymon, Hb. pruni, L.

Tutt, in Brit. Lep. VIII. p. 314 (Brit. Butt. I.), erected a genus Edwardsia (altered to Chattendenia subsequently) for w-album and used Strymon, Hb. for pruni.

Bethune-Baker, in his "Synonymic Notes," Ent. Record, XXVI. 133 (1914), placed the following species in the genus Strymon, Hb.—mopsis, Stdgr.: spini, Schiff.: w-album, Knoch: eximia, Leech: grandis, Fldr.: ilicis, Esp.: acaciae, Fb.: pruni, L.: prunoides, Stdg.: herzi, Fsn.: thalia, Leech: ledereri, Bdv.: lunulata, Erich.: sasanides, Koll.: myrtale, Klug., and says that he can find no characters structural nor otherwise to separate these species generically. Both Tutt and Strand have given a whole string of generic names for this assemblage and

allied species, none of which can stand. Hemming shows that both

Bithys and Strymon are valid as generic names for this "very large group," and suggests that eventually Strymon may be revised when

Bithys will be legitimately available.

Leucophasia, Steph. sinapis, L. becomes Leptidea, Billberg. sinapis, L. This magazine has for years used Leptosia, Hb. for this species, with the previously expressed objection to Billberg's work. As my colleague Mr. T. B. Fletcher points out, the greatest objection to Billberg is that there are no generic descriptions in Billberg's mere List. If Leptidea (1820) be discarded then the next available name is Leucophasia, Steph. (1827). Leptosia, Hb. (1818) Zutrage did not include sinapis, but Leptosia, Hb. Verz. (1823) did contain sinapis. The date of the Verz. was until recently considered to be (1816), hence Butler (1870) took sinapis as the type of Leptosia. This last now falls unless further alteration of the dates of the Verz. be established.

Aporia, Hb. crataegi, L. remains Aporia, Hb. crataegi, L. Pieris, Schrnk. brassicae, L. remains Pieris, Schrnk. brassicae, L. Pieris, Schrnk. rapae, L. remains Pieris, Schrnk. rapae, L. Pieris, Schrnk. napi, L. remains Pieris, Schrnk. napi, L. Pieris, Schrnk. daplidice, L. becomes Pontia, Fb. daplidice, L. This magazine has long used Pontia for daplidice. Euchloë, Hb. cardamines, L. remains Euchloë cardamines, L. Colias, Fb. hyale, L. remains Colias, Fb. hyale, L. Colias, Fb. edusa, Fb. croceus, Frery.

This last change has been used now for some years past. The list contains a long discussion on the use and validity of *Colias*.

Gonepteryx, Leach rhamni, L. remains Gonepteryx, Leach rhamni,

L.

Papilio, L. machaon, L. remains Papilio, L. machaon, L. Nisoniades, Hb. tages, L. becomes Erynnis, Schrank, tages, L.

Nisoniades, Hb. Verz. 108 (1820) contains tages, L. and six other species. In 1850, Stephens List Spec. Brit. Anim. B.M. selected tages as typical of the genus, whereas it was only in 1872 that Scudder selected tages as typical of the genus Erynnis, Schrank (1801). It thus seems that Nisoniades tages should stand.

(To be continued.)

### OTES ON COLLECTING, etc.

Each month the editors are arranging to have a series of short notes under this heading; what has been observed; what to look for; general notes on localities, etc. We already have notes on reed beds in early spring, some notes from Cornwall, from Sussex, from Ireland. Will subscribers please help with these short notes of mutual help.

Broods of P. Napi in the Rhone Valley are based on a misconception. In the observations made in this district during eleven consecutive seasons I have never known a case where the 1st brood was not over before June. I do not remember even having seen a ragged specimen of this brood so late as that. The first brood is out in a forward season at the end of March, in 1899 for example it was out on 28th March; even in a late season I find I have noted it on

17th April, so that I am sure that any specimens Dr. Verity found in

June must have belonged to the 2nd brood.

Further south even at 3,000 ft. in the Abruzzi I have found the the 2nd brood, of extreme napaeae form, in rags by the middle of July, but in the Rhone Valley a pronounced napaeae form is not usual in the June brood.

For a really reliable knowledge of the Rhone Valley broods of the earlier species it would be necessary to begin researches by the 2nd week in April at the latest.—Rev. G. Wheeler, M.A., F.R.E.S.

Notes on the Time of Occurrence of Larvae and Imagines of Pterophorus carphodactylus, Hübn.—For some years I sought in vain for larvae of this species in the flowers of Inula conyza, D.C. (squarrosa) in August and September, according to the dates given by Meyrick. Nearly all the continental authorities, to which I have access, state that the moth is double-brooded, copying, I think, the statement of \*Spuler, who says of the imagines: "im Juni und Ende August-September," and of the larvae: "im Mai in den Astwinkeln eingebohrt, im Juli in den Blütenkörbehen von Inula squarrosa." I am not in a position to say that the insect is single brooded with us, but I know of no captures later than July, and my friend Mr. E. A. C. Stowell, who is in a most favourable position, has also failed to find second brood larvae.

All the imagines I have taken have been caught between 24th June and 7th July at Farley Mount near Winchester, where the insect is fairly common, not very easily disturbed, but to be smoked out in fair numbers on a calm afternoon. I have found larvae in the same locality and also at Newchurch near Alverstone, I.W. The latter locality is an old chalkpit, where on the steep rough sides the foodplant grows commonly. Larvae were found there varying in size from small to well-grown in the last week of April, 1932, while at Farley Mount, only quite small larvae could be found on 7th May, 1932. The difference I assume to be due to the less favourable position as regards sunshine and perhaps also to the higher elevation of Farley Mount. I visited the Newchurch chalkpit again on 8th April, 1933, and found nearly full-fed larvae in fair numbers, boring into the central shoot of stunted plants in the driest and barest places, showing plain signs of their presence. The larva very closely resembles that of Adaina microdactyla, Hübn., is usually heavily parasitised, but not difficult to rear if the infected plants be dug up and replanted in a shallow box. I had hoped in 1934 to breed the moth again, get a pairing and ova if possible, and to make an attempt to find out if a second brood occurs in England or not, but a long illness made this impossible. Can some other entomologist throw any light on this question ?—WM. FASSNIDGE, (F.R.E.S.), 47, Tennyson Road, Southampton.

An unrecorded Aberration of Plebeius aegon.—I was fortunate to secure an interesting unnamed variety of *Plebeius aegon* (argus) near Ilfracombe on 10th July last. The specimen was a female in very fair condition and almost uniform khaki in colour on the upper side, lightly dusted with violet scales at the base of the wings. The

<sup>\*</sup> Spuler apparently got this information from Hoffmann Ber. Nat. Ver. Regensburg. V. 175 (1896).—T.B.-F.

markings on the margin were faintly visible and the fringe was a greyish white. The underside was normal except for the deeper orange shade of the ground colour and the markings clear and definite. The general effect, when on the wing, was so suggestive of Coenonympha pamphilus, that I nearly mistook it for that insect.—(Rev.) T. G. Edwards, M.A., F.Z.S.

Hybernation of Pyrameis atalanta.—Our correspondent Mr. Thos. Greer has recently sent an interesting extract from the Belfast News Letter in which a writer gives a circumstantial account of his discovery of the winter hiding place of Pyrameis atalanta. In a rather dark corner of Belvoir Park, Belfast, was a deep hollow in one rough tree trunk, and the sun shining through the leafless trees on this day of mid December happened to strike the depth of the cavity. In this cavity were a number of P. atalanta which the light and warmth awakened. They moved about, jostled one another, and at length advanced one by one towards the light and flew slowly and heavily away.

LATE FEBRUARY AND EARLY MARCH.—A search on the tree trunks in Richmond Park usually used to give plenty of Erannis leucophaearia males and a very close search especially in the afternoon should afford a few females, spider-like creatures most elusive to see. On the western side of the White House in the centre of the Park one could always get the completely black form ab. merularia, in small number. This species is well worth getting in number on account of its varied forms; some of the whitebanded examples, ab. marmorinaria, are very pretty. The wood some distance north of the White House is also very productive of this species. In March assiduous search will probably produce Apocheima hispidaria in small number. The females of this species are also apterous but being larger than those of E. leucophaearia are somewhat easier to find, but rarer. Apocheima hispidaria emerges in the latter half of the day when the males may be found low down drying their wings and the females in movement like spiders.—Hy.J.T.

British Orthoptera.—Dr. Burr's note in the January issue of this Journal, p. 8, has served as a reminder that a recent record of the occurrence of the Mole Cricket in Lancashire has not yet been published.\* Towards the end of May, 1934, a living specimen was received from Mr. O. G. Fry, an Inspector of the Ministry of Agriculture at Liverpool. The insect was found by a nurseryman at Lytham who sent it to Mr. McPherson, Horticultural Instructor for Lancashire, who, in his turn, passed it on to Mr. Fry. No other specimens were found, and it is not impossible that the insect was imported with shrubs that had been brought in from Holland, although it would be rather surprising if so large and active an insect had not some opportunity of escaping en route. The specimen, when received, seemed to be very healthy, and it was placed in soil in a large bell jar with various roots as food. The jar was about 1 ft. high, the soil reaching about half-

<sup>\*</sup> A specimen (which I saw but did not know) was taken in the bank of the large pond in the grounds of Becket, Schrivenham, in the late eighties and sent to the B.M. for identification. The answer received was "The mole cricket, by no means rare."—G.W.

way up the jar, which was covered with muslin tied round with tape. The cricket made numerous burrows in the soil but after some three weeks it suddenly disappeared and was not subsequently found; its means of escape is a mystery, as the muslin cover had not been bitten through nor did it show any signs of having been removed. Finally it is perhaps worth mention that this is the only specimen of the Mole Cricket that has been submitted to the Ministry of Agriculture during the past twenty years, although on the continent of Europe the species is well known as a serious pest.—J. C. F. FRYER, Plant Pathological Laboratory, Harpenden.

A NEWLY DISCOVERED TINEA SPECIES.—At a recent meeting of the South London Entomological Society, Mr. S. Wakely exhibited series of the group of the Micro genus Tinea containing the species T. granella, L., T. cloacella, Haw., T. ruricolella, Stain., and the newly differentiated species T. personella, Pierce and Metclf. These species are extremely alike and although differences are apparent with series side by side, one has the utmost difficulty to differentiate them by colour and marking. In fact Meyrick, Rev. Brit. Lep. p. 828, unites ruricolella, Staint. with cloacella, Haw. The new species T. personella was taken at Horsley, Surrey, on tree trunks, from the more or less decaying bark from which the pupa cases were still protruding. T. personella is found in the spring, T. cloacella all through the summer, T. granella in spring and summer, T. ruricollella about midsummer. All are more or less connected with fungi, Polyporus and decaying bark are the pabulum of the larvae.

LATE APPEARANCE OF PLUSIA GAMMA AND OF CIDARIA SITERATA (PSITTACATA).—I observed both these species on 3rd December at rest on the electric light lamps here at Torquay.

Unusual Foodplants selected by Arctia caja.—During the last few years I have found batches of ova of Arctia caja on leaves of both birch and poplar and ova of Spilosoma menthastri on ash. In each case the ova were laid in some number at about four feet from the ground and quite clear of any low growing vegetation so that their actions could not have been due to any immediate oversight of the females. The young larvae of each all fed up contentedly on the several food plants until I became aware of their identity, somewhat to my disappointment, when they were transferred to some more humble rations.—(Capt.) C. Q. Parson, Torquay.

Notes from Shoreham, Sussex.—To the collector of Lepidoptera it is often interesting to compare one season with another. That the abundance or otherwise of species is not wholly determined by climatic conditions must be patent to all observers.

Although the summers of 1933 and 1934 were very similar in temperature and amount of sunshine and also remarkable for an abnormally low rain fall, both differed materially with regard to their quota of butterflies and moths. Thus last summer in my experience the migratory species Colias croceus, Vanessa cardui, V. atalanta, Macroglossum stellatarum and Plusia gamma were decidedly scarce here, whereas in 1933 they were common.

Other species that occurred less abundantly than usual were Eumenis semele, Polyommatus icarus and Rumicia phlaeas, to which might be added the three common whites. But on the other hand Polygonia c-album, Limenitis camilla, Satyrus galathea and Polyommatus bellargus were out in considerable numbers. I found P. c-album on Lancing Clump and Erringham Farm on the Downs and also in Clapham Woods near Worthing. They were mostly of the hutchinsoni form with mottled undersides. L. camilla occurred sparingly on Lancing Clump (first time seen there) and was rather common in Clapham Woods.\* I saw a specimen much to my surprise flying down North Street, Brighton, one afternoon in July!

Lycaenopsis argiolus was abundunt in suitable places especially in the summer emergence. I found the ova and larvae commonly on ivy buds during August and September; unlike the larvae of *Polyonmatus* 

coridon and I'. bellargus they were easy to rear.

Of the moths captured none call for mention except perhaps Cirrhoedia xerampelina of which I took two specimens in September, one on an ash tree in Lancing Clump and the other in Shoreham attracted by the lamp. Two or three specimens of the pretty Pyralid Spilodes palealis occurred on the Downs near here and two Myelois cribrum both in mid-July.—L. H. Bonaparte-Wyse, Shoreham-by-Sea.

COLEOPHORIDAE. - The Coleophorids are, perhaps, the most interesting group of the Micro-lepidoptera that one beginning the study of the "smaller fry" can take up. The life-histories of many of the species can be readily observed, from oviposition to emergence, and the stages are excitingly varied. As the name implies they are all "case bearers" in a larval stage, as well as miners. They bore into stems, leaves (between the two surfaces), seeds and so forth, constructing "houses" from their natural secretions, from portions of their food reinforced with silk, from one or more seeds adapted as houses, etc. The "houses" of the young pre-hibernating larvae in some species are quite different from those of the more mature larvae after hibernation.  $\bar{\mathbf{T}}$ o observe a larva building, widening, lengthening, shaping, its older case to allow for growth is a wonderful sight; it generally takes place Just now one can find the whitish cases of Coleophora caespititiella on the seed head of the common rushes growing on moist ground. Gather a handful of these old flowering stems and place them in damp sand covering them with the usual muslin material. They must be kept out in the open and when the hibernating larvae begin to move, fresh seedy stems may be inserted at intervals, until pupation takes place. It is well to get the stems from different localities as the mortality is often great from parasitic attack and from infantile starvation. The imago comes out in June.—Hy.J.T.

At this time of a year, the beginner will easily find the cases of *C. laricella* on larch, of which they are a definite pest when the young

leaves appear.—T.B.-R.

LEPIDOPTERA OF WANDSWORTH.—Since coming to this neighbourhood in 1925, I have observed 67 species of Lepidoptera and submit my list in the hope that fellow entomologists, who have had the opportunity

<sup>\*</sup> A specimen spent an afternoon in any garden at Worthing this summer.—G.W.

to make far more complete surveys, may publish their records. The species all occurred within a mile's radius of Wandsworth Common Station, the ground covered including some 150 acres of old preserved land, which comprises the grounds of the Springfield Mental Hospital. In the case of the migrants and more interesting species the dates of observation are recorded. Those species marked \* came to light.

Pieris brassicae, Pieris rapae, Colias croceus (edusa) (4.ix.30), Aglais (Vanessa) urticae, Vanessa io, Pyrameis cardui (7.viii.31), Pyrameis atalanta (4.vii.30), (the last four at Buddleia flowers), Epinephele jurtina, Coenonympha pamphilus, Heodes (Chrysophanus) phlaeas, Lycaenopsis (Cyaniris) argiolus, Augiades sylvanus, Mimas (Dilina) tiliae, Smerinthus populi\*, Dicranura vinula, Phalera bucephala\*, Orgyia antiqua, Cilix glaucata (5.vi.31) (on a fence in Sudbrooke Road), Spilosoma menthastri, Spilosoma lubricipeda, Arctia caia, Hipocrita jacobaeae, Acronicta aceris, Acronicta megacephala, Acronicta psi, or tridens (imago only observed), Metachrostis (Bryophila) perla\*, Agrotis exclamationis\*, Noctua xanthographa\*, Axylia putris, Triphaena pronuba\*, Mamestra (Barathra) brassicae, Mamestra persicariae, Apamea secalis, Miana strigilis\*, Xylophasia monoglypha, Dipterygia scabriuscula (25.vii.31) (on a fence in Beechcroft Road), Phlogophora meticulasa, Mania maura, Hydraecia nictitans\*, Leucania pallens\*, Leucania lithargyria, Caradrina quadripunctata, Taeniocampa gothica, Amathes lychnidis\*, Plusia moneta (28. viii. 32) (on a wall in Nightingale Lane), P. gamma\* (18.ix.31), Catocala nupta, Acidalia seriata, Schrnk. (virgularia, Hb.), Acidalia sylvestraria (straminata)\*, Acidalia fuscovenosa (interjectaria), Acidalia aversata, Acidalia floslactata (remutaria), Operophtera brumata, Xanthorhoë fluctuata, Euphyia (Camptogramma) bilineata, Eupithecia vulgata, Abraxas grossulariata\*, Ennomos fuscantaria\*, Ourapteryx sambucaria, Opisthograptis luteolata, Hybernia aurantiaria, Lycia hirtaria, Biston (Pachys) betularia and ab. carbonaria, Jord. (doubledayaria, Mill.) 1.vi.30, Hemerophila abruptaria, Boarmia rhomboidaria (gemmaria), Hepialus sylvina\*, Hepialus lupulina.—(Major) C. Dick. Tooting, S.W.7.

#### **EXURRENT NOTES AND SHORT NOTICES.**

Part 2 concluding Vol. I. of the Transactions of the Society for British Entomology was published in November last and is a most valuable addition to our literature on British Entomology. A hundred pages is devoted to a first instalment of an annotated "List of the Lepidoptera of Dorset" by W. Parkinson Curtis, F.R.E.S. with whose thorough work we are familiar in these pages. The unusual classification of Mevrick's Handbook is followed, but subsequent and omitted items in the latter are discussed and much up to date observations included, e.g., oditis in place of hispidus. Interpolated notes occur throughout and no student of the Noctuae should fail to consult the author's remarks and suggestions. There is a composite article on the English names of the British Lepidoptera worked around the writings of Haworth and Wm. Jones, by Sir. E. B. Poulton, Dr. Hobby, F. Hemming and H. M. Edelsten; a very charming and interesting "archaeological" exploration among the early "fathers" of British entomology. F. J. Killington gives the Life-histories of some of the Hemerobiidae, H. Audcent discusses the Family Liriopeidae (Diptera)

and D. O. Boyd, Notes on the Variation in certain Ichneumonida. The amount of observation and research in the first year of this periodical is really great and all our local Natural Science societies must perforce have the Transactions of this Society on the shelves of their libraries. There are ten plates in this part and the whole forms a

very handy volume.

Dr. Hering of Berlin has just issued his annual contribution of three portfolios of Minen Herbarium. This issue contains 60 sheets of leaf mines made by insects, collected and mounted mostly during the past year. 26 of these are Lepidopterous, 28 are Dipterous, and the others are made by 5 Coleoptera and 1 Hymenopteron. The whole series now comprises 360 sheets of mines and with the Index supplied forms quite a material encyclopaedia. Dr. Hering is now the world authority on mining-insects of all Orders, and one can rely on the correctness of his identifications. The labelling gives the plant name and Order, besides the insect name and Order, and the dates and places of occurrence. Those who desire to possess these portfolios should write to Dr. Hering himself at Berlin N.4, Invaliden str. 43, Germany.

We have a few more descriptions of forms of British Noctuids to publish and the Index and Title page, before we commence vol. II which we hope will be in May. The detailed consideration of the species in Tutt's British Noctuae, vol. II. was much more thoroughly worked out than those in vol. I, so that we anticipate that we shall be able to get on more rapidly than we have done there. We shall have some complete sets of the parts p. 1 to p. 364 for sale at 10/6 the

set unbound.

A Meeting of the Entomological Club was held at the Museum, Tring Park, on 29th September, 1934. Lord Rothschild in the Chair. Members present, in addition to the Chairman:-Mr. Horace Donisthorpe, Mr. H. Willoughby-Ellis, Mr. Jas. E. Collin, Mr. W. J. Visitors present: - Major E. E. Austen, Mr. H. E. Andrewes, Dr. K. G. Blair, Mr. E. C. Bedwell, Dr. Malcolm Burr, Prof. H. D. Hale Carpenter, Dr. E. A. Cockayne, Mr. C. L. Collenette, Mr. Guy Dollman, Dr. F. A. Dixey, Mr. H. N. Edelsten, Mr. S. S. Flower, Mr. J. C. F. Fryer, Mr. F. W. Frohawk, Major Philip Graves, Capt. Francis Hemming, Mr. H. R. Hewer, Dr. Karl Jordan, Mr. W. H. Laing, Sir Guy A. K. Marshall, Mr. William E. F. Nelson, Dr. S. A. Neave, Mr. Louis B. Prout, Mr. W. P. Pycraft, Dr. C. Tate Regan, Capt. N. D. Riley, Mr. W. Rait Smith, Mr. H. Stevens, Mr. C. Danes Sherborn, Mr. Henry J. Turner, Mr. W. H. T. Tams, Mr. B. P. Uvarov, Mr. Colbran J. Wainwright, Mr. C. G. M. de Worms, Comm. J. J. Walker. The members and guests arrived at the Museum at various times during the morning and were received by Lord Roths-The whole of the collections in the Museum were thrown open to visitors, and the Chairman made Special exhibits on the tables in the Insect room and the former Bird room.

1. The entire collection of the Acraeinae, a subfamily of Nymphalidae, which is purely tropical and subtropical, the large majority of species occurring in Africa south of the Sahara, a fairly large number in South and Central America and a few species in the Oriental Region as far east as the Solomon Islands, none being found in the Palaearctic and Nearctic Regions proper. The specimens of each species and subspecies were arranged strictly according to localities, the collection

showing which districts were sparsely represented, and at the same time illustrating the extent of the variability of a species in any locality from which the collection contained an adequate series.

2. Some Papilio and Pseudacraea resembling Planema and Acraea.

3. Acraea collected in South-west Africa and Angola by Dr. Karl Jordan in 1933 and 1934, and among them a series of Acraea hypoleuca, Westw., of which only one specimen was previously known (in the Hope Department, Oxford).

4. A Large series of the Uraniid, Chrysiridia madayascariensis, with some very conspicuous aberrations in which the metallic green scaling of the forewing was much extended, forming a large patch

divided distally into broad rays on the veins.

5. The larva and imago of the giant coleopteron, Goliathus cacious from Sierra Leone, the larva measuring  $5\frac{1}{2}$  inches in length.

6. The cast of the Giant Salamander, which has been living in a

tank at Tring Park for 44 years, and had only lately died.

Luncheon was served at 1 o'clock and a most pleasant time was spent, the guests thoroughly enjoying the conversation around the tables. The whole of the party again returned to the Museum and left for their various destinations later in the afternoon after a most interesting and successful day.—H. Willoughby Ellis.

#### BITUARY.

#### Dr. F. A. Dixey, F.R.S. (1855=1935).

Another eminent entomologist has lost his life by the murderous Dr. Dixey became a scholar in Wadham College, Oxford in 1874, and most of his life until his retirement in 1925 was spent there. He was elected to a Fellowship in 1885 and subsequently held various offices in the College. His speciality in entomology was aught that concerned the Pierine butterflies, which group was strongly represented in the Hope Collection in the Oxford Natural History Museum. Not only was he interested in the systematics and distribution of the group, but he sought to work out their bionomic relationship, their part in the theory of mimicry, the development of special glands and scales on the wings, the process of development of the wings in the pupa, etc. His notes on the scent and scent-scales are well-known to all entomological students. He possessed marvellous ease of speech; without hesitation he would demonstrate a subject with the greatest clarity to his hearers, without superfluous thought or word. As a host, those of us who have stayed in Wadham College during the visits of the Entomological Club know full well, he was one of the best. His Oxford stories, his verbal sketches of the idiosyncrasies of students who subsequently became famous, his accurate memory of university incidents and his real learning made his company an illumined pleasure. In 1910 he became F.R.S.; in 1909-10 he was President of the Entomological Society of London after serving on the Council and as Vice-President. In 1919 he presided at the Zoological Section of the British Association at Bournemouth. more than one occasion he gave an address on his special Pierine study to our South London Society and his visit was always of special interest to a large audience. Entomological circles have lost a fine entomologist and a fine man.—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\*, B Doubledayaria, Black rhomboidaria\*, Black virgularia\* and others. Repandata in variety,

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.

Desiderata.—Urgently wanted for research work at the Royal College of Science,

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#### MEETINGS OF SOCIETIES.

Entomological Society of London.-41, Queen's Gate, South Kensington, S.W. 7.

8 p.m. March 6th, 20th.

The South London Entomological and Natural History Society, Hibernia Chambers, London Bridge. Second and Fourth Thursdays in the month, at 7 p.m. February 28th, March 14th, 28th.—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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## THE VASCULUM

A quarterly journal of Natural History, etc., chiefly for the Northern Counties

EDITED BY

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#### Wicken Revisited.

By HORACE DONISTHORPE, F.Z.S., F.R.E.S., etc. (Department of Entomology. British Museum. Natural History.) (Continued from p. 14.)

#### HEMIPTERA (HOMOPTERA).

Jassidae.—Tettigonia viridis, Linn. 2 ex. Limotettix frontalis, Boh.

Cicadula sexnotata, Fall. 1 ex.

Cercopidae.—Aphrophora myricae, Edw. 2 ex. and ab. picea, Edw. Philaenus spumarius, Fall. form vittatus, Fab. 1 ex. and f. populi, Fab. 1 ex. P. lineatus, Linn. 2 ex.

I am indebted to Mr. China for the names of the bugs. Many of

the above species are not recorded for Wicken Fen.

#### ORTHOPTERA.

Chorthippus albomarginatus, Zett. Conocephalus dorsalis, Latr., not recorded for Wicken Fen. Acrydium kiefferi, Sauley.

#### HYMENOPTERA.

Tenthredinidae.—Only one sawfly was obtained—Athalia cordata, Leg. two specimens being taken in Burwell Fen and one at Wicken Fen. Mr. Benson tells me this species is many brooded, which

accounts for these late captures.

Formicidae.—Only one interesting ant was captured, a winged 2 of Stenamma westwoodi, West., swept in Wicken Fen on 14th September. This is a new county record. Many males and winged females of Myrmica scabrinodis, Nyl., were also swept in Wicken and Burwell Fens 10th and 21st Sept., new to the Wicken List.

Ichneumonidae.—A large number of Ichneumons was taken, but of course many of these will take a very long time to be worked out. Mr. Perkins has supplied me with the short list below. Those marked with an asterisk are of most interest and most of them were new to Wicken Fen. One of the most interesting was Aritranis carnifex, Gr.,

but the rarest species are, no doubt, among those unnamed.

\*Pimpla (Epiurus) melanopyga, Grav. 5 & . \*Pimpla spuria, Grav. 1 9. Pimpla flavicoxis, Thoms. 1 9. Tromatobia oculatoria, Fab. 1 9. \*Polysphincta (Zaglyptus) varipes, Grav. 1 9. Lissonota bellator, Grav. 1 3 many 9.9. Lissonota sulphurifera, 2 3 3. \*Aritranis carnifex, Grav. 1 3 2.9.9. Acanthocryptus quadrispinosus, Gr. 2 \, \cong \, \cong \. Schizopyga podagrica, Grav. 1 \, \cong \. \*Homocidus ornatus, Grav. 1 \, \cong \. Bassus laetatorius, Fab. 1 \, \cong \. \*Promethus laticarpus, Thoms. 1 ?.

(To be concluded.)

#### Contrexéville, Vosges, France, in June, 1934, and Locquignol, Forest of Mormale, France, in July, 1934.

By Rev. E. B. ASHBY, F.R.E.S., F.Z.S.

(Concluded from page 9.)

Heterocera.—Trochilium apiforme, Clerck.; Zygaena filipendulae, L.; Zygaena lonicerae, Esp. and aberration; Macrothylacia rubi, L.; Spilosoma (Spilarctia) lutea, L. (lubricipeda, L.); Agrotis exclamationis, L.; Leucania conigera, Fab.; Euxoa segetis, Schiff.; Euclidia glyphica, L.;

Hemithea strigata, Müll.; Angerona prunaria, L.; Cabera pusaria, L.; Cabera exanthemata, Scop.; Ematurga atomaria, L.; Siona lineata, Scop.; Abraxas grossulariata, L.; Ochyre biriviata, Staint.; Rhodostrophia vibicaria, var. strigata, Staud.; Cidaria truncata, Hufn.; Odezia atrata, L.; Aglossa pinguinalis, L.; Spilodes verticalis, L.; Alucita pentadactyla, L.; Cheimophila salicella, L.

Hymenoptera.—Allantus omissus, Först.; Macrophya rustica, L.; Salius fuscus, L.; Tenthredella mesomela, L.; Tenthredopsis litterata, Geoffr.; Vespa sylvestris, Scop.; Halictus calceatus (cylindricus), Fab.; Apis mellifica, L. dark form; Protichneumon pisorius, L.; Ichneumon raptorius, Grav.; Colpotrochia elegantula, Schr.; Pimpla arctica, Zett.; Exochilium circumflexum, L.; Amblyteles subsericans, Grav.

Rhyncota.—Troilus luridus, Fab., larva; Carpocoris purpureipennis, De G.; Graphosoma italicum, Müll.; Lygaeus saxatalis, Scop.; Miris dolobratus, L.; Deraeocoris ruber, L., bred, larva from Contrexéville.

Coleoptera.—Cicindela campestris, L.; Cicindela hybrida. L.; Carabus auratus, L.; Carabus monilis, F.; Silpha thoracica, L.; Trichius fasciatus, L.; Necrophorus vespillo, L.; Necrophorus investigator, Zt.; Lamia textor, L.; Agapanthia cardui, L.; Leptura aethiops, Poda; Cryptocephalus hypochaeridis, Su.; Lagria hirta, L.; Molytes germanus, L.

Neuroptera.—Chrysopa prasina, Ramb.; Osmylus maculatus, Lat.; Panorpa communis, L.; Panorpa germanica, L.; Calopteryx virgo, L.

Diptera.—Therioplectes tropicus var. bisignatus, Jaen.; Tabanus bovinus, L.; Anthrax cingulatus, Mg.; Chilosia illustrata, Harr.; Volucella bombylans, L.; Volucella zonaria, Poda; Chrysotoxum arcuatum, L.

Forêt de Mormale, 2nd July to 12th July, 1934.—I left Coutrexéville early on 2nd July, and arrived the same afternoon at Le Quesnoy station via Nancy. At Le Quesnoy I was met by the motor car from the Grand Hôtel Restaurant "La Chênaie," at Locquignol, a small village situated in the large Forest of Mormale, where I stayed very comfortably until 12th July. The Forest situated as it is roughly between Le Cateau and Mons, was occupied by the Germans from 1914 to 1918; they cut down portions of it and also flooded it. It is however a very good collecting centre at the present time. It has numerous rides, as well as many intersecting paths. The various small inns preserve as treasures many of the bully beef tins, etc., thrown away by our soldiers when they cleared the Germans out in the autumn of 1918.

On my arrival I found Major Twigg and Mr. Bowes of Herne Bay at the hotel. They had already found out the character of the Forest as to the best collecting grounds, some of which were in the neighbourhood of the Champ de Tir, a few kilometres away.

On the following Saturday, 7th July, we were joined by Dr. Scott of Ashford, Kent, and by Dr. Maclaren of Tenterden. We made an early start by car that morning for the "Champ de tir" near which

we spent the whole day and picnicked for lunch. Summer rifle practics was going on at the Champ de tir, which restricted our movemente somewhat owing to the presence of a sentry who prohibited us from using a certain area until after 5.0 p.m. During the week we had got glimpses of a doctor and his wife from Paris, also of Monsieur Betts and his wife from Croix, all of whom had motored to the forest to collect.

It was the excellent article by Monsieur Betts in the "Amateur des papillons," published about a year previously, on the Forest of Mormale which decided us to go there.

We found the Apaturids, Apatura iris, and Apatura ilia mostly var. clytie, Hb., all males of both species in great abundance, the first

mentioned predominating.

Dr. Twigg and Mr. Bowes took out various samples of offal from the hotel which they laid out on the forest roads in the vicinity of the Champ de tir, so much so that the smell and unwonted sight aroused the ire of the army officers in charge of the troops who were engaged in rifle practice, and they reported it to the police. One day a policeman turned up on a bicycle with his nose as near to the ground as he could get it. He told us that we ought to have applied for leave. I interviewed the constable and told him that nothing could be done, as we were all leaving for England very shortly. It was a very hot day, and he probably wanted to get home. He too agreed that nothing could be done, so he grinned a 1914-1918 grin and departed. An old friend of mine, Mr. L. Goodier who recently retired from the Bank of England, to whom I related an account of our exploits made a précis of them in the following terms: "Total defeat of the French Army by a good old British stink!" and I don't think that Dr. Inge ever wrote anything to beat that!

One afternoon after the others had returned to England I netted what appeared to be a totally black form of A. iris, but I was so overcome with the heat and very tired after a long day, that I failed to secure this prize of the whole tour, and although I hung around the

same spot for the whole of the next day, I never saw it again.

We gathered a large number of Araschnia levana gen. aest. prorsa larvae on nettles; these quickly pupated and began to emerge before I left Locquignol.

I took the following list of insects; many of the moths' mentioned were actually captured by Mr. Bowes who very generously presented

them to me.

These were mostly secured on the walk back from the Champ de tir, which we usually did in the late afternoon. It took us a little over an hour, including a short pause for refreshments at a wayside Inn near Locquignol. On the path back we generally disturbed a number of buzzards and sparrowhawks which were sitting waiting for prey.

RHOPALOCERA.—Papilio machaon, L.; Pieris brassicae, L.; P. napi, L.; P. rapae, L.; Leptidea sinapis, L.; Colias hyale, L; Gonepteryx rhamni, L.; Aricia medon (agestis, Schiff.); Polyommatus icarus, Rott.; Nordmannia ilicis, E.; Argynnis lathonia, L.; A. aylaia, L.; A. cydippe, L., with some specimens of var. cleodoxa, O.; A. paphia, L.; some forms of the female ab. valesina, Esp. were in addition taken by Dr. Scott and

Mr. Bowes. Araschnia prorsa, L.; Vanessa atalanta, L.; Aglais urticae, L.; Nymphalis polychloros, L.; I saw one specimen of Nymphalis antiopa, L., flying high out of reach. Polygonia c-album, L. Another member of our party captured a worn female of Limenitis populi, L., which afterwards laid a number of eggs; Limenitis camilla, L.; Pararge aegeria, L.; Pararge megera, L.; Epinephele jurtina, L.; and one nice aberration of the female with white scales on the uppersides of the hindwings. Coenonympha pamphilus, L.; Aphantopus hyperantus, L.; Erynnis tages, L.; Adopoea flava, Poda; Ochlodes sylvanus (venata), B. and G.

Heterocera.—Macroglossum stellatarum, L.: Callimorpha dominula, L.: Miltochrista miniata, Forst.; Cybosia mesomella, L.; Comacia senea, Hübn.; Lithosia lurideola, Zinck.; Lithosia rubricollis, L.; Hepialus hectus, L.; Orgyia gonostigma, Fabr.; Plusia chrysitis, L.; Bankia argentula, Hübn.; Erastria fasciana, L.; Hypena proboscidalis, L.; Boarmia repandata, L.; Hyria muricata, Hübn.; Eupithecia rectangulata, L.; black var. Mesoleuca albicillata, L.; Cabera pusaria, L.; Bapta temerata, Hübn.; Euchoeca obliterata, Hufn.; Minoa murinata, Scop.; Larentia pomoeriaria, Ev.; Cidaria pyraliata, Sv.; Lomaspilis marginata, L.; Ochyria biriviata, Borkh.; Evergestis straminalis, Hübn.; Psammotis lanceolatus, Schiff.; Pandemis heparana, Schiff.; Harpella forficella, Scop.

HYMENOPTERA.—Ichneumon stramentarius, Grav.; Vespa crabro, L.; Colletes succincta, L.

Coleoptera.—Cicindela campestris, L.; Carabus monilis var. consitus, Pz.; Pterostichus madidus, F.; Pterostichus niger, Sl.; Pterostichus melanarius, Illig.; Agabus melanarius, Ab.; Silpha obscura, L.; Geotrupes silvaticus, Panz.; Chrysomela varians, Sl.; Tenebrio molitor, L.; Lagria hirta, L.; Pyrochroa coccinea, L.

NEUROPTERA.—Chrysopa alba, L.; Calopteryx virgo, L.

Diptera.—Haematopota pluvialis, L.; Eristalis nemorum, L.; Xylota sylvarum, L.

On leaving Locquignol I motored to Aulnoye station instead of Le Quesnoy. It is better to use Aulnoye station in both arriving and leaving, there are cobble stones to be motored over by both routes; but far less of these between Locquignol and Aulnoye. All the best trains stop at Aulnoye.

In conclusion I must thank those many naturalists who have so

kindly helped me to make this article correct.

#### Nomenclature. The List.

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

(Continued from p. 21.)

Syrichthus, Bdv. malvae, L. becomes Syrichtus, Bdv. malvae, L. For many years in this country, on the Continent and in America, malvae and all species congeneric with malvae, have been placed in the

genus Hesperia, and this name has been exclusively used in catalogues,

memoirs, larger works, and general magazines.

Syrichthus is wrongly spelled. It should be Syrichtus, Bdv. Scudder, Hist. Sketch. 273, says that this name is invalid as a genus name since it is that of a species, which must be included in the genus.

cf. Cossus cossus which is accepted.

The List contains the simple statements (1) That Hesperia, Fb., is not available. (2) That Pyrgus, Hb. is not available as its type is syrichtus, Fb., which is not (now?) congeneric with malvae, L. (3) Plotz (1879) fixed the type of the genus Syrichtus as malvae, L. In Generic Names, p. 165, the author makes this last statement as to the action of Plotz (who called it sao!!) and makes the definite further statement "that the name Syrichtus, Bdv., is thus a synonym of Pyrgus, Hb. Regarding Pyrgus, Hb. on the same page the author gives the type of Pyrgus as laid down by Westwood (1841) as malvae L. Thus the name Syrichtus is there definitely turned down. The whole of this appears to be a complete muddle.

Careful investigation points out that *Hesperia*, Fb. is the correct generic name to use for *malvae*, L. The list and "Generic Names" at considerable trouble endeavours to point to *comma* as the type of *Hesperia*, but *comma*, L. had already been selected by Barbut as a

species typical of Urbicola, in 1781, and thus was not available.

Scudder analyses the position of Hesperia thus:

Fabricius, Ent. Sys. (1793) gives Urbicolae with 118 species including malvae.

Cuvier, Tab. Elem. cites malvae (but his malvae is not the malvae of

Linnaeus).

Latreille, Consid. (1810) selects proteus, malvae and morpheus as the most suitable representatives of Hesperia; hence the type must be one of these three species.

Dalman, Vetensk. (1816) cites comma, which is doubly invalid. Many other authors cite types for this genus but all invalid until

Scudder Syst. Rev. (1872) definitely selects malvae.

If one wishes to verify the above, the references are Scudder Hist. Sketch. (1875) pp. 187, 260, 273, Hemming Generic Names (1934) pp. 165, 170.

(To be concluded.)

#### Collecting at Ry (nr. Rouen), 17th-29th August, 1934.

By P. C. HAWKER.

Ry is situated 24km. east of Rouen and 150m. above sea-level: the soil is chalky and there are rolling downs with several large woods on the slopes and an occasional river; the fields were mostly stubble and clover, and a few grass. As far as I know this district has not been well worked so I thought one or two items of interest might be found. I was here in 1930 at about the same time of year and one or two changes in the Rhopalocera seem of interest, although the climate and locality are so like England.

Pararge aegeria, L.—Was very common in woods and lanes but it

did not differ from the English forms.

Melanargia (Satyrus) galathea, L.—In spite of the lateness of the

season here this species, abundant in 1930 in the first week in August, was absent. I did not see even a battered specimen.

Epinephele (Maniola) tithonus, L.—Was found sparingly but did not

exhibit any variation.

E. jurtina, L.—Varied a good deal towards albinism, and although I worked hard I could get no really good var.

Coenonympha pamphilus, L.—Was everywhere and seemed much

darker than the English form.

Argynnis aglaia, L.—Was very common and found almost everywhere but it was rather damaged. It occurred in much the same places as dia.

Brenthis dia, L.—Came out first on the 22nd and by the time I left was to be found in dozens at the edges of woods. It showed no

variation.

Pyrameis (Vanessa) cardui, L., and P. atalanta, L.—Were almost entirely absent: I saw only one atalanta. Immigration of these two Vanessas was bad this year possibly owing to the drought.

Limenitis camilla, L. (sibilla, L.).—Of which I found several in

early August in 1930 all damaged, was of course absent this time.

Araschnia levana var. prorsa, L.—Was also absent this year,

although I took one perfect 3 in 1930.

Polyommatus coridon, Poda.—Varied a great deal although it was not very plentiful and was confined to one field. It first appeared as far as I know on the 20th Aug., whereas it appeared on 19th July at Winchester, 4 days earlier than 1933. Here I managed to capture one  $\mathfrak P$  (ab. et var.) syngrapha, Keff.; I also managed to obtain some  $\mathfrak F$  s which showed slight signs towards albinism, and one  $\mathfrak P$  was very dark.

Arivia medon (agestis, Schiff.) and Polyommatus icarus, Rott.—Were both common.

Cyraniris semiargus, Rott.—Was absent this year although I caught

one in 1930, close to the village.

Polyommatus dorylas, Hb. (hylas, Esp.).—Was sparingly taken; I only got 1 ? and 2 ? s but I saw one or two more ? s. (Rumicia phlaeas, L. did not occur this year.)

Strymon w-album, Knoch.—Was found on brambles in 1930, but

this year I was far too late for them.

Colias croceus, Fourc.—Was in dozens in 1930 but was entirely

absent this year.

C. hyale, L.—However, was in dozens. These reached a maximum of about 24 per field on 22nd Aug., percentage of  $\mathfrak{P}: \mathfrak{F} = 34:66$  the former being partial to clover. They became more faded at the end of my stay: the weather conditions were dry anticyclonic.

The three *Pieris* are common here and *E. cardamines*, **L.**, occurs in the spring as I found some wings in a cobweb. *Gonepteryx rhamni*,

L., is also found.

Papilio machaon, L.—Was found this year. I was given a specimen taken by a pond on July 14th. I caught one 3 flying in a stubble field where C. hyale was common: I also saw one other in this place, and one flew over me at a great height down in the valley. They were considerably darker than most English forms; the one I captured was however a little worn.

Nisoniades (Erynnis) tages, L.—I got this one on my last day (29th).

It is different from the forms I have taken at Winchester but does not seem to be a var. after comparing it with the series in the B.M.

Urbicola comma.—Was very common but of little interest except in the lateness of its emergence, it being nearly over at the end of July at Winchester and in fresh condition here on the 17th.

I only saw 1 specimen of Macroylossum stellatarum, L., so common

this year in England.

I did little work in other Orders, but will describe what I did get.

On my first day I took 1 Vespa crabro, which was by a nest which had been bored in a fir tree. We saw many others after this date. I took the common dragonfly Sympetrum striolatum, and 3 common Syrphids Sphaerophoria scripta, Syrphus vitripennis, Mg., and Melanostoma mellinum, L. 2. I also took Pentatoma juniperina, L., Neottiglossa inflexa, Wolff., and one or two other, but unnamed, Hemiptera and Homoptera.

I also took the scorpion fly, which is local in England, Panorpa cognata, Ramb. and two Orthoptera: one Oedipoda caerulescens, L. (which corroded through a white pin in about a week), the other was

Pteronemobius sylvestris.

The weather was perfect for collecting except for the last day on which we had heavy showers.

#### SCIENTIFIC NOTES AND OBSERVATIONS.

PSEUDO-VIVIPARITY IN LEPIDOPTERA.—In the Eint. News for February, A. B. Klots, New York, records another case of pseudo-viviparity. In Colias hecla, he found a well-developed, first-instar larva in the oviduct of a female of this species. There are now numerous cases of such findings recorded, but always a solitary He discusses the possibility of the future development of general viviparity in the Order Lepidoptera. Such suggestion seems beside the mark altogether. There is a critical point in the 2 oviduct, where the duct from the bursa (where the 3 sperm has been stored) joins it, and as each ovum passes, it is fertilized by a charge from this. If a 2 butterfly be killed immediately the single ovum has received the charge, it would appear that, although the poison (or etc.) stopped the life functions of the perfect insect, it would have no effect whatever on the fertilized ovum which had become an absolutely separate organism independent of the life of the parent, and it would be able to go on developing in due course, in the oviduct, over which there was now no control. If by chance the abdomen of a female killed at such a critical moment be examined some while later, one may expect always to find a first instar larva in the oviduct below the bursa duct inlet, but never more than one. The whole thing is a mere accident, which would not occur were there not an outside influence to cause stoppage of life function at the critical moment. Rev. C. R. N. Burrows has considered this phenomenon very carefully for some time and the above is to him the only solution possible. In the near future he will probably pursue this question further. Already the plate to illustrate his article has been prepared.—Hx.J.T.

#### OTES ON COLLECTING, etc.

Reed Beds in Early Spring.—Searching reed beds (Phragmites) in daylight during March and April is often a good way of getting larvae of species not easily obtained in other ways. Any well reeded pond or ditch can be tried and in many places larvae of Leucania obsoleta, L. straminea and also of Senta ulvae can be taken, all of which are easy to rear, vary greatly, and need to be freshly emerged to be seen in their true beauty. All three species are dependent on finding an open reed stem or similar hollow stem among reeds for a hiding place while feeding up and for pupation later, and as there are seldom a great many opened reeds in any given reed bed, the collector, who will look for such and carefully open up the stems, stands a good chance of a reasonable bag.

Last year's reeds broken by the wind or bored by the larvae of Nonagria geminipuncta are easily seen at this early time of year, when the new reed stems are only just appearing through the mud. L. obsoleta larva was full fed in the last days of September or early October, and having entered a dead stem, sealed itself in, and there rests until it pupates in late May. A good sized stem is chosen for obvious reasons, and if this is one with an open end toward sky the sealing cap is nearly always at the top and can be seen. But when the hole is in the side the sealing cap is inside the stem and may be above or below the hole. Careful opening up of the segment with a

knife is required.

L. straminea is quite a small larva yet and S. ulvae although, to all intents and purposes, full size, is also able to use quite a small stem. Neither of these seals itself in before May, as until then they come out on mild, damp nights and walk about. The procedure is the same as for L. obsoleta; pare away the open reed segment from top to bottom. Once a larva is found, continue to work close around, they are often found in little groups.

When the resting larva of L. obsoleta is located, cap over the opened up larva with a segment of larger diameter reed and stand upright on slightly damped sand until late May when pupation has taken place,

when remove the capping reed section.

Larvae of S. ulvae are liable to bite one another when freshly taken if at all crowded. Take home separately and put in a good sized cage with a good supply of open reed segments, several for each larva, as the larvae eat the lining of the dead stems. Moisture is essential or they become cannibal. Spraying once a week will prevent this and mutton fat is also accepted as a food and prevents cannibal tendencies

in my experience.

L. straminea larvae are found in the same way as the larvae of S. ulvae and are easily reared like any other Leucania, the food of course being Phragmites where there is a growth of Phalaris grass (wild ribbongrass) on the bank. The larvae of Apamea ophiogramma are often plentiful; they feed in the lowest part of the stem and the affected plant is easily detected by its red-brown leaves. These so easily seen on close inspection, are not very noticeable until looked for. But below the earth or mud level as far as possible; the larva is right at the bottom and will feed on ribbon grass stems. Pupation takes place in early May in the earth.

RHOPALOCERA IN CO TYRONE, 1934 WITH NOTES ON VARIATION .- The past year has been a wonderful one for most of the local butterflies in The weather in the early months was mild and genial; this district. and there was more than the usual amount of sunshine during May Nymphalis io, L., was the first to put in an appearance on 16th April, and hibernated individuals were to be seen almost everywhere during May and early June, the last, a very tattered specimen, was observed on 14th June. In the autumn it was about in enormous numbers; fields of scabious were a moving mass of the butterfly; and over thirty were observed at one time at Buddleia in the garden. Other species present were Pieris brassicae, P. napi, P. rapae, a very worn Argynnis paphia, Aglais urticae, common, Pararye megera, and Rumicia (Heodes) phlaeas. In May Euchloë cardamines, L., was out in its usual numbers; a female with the forewings on upper and underside primrose yellow, form ochrata, mihi., another female with apex and outer area of forewings tinted with pale yellow, the yellow colour occupying the same area as the usual orange blotch in the male. Pieris napi, L., was less abundant than in the previous year, and no striking forms were captured; the dry weather of that year being no doubt responsible. In 1933 several banded forms \*ab. interjuncta, Cabeau, occurred. This may be a rare aberration in Belgium, but locally it is a fairly recurrent form. The spring broad of Pieris brassicae, L., was abundant and several forms (not abs.) nigronotata, Jachn., were netted, one of which is also of the form marginata, G.-Smith.

Larvae of Euphydryas aurinia, Rott. were more abundant than for many years; larval nests being found even on roadside banks and also

in the highland district at 800 feet near the town of Pomeroy.

The larva of this species seems to be very tenacious of life, as a number of nests was found in the Spring on ground, the herbage of which had been burnt a short time previously; the foodplant being scorched and blackened, but the larvae seemed quite unaffected and were collected here and there in little groups, or roaming about in search of food, but difficult to distinguish on the blackened turf.

It may be only a coincidence that on 16th June an aberration was

captured here; the description is as follows:-

Male. Forewings, base smoky black with dark red spot on costa, three fulvous blotches on discal area, outer and inner margins smoky black. Hindwings, entirely smoky black with a faint trace of blackish red towards the base, on outer margin, a series of red dots with black centres. Underside, base of forewings fulvous red streaked with black lines, hindwings, basal portion reddish, marked with black lines, the remainder of the wings pale yellow with a row of faint black submarginal dots. On the underside this aberration is not unlike a variety of athalia figured by Frohawk in the Entom. 1907, page 193.

Coenonympha tullia (tiphon, Rott.) was fairly abundant on the bogs at Washing Bay on Lough Neagh. (To be continued).—Thos. Greek.

Larva of Phigalia pedaria feeding on Laurel.—In the summer of 1934 I found in my garden a larva of *Phigalia pedaria*, Fabr., feeding on Laurel leaves; these it continued to eat until full-grown and the moth, a male, has emerged to-day. A few larvae have been recorded on Laurel from time to time, but it is a noteworthy foodplant and the only larva which I have found on it previously (at West

Norwood, about 1892) is Orgyia antiqua, Linn. The Laurel referred to here is the ordinary poisonous Laurel of which the leaves make a good killing-bottle.—T. Bainbrigge Fletcher, Rodborough. 27th February, 1935.

DISCOMYZA INCURVA, FLN., IN CORNWALL.—Examining a small collection of little flies taken in Cornwall during the last two years, I was pleased to find two examples of the rare Discomyza incurva, Fln. One taken on the Lelant sandhills 26.viii.32, and the other at Gurnard's Head near Zennor on 31.viii.34. These two localities, both on the North Coast, are about six miles apart so that the species seems to occur throughout a rather wide district.—Rev. A. Thornley, M.A., F.L.S.

Unusual Foodplants of Noctuid Larvae.—Acronicta rumicis, Linn., usually feeds in my garden on Polygonum colvolvulus; on 8.x.1934 I found a larva feeding on a leaf of Garden Rhubarb (Rheum) on which it continued to feed until it spun up on 21st October. In June, 1934, I found in my garden a larva of Naenia typica, Linn., on Groundsel, and a larva of Amphipyra tragopogonis, Linn., on Garden Parsley; they fed up on these foodplants and emerged in due course.—T. Bainbrigge Fletcher, Rodborough. 26th February, 1935.

Catocala Nupta flying by day.—Mr. Donisthorpe's observation of an example of this species flying and settling on a cottage walls in the sun is extremely interesting and, I suspect, very unusual, as nupta is not ordinarily a day, as well as a night, flier, and, even if it were distributed, would scarcely remain in evidence longer than would be necessary to find cover again. It would be useful to know whether there are any previous observations.—C. Nicholson, Tresillian, Cornwall. [I once saw C. nupta sitting on a fence in the late afternoon sunshine at the top of Shirley Heath.—Hy.J.T.]

LEPIDOPTERA AT WANDSWORTH.—Major Dick's list of Lepidoptera occurring within a mile's radius of Wandsworth Common station, is interesting for its inclusion as well as its omissions, compared with Clapton, a N.E. London suburb in which I spent about half my life and collected for about 20 years in the garden and neighbourhood. The insect that seems perhaps most remarkable in Major Dick's list is Metachrostis perla, because one doesn't expect to find much in the lichen way in a London suburb; and I was surprised to see Hipocrita jacobaeae also; but perhaps ragwort is not uncommon in S. London, though I never saw any near Clapton. Neither Acidalia sylvestraria nor A. fuscovenosa ever turned up anywhere near Clapton either, but on the other hand did Major Dick never meet with Eupithecia oblongata, E. assimilata, or E. subnotata? The first was common in our Clapton garden, the second occasionally-perhaps they don't grow currants in the Springfield Hospital grounds!—and the last named common amongst goosefoot on waste ground.

Ennomos fuscantaria seems unusual for such a close-in suburb, but we used to get E. quercinaria on doors and fences at Clapton, and I once found a patch of its eggs on a garden door. Did Major Dick ever see var. perfumaria of Boarmia gemmaria at Wandsworth? We never

saw any other form at Clapton and the larvae used to eat the green bark of our white jasmine, betraying their presence during the winter by the light green patches thus caused by the half-inch-long larvae which my sister and I used to amuse ourselves by trying to find; sometimes they were close to these patches (and often in or near a withered leaf), and sometimes they were an inch or two away; when we were completely baffled, a puff of breath or a slight tap caused the larva to move in some way and reveal its presence. Their favourite food is ivy. We never saw Hepialus sylvina, but H. lupulina was common, and also H. humuli on neighbouring waste grassy land. The last does not appear in Major Dick's list.—C. Nicholson, Tresillian, Truro, Cornwall.

Some Notes on a Method of Rearing Calocampa exoleta from Ova.—Several dozen ova laid in the spring of 1934 were kept in glass-topped metal boxes until they were about a quarter full-fed. They were then transferred to large flower pots and tins with lino covers until full fed and formation of their cocoons. Several different foodplants were tried, but dock was preferred, so they were all given this throughout.

During the long period of summer drought the flower pots and tins were buried in the ground, in a shady spot, to about three-quarters of their depth, and the earth around was kept moist by sprinkling water outside.

Earth was put inside each pot and tin to a depth of several inches for pupation. It was noticeable that nearly all the cocoons were placed deeply; they were large, also very loosely constructed with earth and silk. Many of the pupae were removed from their cocoons and emerged quite as satisfactorily as those left intact. The larvae did not turn to pupae for many days after constructing their cocoons, some still "resting" larvae being noticed after about 14 days. I am indebted to Dr. Cockayne for supplying the ova. The newly emerged imagines were extremely active before they expanded their wings. There was practically no variation in the resulting series.—Geo. S. Robertson, M.D. Storrington, W. Sussex.

OEDIPODA CAERULESCENS, L., IN BRITAIN.—" A solitary specimen of Oedipoda caerulescens, L., was obtained by E. T. Price at Hugh Town, St. Mary's, Scilly, in 1903. The bright blue of its wings had attracted a good deal of attention from the passers-by, and the insect had been badly knocked about by ineffectual attempts at capture on the part of several islanders."

The above is an extract from p. 8 of a paper entitled "The Orthoptera of Cornwall," by James Clark, M.S., D.Sc., A.R.C.S., reprinted from the Report of the Royal Cornwall Polytechnic Society for 1907.

Will somebody please go to Scilly in August and find some more? It should be looked for on dry, open ground, sandy or rocky, in sunny places. It is almost invisible when settled, but the blue flash of the wings is unmistakable.

Personally, I find it harder to swallow the "passing ship" theory than the "Lusitanian relict" theory, and the "introduced in shrubs, fruit or vegetables" theory is also indigestible. This creature lives in waste ground and is active. It is best caught with a butterfly net.

It would probably have been noticed, if it existed on the mainland,

but islands often conceal surprises.

It should be looked for in southern Ireland too. This beautiful creature is worth an effort.—Malcolm Burn (D.Sc., F.R.E.S.).

Two Local Species of Hypenides in W. Sussex.—Tholomiges (Schrankia) turfosalis was plentiful on 18th July in a damp clearing in a wood, settling on rushes and flying slowly low down amongst the tall grasses at early dusk.

Hypenodes costaestrigalis was less common, but taken at 'sugar' and flying at dusk on 14th August and 2nd October; it appears to be

less local than turfosalis here.

Hypenodes taenialis (albistrigalis) comes rarely to light.—G. S. . ROBERTSON, M.D. "Struan," Storrington.

DIPTERA ON BOOKHAM AND EFFINGHAM COMMONS, SURREY.—At a London Nat. Hist. Society's excursion to Effingham and Bookham Common on 26th August, 1934, I collected some Diptera, which I venture to list below, although most may be quite common in that Those caught on Bookham Common were all taken at the almost dry ponds and connecting marshes; those at Effingham, either

on the Common or in Barnthorns Wood.

BOOKHAM COMMON.—Pyrophaena granditarsa, Forster, 2 & & 1 9, P. rosarum, Fab. 1 9, Syrphus balteatus, Deg. & 9, S. diaphanus, Zett. 1 3, Sphaerophoria scripta, L. 1 2, Rhingia campestris, Mg. 1 3, Volucella inanis, 1 & 1 \, both on the Water Mint (Mentha aquatica, L.), Eristalis arbustorum, L. J, E. pertinax, Scop. JJ, E. nemorum, L. J, Helophilus pendulus, L. 1 J, Xylota segnis, L. 1 J, Syritta pipiens, L. & \(\mathcal{Z}\), Conops quadrifasciata, Deg. 1 \(\mathcal{Z}\), Echinomyia fera, L. 3 2 on the Water Mint, Scatophaga stercoraria, L. 3 2, Tetanocera unicolor, Lw. 1 3.

Effingham.—Sargus iridatus, Scop. 1 9, Melanostoma scalare, Fab.  $\mathcal{F}$ , Syrphus balteatus, Deg.  $\mathcal{F}$ ,  $\tilde{S}$ . cinctellus, Zett. 1  $\mathcal{F}$ ,  $\tilde{S}$ . ribesii, L., S. albostriatus, Fln. 1 9, Sphaerophoria menthastri, L. var. picta, Mg. 1 ♂, S. scripta, L. ♂ ♀, Xanthogramma ornatum, Mg. 2 ♂ ♂, Ascia podagrica, Fab. 1 ♀, Rhingia campestris, Mg. 1 ♀, Volucella pellucens, L. 1  $\circ$ , Eristalis arbustorum, L.  $\circ$   $\circ$ , E. pertinax, Scop.  $\circ$   $\circ$ , E. nemorum, L.  $\circ$   $\circ$ , Myiatropa florea, L. 1  $\circ$ , Helophilus pendulus, L. 1 \, Xylota segnis, L. 1 \, Syritta pipiens, L. 3 \, Enmerus ornatus, Mg. 1 3, Chrysochlamys cuprea, Scop. 1 9, Chrysotoxum bicinctum, L. 1 \( \text{\gamma} \), Conops quadrifusciata, Deg.  $(\delta \) \( \text{\gamma} \), C. flavipes, L. 1 \( \text{\gamma} \), Sicus ferrugineus, L. (taken by Mr. H. J. Burkill), Echinomyia fera, L.$ 3 \, Eriothrix rufomaculata, Deg. \, Graphomyia maculata, Scop. 1 \, \, Phaonia basalis, Zett. 1 2.

The identification of S. diaphanus has been confirmed by Mr. R. L. Coe of the British Museum (Natural History) to whom and his colleagues I owe many thanks for assistance in identifying my flies.— L. Parmenter. 94, Fairlands Avenue, Thornton Heath, Surrey.

THE PUZZLE OF "TETTIX BIPUNCTATUM."—Most entomologists, especially those who use the sweep-net, are familiar with the squat, brown, horny little grasshopper that is generally known by the above name. is nearly all pronotum and, normally, cannot fly. Abundant as it is,

and generally known, there remain several problems connected with it.

It differs in habits from other grasshoppers, being adult in spring and early summer, the adults giving place to immature ones about midsummer, the new generation hibernating and appearing fully grown

in the following May.

It is now recognised that no less than three species have been confused under this name, for which reason, material is needed from districts as widely separated as possible. The distinctions are very slight, but constant. The clearest is the form of the middle segments of the antennae.

In the typical species, bipunctatum of Linnaeus, these are very short, about twice as broad as long. This appears to be a northerly species, and is known to occur in Scotland, but is not yet known from England. These segments are somewhat longer, about three times as long as broad, in kiefferi, Saulcy, which is more southerly, and seems to be the only one of the three known in England. They are four times as long in tenuicorne, Sahlb., which is not known from Britain, or Scandinavia.

The question is also complicated by the existence of polymorphism. Haij, in his analysis of the Swedish species, recognises three forms of kiefferi, and no less than five of kraussi, which is now established to be

a synonym of bipunctatum, by Alder.

It is very desirable to establish the status of our British species, to map their areas of distribution, both horizontally and vertically. Entomologists in the field will assist very much if they will collect material, especially from the north of England, from Scotland, and from Ireland.

I may add that, unfortunately, we are obliged now to call the genus Acrydium.—Malcolm Burr, D.Sc., F.R.E.S., United University Club, Pall Mall East, London, S.W.1.

CAPTURES AT LIGHT AND SUGAR IN W. SUSSEX.—During the second week in April, 1934, light attracted Taeniocampa gracilis, Pachnobia rubricosa, Earophila badiata (common), Nothopteryx (Lobophora) carpinata, Calostigia multistrigaria, Ectropis bistortata (dark form).

17th April:—Demas coryli, Nothopteryx (Lobophora) polycommata, Selenia bilunaria f. illunaria (common), Xylocampa areola, T. incerta (pale form), T. munda, one very pale and almost without spotting; it

was exhibited at the South London Entomological Society.

1st to 6th May: — Hypena rostralis, Orneodes hexadactyla, Xanthorhoe ferrugata, Hemerophila abruptaria, Euphyia silaceata, Pachycnemia hippocastanaria, Drymonia chaonia 3, Demas coryli 🔉 .

10th May: - Larva, nearly full fed, of Cirrhoedia xerampelina seen

ascending ash trunk at late dusk.

14th to 20th May: -Anagoga pulveraria 3, Lithina chlorosata (petraria) (common), Xanthorhoë fluctuata, Cabera pusaria, Gonodontis

21st to 27th May: -Xanthorhoë unidentaria (common), Perizoma

flavofasciata (common), Agrotis cinerea &, Dianthoecia cucubali.

19th to 24th June: Ptychopoda (Acidalia) aversata, C. pusaria, Iodis lactearia, Pseudoterpna pruinata (cytisaria), Hadena nana (dentina), Plusia chrysitis, Rivula sericealis, Agrotis corticea and A. exclamationis, Leucania comma, Eupithecia exignata, Playodis dolabraria.

22nd June:—At 'sugar' Grammesia trigrammica (trilinea) was

common and Theretra porcellus at flowers of Rhododendron.

31st July:—One Leucania albipuncta was obtained at sugar; several were taken by others in the district.

3rd week Sept.:—Hadena protea, common at light.

25th Sept.:—At light Calocalpe cervinalis, Plusia gamma.

29th Sept.:—At 'sugar': Xylina semibrunnea, one; Amathes lychnidis (pistacina), A. circellaris, Orrhodia vaccinii, all common; A. litura, two.

1st Oct.:—Chesias legatella (spartiata) at light.

19th to 25th Nov.:—Erannis (Hybernia) aurantiaria (common), Gonoptera libatrix, Operophtera brumata 2, O. boreata several, Colotois pennaria several, all males.—Geo. S. Robertson, M.D.

#### **QURRENT NOTES AND SHORT NOTICES.**

We are informed that the Socy. for Brit. Entomology is to hold a Congress of its Members at Oxford in July, with Prof. Hale-Carpenter, F.L.S., F.R.E.S., in the Chair.

The following Members are elected Officers and Council of the South London Entomological & Natural History Society for the

ensuing year:—

President, E. E. Syms, F.R.E.S. Vice-Presidents, T. R. Eagles, M. Niblett. Hon. Treasurer, A. E. Tonge. Hon. Librarian, E. E. Syms. Hon. Editor of Proceedings, H. J. Turner. Hon. Secretaries, S. N. A. Jacobs, H. J. Turner. Hon. Lanternist, J. H. Adkin. Council, R. W. Attwood, F. J. Coulson, H. G. Denvil, P. Bainbrigge-Fletcher, M.Sc., J. A. Downes, C. G. M. De Worms, M.A., F. Stanley-Smith, Mrs. M. Stanley-Smith, G. V. Bull, B.A., M.B., H. King, D.Sc., F.R.S.

The following Fellows are elected Officers and Council of the

Royal Entomological Society of London for the ensuing year:—

President, S. A. Neave, M.A., D.Sc. Vice-Presidents, C. L. Collenette, H. Eltringham, F.R.S., A. D. Imms, F.R.S. Treasurer, Francis Hemming. Secretary, A. W. McKenny-Hughes. Other Members of the Council, Professor W. A. Balfour-Browne, Professor P. A. Buxton, Professor G. D. Hale Carpenter, Brigadier W. H. Evans, G. Fox-Wilson, K. Jordan, F.R.S., R. Stewart MacDougall, D.Sc., N. D. Riley, J.

Simes, W. H. Thorpe, M.A., C. B. Williams, D.Sc.

A Meeting of the Entomological Club was held at the Junior Carlton Club on 4th December, 1934, Mr. H. Willoughby Ellis in the Chair. Members present in addition to the Chairman:—Mr. H. St. J. K. Donisthorpe, Prof. E. B. Poulton, F.R.S., Mr. Jas. E. Collin, Dr. Harry Eltringham, Mr. W. J. Kaye. Visitors present:—Major E. E. Austen, Mr. H. E. Andrewes, Dr. K. G. Blair, Mr. C. L. Collenette, Mr. H. M. Edelsten, Mr. F. W. Frohawk, Mr. J. C. F. Fryer, Dr. Karl Jordan, F.R.S., Sir Guy A. K. Marshall, C.M.G., F.R.S., Dr. S. A. Neave, O.B.E., Mr. W. Rait Smith, Dr. Hugh Scott, Mr. W. H. T. Tams, Mr. C. J. Wainwright. After dinner Mr. J. E. Collin exhibited three pairs of a rare British Dipteron (the Asilid Epitriptus arthriticus, Zeller) captured by him on Breckles Heath, Norfolk, on 11th July this year. This species is known to occur from Southern

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Sweden down to Austria, but only one specimen had previously been found in this country, which, though taken in 1907 by the late Lord Walsingham near Merton in Norfolk, remained unrecognised until 1932 when Mr. B. M. Hobby found it in the Hope Department at Oxford and published a note about it in the Entomologist's Monthly Magazine for June of that year. The species is evidently still to be found on the sandy heaths of this part of Norfolk in spite of the changed conditions by afforestation of large areas since 1907. A long and interesting evening was spent.

#### REVIEWS AND NOTICES OF BOOKS.

Through the kindness of the author, Mr. Francis Hemming, F.R.E.S., we have received a copy of his work, "The Generic Names of the Holarctic Butterflies," Vol. I. 1758-1863, published by Order of the Trustees of the British Museum. The compilation of a work of this character is a thankless task, since no one agrees with the results which are arrived at. Every critic has his own pet names, which he sees are perfectly correct according to the premises which he himself has set up more or less correctly, just as did the author. Some portions of the work which have been provisionally adopted by the Royal Entomological Society have already been criticised in the pages of this magazine.

That the work has been done in our British Museum has ensured that all references are first hand. With the great libraries of the British Museum, of the Royal Entomological Society and of the Linnean Society there must have been scarcely a single work of reference to which the author had to refer by deputy. Knowing personally the extremely careful work and method of the author we feel sure that his data and results are as near perfect, under the restrictive lines he

has laid down for himself, as is humanly possible.

But our criticism is partly the old one that the investigation is under Zoological auspices and not Entomological. The International Code of Zoological Nomenclature and its Zoologically inspired interpretations of these rules (Recommendations, Opinions, etc.) form a difficult track to follow, particularly as followed rigidly some of them are silly. The authors enacted these rules, not to be rigidly carried out, but to be used as lines of action where absolutely necessary (e.g. the homonym rule, which duplicated a vast number of names and has made already complicated nomenclature "worse confounded."). Then our Code makers have endeavoured to enforce rules made under modern conditions and experience, on the work of entomologists generations ago, making in many cases a hopeless muddle, instead of clearing the way and simplifying our nomenclature.

Again we must point out that our British National Committee on

Entomological Nomenclature is quietly pushed out.—Hy.J.T.

THE COMPLETE BOOK OF BRITISH BUTTERFLIES. By F. W. Frohawk, F.R.E.S., M.B.O.U. With 32 plates in colour and 160 illustrations. Large octavo. Price 10/6. Messrs. Ward-Lock and Co.—This is an exellent book in many respects. It is most profusely illustrated. To say 32 plates does not convey to one the suggestion that these plates contain nearly 650 coloured figures of imagines, typical of both sexes

and many aberrations, larvae and critical segments of the same, pupae and ova. Necessarily these figures have had to be crowded and hence the artistic appearance of the plates is not what one would wish and the colours are in many figures vivid and not soft as in Nature. However the intended information conveyed by them is full and complete. On the other hand the 160 drawings scattered throughout the letterpress make up for this in their artistic beauty of execution, and, illustrating, as they do, the habits and natural surround of the various species, form no mean addition to the personal information in the letterpress. The author has bred every species from the ovum, has met with every species and almost every stage of every species in Nature, and the information he has thus obtained is briefly but amply given in the text. In fact the illustration and information in this book is phenomenal for such a low priced production and we only hope that the author will be sufficiently recompensed for his labour of love.

The technique of Rearing from the Egg, Collecting, Setting, with Notes on Aberration, Migration and Protective Resemblance, and the Foodplants of the Larvae are all briefly discussed. No opportunity of introducing special biological facts is passed in the specific accounts, such as the anal comb of the large "Skipper," the resting head downwards of the "Blues," the hibernating position of the Brimstone head upwards, the Ant carrying the larva of the large "Blue," the social nest of Melitaea cinxia larvae, the variation in resting habits, and so on.

In fact the volume is a happy combination of a book for the sittingsoom table, a book for the collector, a book for the ardent student, and for the average naturalist and lover of Nature with an aptitude

for natural artistic beauty.

The names suggested by the Royal Entomological Society are used but variations occur: aurinea, polychlorus, ageria. It seems that with fresh names which the average consultant has no means of tracing, the generally-used names should also be indicated, e.g., tullia, venata, agestis, sylvestris, cydippe, etc. The List is called "International." It is no such thing and may never become so in its present state.

THE INVERTEBRATE FAUNA OF NOTTINGHAMSHIRE (SUPPLEMENT). By Prof. J. W. Carr, M.A., F.L.S., F.R.E.S., etc. pp. 288.—The Main Volume was issued in 1916 after many years of preparation by the Members of the Nottingham Naturalists Society, and consisted of a huge mass of records on all Orders, giving locality, dates and name of recorder for every species, arranged in scientific order. The volume consisted of over 600 pages of brief notes. Needless to say the Lepidoptera and Coleoptera took up no mean share of the pages; about In the volume just issued the deficiencies in the records 260 together. for Diptera and Hymenoptera are well made up. To the former (90 pp.) are added a further 121 pp. and to the latter (87 pp.) a further 80 pp. Prof. Carr seems to have been ably supported by many interested members and others so that many records are attached to The whole work is an admirable compilation, an immense fund of information upon which to base other faunistic work in the County. One would have liked an introductory Description of the area, as to geological formation, geographical facts, details as to cultivation, open country, water areas, etc., elevation and climate. The volumes are well got up and the matter admirably displayed.

All MS. and EDITORIAL MATTER should be sent and all PROOFS returned to Hy. J. TURNER, "Latemar," 25, West Drive, Cheam.

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with those they are sending to other magazines.

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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, 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.

Desiderata.—Urgently wanted for research work at the Royal College of Science,

Pupae normal form of Hemerophila abruptaria.

Duplicates.—Pupae of var. fuscata of the same species offered in exchange.—J. A.

Downes, 5, Trinity Road, Wimbledon.

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.

Duplicates.—Well set British Lepidoptera all in perfect condition about 200 species. Desiderata.—Living larvae: please send list of species obtainable.—A. Lester, 2,

Pembury Road, London, N.17.

CHANGE OF ADDRESS.—Rev. C. R. N. Burrows, F.R.E.S., to Stanford-le-Hope, Essex: L. D. Wakeley, to 15, Berkeley Place, Wimbledon, S.W.19: B. C. S. Warren, F.R.E.S., to 3, Augusta Mansions, Folkestone, Kent. W. Parkinson-Curtis, to 17, Princess Road, Bournemouth.

Duplicates .- Many exceedingly rare species of moths from the Mediterranea

especially Sardinia. Ask for List.

Desiderata.—British Z. exulans; D. barretti; A. nickerli-guenei; L. favicolor; H. crinanensis; Lar. ostregiata. Urgently needed.—Breeding material of all Ephestia-species except kuchniella. Will also pay cash if desired.—H. Bytinski Salz, John Innes Institution, Merton Park, London, S.W.19.

#### MEETINGS OF SOCIETIES.

Entomological Society of London.—41, Queen's Gate, South Kensington, S.W. 7.

8 p.m. March 20th. April 3rd.

The South London Entomological and Natural History Society, Hibernia Chambers, London Bridge. Second and Fourth Thursdays in the month, at 7 p.m. March 28th. April 11th.—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.

#### IRISH NATURALISTS' JOURNAL

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# Entomological Congress, Oxford, 1935.

THE SOCIETY FOR BRITISH ENTOMOLOGY announce that they are inaugurating a series of BRITISH ENTOMOLOGICAL CONGRESSES to be held in a different Centre each year, and that they have accepted an invitation from the ASHMOLEAN NATURAL HISTORY SOCIETY OF OXFORDSHIRE to hold the 1935 Congress in the City of OXFORD. The dates selected are from the evening of the 12th to the 15th July, 1935, and a cordial invitation to attend the Congress is extended to all persons of either sex who are interested in any aspect of British Entomology.

Professor G. D. Hale Carpenter, M.B.E., D.M., F.L.S., F.R.E.S., Hope Professor of Zoology (Entomology) in the University of Oxford, President of the Society for 1935, will preside, and the proceedings will consist of an Opening Session; Presidential Address; reading of Papers; inspection of Exhibits; visits to the University Museum, School of Forestry, and School of Rural Economy; a Conversazione; a Dinner and two Luncheons in College Halls; a Field Meeting;

an al fresco Tea; and perhaps other items.

Visitors are invited to bring Exhibits, for the display of which facilities will be provided in the Hope Department of the University Museum; it is suggested that exhibits might be selected to illustrate work which the exhibitor has in hand.

Any person having a matter of importance which they wish to bring before the Congress should let the Hon. Secretary have particulars at the earliest possible moment. The Council will endeavour to provide an opportunity for this to be done, and if desired for a Resolution on such matter to be voted upon.

Accommodation in College buildings (for both sexes, but separately) will be available at very low rates, and special cheap return tickets will be obtainable from all Railway Stations to Oxford. The cost of attending the Congress need

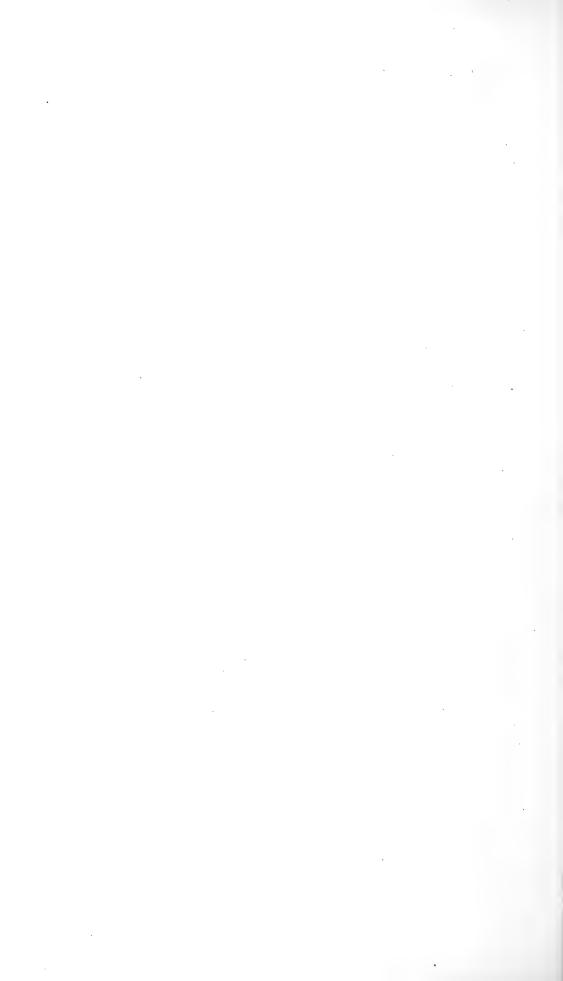
only therefore be small.

A detailed Programme with full particulars and directions will be available shortly, and a copy will be sent to any name and address on receipt of a postcard. The Hon. Secretary will be pleased to answer enquiries, and to render every possible assistance.

The Council hope that every British Entomologist who can do so will attend the Congress so that it may be thoroughly representative.

Write for particulars to: -

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#### Wicken Revisited.

By HORACE DONISTHORPE, F.Z.S., F.R.E.S., etc. (Department of Entomology. British Museum: Natural History.)

(Concluded from page 29.)

Mons. Ferrière has named the *Chalcidoidea*, etc., as far as possible, the below being a list of the species:—

Chalcidoidea.—Fam. Torymidae.—Torymus ventralis, Fonsc. 1 ? 2 3.

Fam. Eurytomidae.—Eurytoma appendigaster, Boh. 1 2.

Fam. Pteromalidae.—Stenomalus muscarum, L. 1  $\circ$ . Pteromalus spp. 2 diff.  $\circ$ . Habrocytus spp. 2 diff.  $\circ$ . Asaphes vulgaris, Walk. 1  $\circ$ . Cyrtogaster vulgaris, Walk. 1  $\circ$ . Lamprotatus maculatus, Walk. 1  $\circ$ . Spalangia nigra, Latr. 1  $\circ$ .

Fam. Mymaridae.—Ooctonus vulgatus, Hal. 19.

Cynipoidea.—Fam. Cynipidae.—Eucoila sp. 1  $\mathcal F$ . Figites sp. 1  $\mathcal F$ . 1chneumonoidea.—Fam. Braconidae.—Apanteles sp. 1  $\mathcal F$ .

I am indebted to Mr. Nixon for the names of the following Bra-

conidae and Proctotrupidae, mostly taken in cut sedge.

Braconidae.—\*Microdus fumidulus, Hb. Microbracon minutator, Fab. \*Microbracon fuscicoxis, Wesm. Blacus ruficornis, Nees. \*Blacus armatulus, Ruthe; and \*Hormius moniliatus, Nees.

(Marked with an asterisk new to the Wicken list).

PROCTOTRUPIDAE.—Sephus gravidator, Hal.  $\circ$ . Paracodrus apterogynus, Hal.  $\circ$ . Loxotropa atricoxi, Kieffer.  $\circ$ . Loxotropa convexa, Kieffer,  $\circ$   $\circ$ . Belyta depressa, Thoms.  $\circ$  Baeus seminulum, Hal.  $\circ$   $\circ$  Hoplogryon fimbriatus, K.  $\circ$ . Calliceras, sp.  $\circ$   $\circ$  Hoplogryon anatus, Walker,  $\circ$ .

# Lepidoptera at Jaca, Alto Aragon, Spain, in August, 1931 and 1933. By Wm. FASSNIDGE, M.A., F.R.E.S.

(Concluded from page 20.)

Pterophoridae.—\*Oxyptilus pilosellae, Zell. \*Platyptilia gonodactyla, Schiff.—A few disturbed from among Tussilago. Alucita tetradactyla, L. \*A. pentadactyla, L.—Very local. Pterophorus monodactylus, L. Stenoptilia bipunctidactyla, Hw. \*S. zophodactyla, Dup.—Imagines and larvae. Agdistis satanas, Mill.—Two specimens.

Orneodidae. -\*Orneodes grammodactyla, Zell. \*O. cymatodactyla,

Zell.

Tortricidae: — Acalla hastiana, L.—A few larvae from which imagines emerged in late September; only the form typica was obtained. A. variegana, Schiff. \*Capua gnomana, Cl.—One specimen. Tortrix croceana, Hb. \*T. unifasciana, Dup.—Common. \*Argyrotoxa conwayana, Fb.—Common. Anisotaenia hybridella, Hb. \*Lozopera francillana, Fb. \*L. dilucidana, Stph. \*L. bilbaensis, Rössl.—Rare. \*Phalonia purpuratana, Hb. P. undulatana, Kenn.—Very common among white scabious. \*P. pallidana, Zell. \*P. austrinana, Chrêt.—Fairly common. Euxanthis meridiana, Stgr. \*E. nodulana, Möschl. E. hamana, L. \*E. zoegana, L. \*Enlia politana, Hw. Argyroploce oblongana, Hw.—common. \*A. salicella, L.—One specimen. \*Ancylis comptana, Fröhl. \*Polychrosis botrana, Schiff. Crocidosema plebejana, Zell.—Larvae found in seeds of hollyhock 1.viii.31 probably belonged

to this species. Bactra lanceolana, Hb. \*Eucosma cana, Hw. Semasia pauperculana, Stgr. \*S. scopoliana, Hw. \*S. conterminana, H.S.— Fairly common. \*Epinotia imparana, Müll.-Rutz. Notocelia incarnatana, Hb.—Common. \*N. roborana, Tr.—Common. Epiblema griseolana, Zell. \*E. pflugiana, Hw. \*E. ramella, L. \*E. fractifasciana, Hw. \*Evetria posticana, Zett.—Beaten from Pinus sylvestris. \*E. resinella, L.—Galls found sparingly. \*Laspeyresia pomonella, L. \*L. splendana, Hb. \*Eucosma lacunana, Dup. \*Hemimene simpliciana, Hw. \*Lipoptycha plumbana, Scop.

GLYPHIPTERYGIDAE: -\* Choreutis nemorana, Hb.-Larvae on fig

leaves fairly common, emerged 27.viii.33.

Hyponomeutidae:—\*Argyresthia caesiella, Hb.—Common. Hypono-

meuta padellus, L. Ethmia pusiella, Roem. E. bipunctella, Fb. Plutellidae:—\*Cerostoma nemorella, L. \*C. scabrella, L.—Two specimens. \*C. lucella, Fb.—Beaten from oak. \*C. persicella, Fb.—

One specimen. Plutella maculipennis, Curt.—Rare.

Gelechiidae: — Metzneria neuropterella, Zell. Aristotelia subericinella, H.S.—Fairly common at light. A. decurtella, Hb. A. pictella, Zell. \*Acompsia cinerella, Cl. \*Telphusa fugitivella, Zell.—Fairly common on elms. \*Lita leucomelanella, Zell. \*Gelechia tessella, Hb. G. aristotelis, Mill. Stomopteryx anthyllidella, Hb.—Common at light. S. detersella, Zell. Dichomeris marginella, Fb. Symmoca oenophila, Stgr.—Common at light. Lecithocera luticornella, Zell. \*Chrysoclista atra, Hw.

OECOPHORIDAE: - Endrosis lacteella, Schiff. - Indoors and Jout. Pleurota planella, Stgr.—Fairly common. P. bicostella, Cl. \*P. schlägeriella, Zell. \*Borkhausenia pseudospretella, Stt.—On a shop window in the Calle Mayor. Depressaria costosa, Hw. 1). oenochroa, Tur. \*D. prostratella, Const.—Two specimens. \*D. depressella, Hb. D. liturella, Hb.—Two specimens. Chirocampa lambdella, Don.—Two

specimens.

Elachistidae: -\*Scythris chenopodiella, Hb. \*S. scopolella, Hb.-Two specimens. S. dissimilella, H.S. Coleophora ochrea, Hw.— Fairly common. \*C. frischella, L. \*C. deauratella, Zell. C. solenella,

Stgr.

Greatlaridae: -\*Gracilaria stigmatella, Fb.—Three bred from larvae found in leaf pockets on young poplars in the Paseo. differ from English specimens in their dark blackish ground colour. \*G. tringipennella, Zell.—One specimen. Tischeria ?complanella, Hb.— Old mines commonly near the Fuerte Rapidán.

TALEPORIDAE:—Taleporia tubulosa, Retz.—Old cases found.

TINEIDAE: Tinea fuscipunctella, Hw.—Fairly common indoors. T. quercicolella, H.S. \*T. pellionella. L.—Indoors and out. \*T. simpliciella, H.S.—Two specimens. \*Monopis nigricantella, Mill. \*Scardia boleti, Fb.—One specimen.

ADELIDAE: -\* Nemotois metallicus, Poda. - Fairly common; a dozen

or more seen assembling to a ?.

HEPIALIDAE: -\* Hepialus sylvinus, L. -Fairly common at light.

I take this opportunity of offering my best thanks to Dr. H. Zerny, of the Naturhistorisches Museum, Vienna, who after reading my MS., very kindly gave me valuable information, and helped with a number of difficult identifications.

#### An Account of my Studies in the Biology of Pieris rapae. III.

By ORAZIO QUERCI.

(Continued from p. 14.)

#### EXPLANATORY NOTES.

The weather was very cold in March of 1932, dropping to 17°-19° on the 8th, 9th, 10th and 15th. In April it was almost always cold, being 33°-34° on the 4th, 13th and 17th. On 22nd April the temperature rose up to Max. 79°, Min. 55°, and we saw three males of *Pieris rapae* at rest on the stems, but later the heat decreased, being almost always 50° during the nights, and we saw no more butterflies on the wing until mid-May.

MAX.
MIN.
P. RA

77. 53. 0—The climate becomes lovely, and some Pieris rapae
78. 59. 14 of both sexes begin to emerge from the chrysalides which had gone over winter.

16 87. 62. 8—They mate and lay eggs on the same day of their birth.

17 78. 67. 7—The eggs, which we rear in May, hatch after four 18 68. 53. 8 days. The young larvae, hang by a silk thread and

19 72. 50. 10 try to find a suitable leaf or flower to feed.

20 73. 52. 6

21 78. 58. 0-In the country all the "Whites" which we observe,

22 70. 56. 0 are more or less worn.

23 72. 50. 0—A few larvae of our broods grow more rapidly than the others.

24 78. 56. 0—At the Park Way we see no more males on the wing.

25 86. 59. 0—A few larvae of our broods pupate after six days. 26 87. 66. 0—It is hot. The larvae of our breeding are very

27 87. 68. 0 active, a few of them turn from green to yellow, later 28 78. 58. 0 they are caught by stupor and rot. Other larvae, of

the same batch, are not injured by the heat. 29 65. 54. On this day no larva forms the chrysalis.

30 73. 51. 0—The climate is lovely, and many larvae of our broods pupate.

31 75. 55. 0—Other chrysalides are formed in our cages, Some June larvae delayed twelve days to pupate. All the larvae,

1 85. 60. 0 which we reared, which delayed more than twelve 2 81. 68. 1 days, died. We take the first *Pieris rapae* of the

3 82. 63. 2 second brood. On the days following that species

4 86. 65. 3 becomes frequent at the Park Way.

5 90. 71. 10—It is hot. The larvae of our broods are restless.

6 90. 71. 18 All of them turn yellow and later die. This heat-wave is not very intense, but it continues for two consecutive days. I believe that, in such an open place as the meadows of the Park Way, very few larvae were able to find a shelter against such a great heat while the vegetation was scarce and the ground was barren.

In the evening of 6th June, 1932, the heat continued to be intense, and it was still 85° at 8 p.m. Also the larvae of our broods, which had hatched on that day, died. Some chrysalides, formed on 5th June, became black and rotted. None of the larvae, which we were rearing, pupated on 6th June.

(To be continued)

#### Nomenclature. The List.

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

(Concluded from page 33.)

Carterocephalus, Led. palaemon, Pall. remains Carterocephalus, Led.

palaemon, Pall.

Thymelicus, Hb. thaumas, Hufn. becomes Adopoea, Billberg, sylvestris, Poda. The linea, Schiff. (1775) early replaced thaumas, Hufn. (1776) until Tutt and others in Brit. Lep. adopted flava, Brunniche (?) (1763). Now we are asked to adopt the sylvestris of Poda (1761) as the prior name of linea. The original description of Poda's sylvestris reads "primoribus supra linea transversa lanceolata nigra." Werneberg and others identify this as either sylvanus or comma both of which have the "linea lanceolata," which most certainly linea has not. Since the description of Poda adds "Habitat in sylvis" one would suggest the probability that Poda's insect was sylvanus. [See L. G. Higgins' Note Ent. Rec.XLVI. p. 44 (1934)].

Adopaea was the genus adopted by Tutt, etc., for this species and

for lineola. It is now shown that the correct spelling is Adopoea.

Thymelicus, Hb. lineola, Ochs. becomes Adopoea, Hb. lineola, Ochs. Thymelicus, Hb. actaeon, Rott. becomes Thymelicus, Hb. acteon, Rott. The spelling of actaeon was corrected in Brit. Lep.

Pamphila, Fb. comma, L. becomes Hesperia, Fb. comma, L. (See

above.)

Pamphila, Fb. was replaced in Brit. Lep. by Urbicola, of which comma was chosen by Barbut, to whose selection of species typical of genera we have already referred. Hence the use of comma as typical of Hesperia is technically invalid, as well as extremely inconvenient from long continued use for the malvae group.

Pamphila, Fb. sylvanus, Esp. becomes Ochlodes, Scudd. venata,

Brem. and Gray.

The acquisition of a series of the venata from the far East some years ago strongly suggested the result given here that sylvanus and venata were the same species. However the misapplication of the homonym rule cuts out sylvanus (1777), although there has been no chance of confusion for more than 120 years at least. It is a fine scientific (sic) amusement to misapply this Zoological rule. Of course it should be sylvanus and the far Eastern form ssp. venata.

Augiades, Hb. was subsequently adopted in Tutt's Brit. Lep. I have failed to find any reason advocated for the use of Ochlodes, Scudder, which only contains 3 species not including sylvanus, Sys. Revis. 1872, and it seems that Augiades, Hb. should stand for the genus of sylvanus, which is one of the original species in the genus.

There is insufficient evidence for Augiades to be supplanted.

Note.—The name of our Augiades sylvanus is now said to be corrected to Ochlodes venata ssp, septentrionalis.

Thus the List is a great advance on all previous Lists but it will have to come up again to be further corrected, both in Generic and some Specific Names.

The Americans will not accept the erroneas plexippus (See Seitz)

which is an Indo-Malay name (See Seitz).

Hyperanthus is not a prior spelling: hyperanthus (South?) in place of the correct hyperantus, L.

Sylvestris is a gross error.

Aegon v. argus can never be proved either way. Seitz suggestion of aegon is the better.

Agestis and bellargus are forced in by the stupidly applied homonym

rule.

Latitude in the use of *Brenthis*, *Issoria*. *Polyommatus* is allowable. *Ruralis* and *Urbicola* are undoubtedly correct for *betulae* (and there-

fore quercus) and comma, respectively.

Lycaena and Hesperia have been so universally used for their respective groups of species that endeavour should be made to get them restablished as in the case of Colias, Argynnis, Vanessa, etc.

(P.S.—As shown, the inexplicable elimination of Oken's work is

responsible for Lycaena being rejected.)

#### Early Stages of Indian Lepidoptera.

By D. G. SEVASTOPULO, F.R.E.S.

(Continued from p. 19.)

#### NYMPHALIDAE.

Euthalia garuda, Mre., ssp. suddhodana, Fruh.

Head green, body green with a pale dorsal stripe and a pale mauve transverse line on each somite. A series of eleven feathery scoli, about \$\frac{2}{3}\$ths of an inch long, arising subdorsally, the first pair pointing forwards, the 2nd to 10th pairs sideways and the 11th pair backwards.

Pupa green. The head lobed with a brown spot on each projection. A lateral and a dorsal brown spot on the thorax, a gilt and brown line between the 3rd and 4th abdominal somites dorsally. Shape, ventral surface flattish; thorax and first three abdominal somites flat with a median keel and rising to a point, the posterior somites with a slight median keel.

Foodplant.—Mango (Mangifera indica).

Described from a full fed larva found in Calcutta 16.i.32, pupated 19.i.32 and a female emerged ?.ii.32.

Seitz describes a form of the larva which has the transverse lines yellow.

#### LYCAENIDAE.

Rathinda amor, F.

Head retractile. Ground-colour bright green, olive green or dull purple. The green forms with a brown transverse band on the 4th and a brown dorsal patch on the 6th to 8th somites, the purple forms with the same markings a little darker than the ground-colour. A white lateral line from the 5th to 10th somites. The 2nd and 3rd somites with a pair of subdorsal horn-like projections, the pair on the 3rd somite being the longer. A single dorsal projection on the 4th

somite. The 5th somite bearing a long dorsal and a long lateral projection. The 6th to 9th somites each bearing a dorsal projection, that on the 6th very short, the 7th and 8th slightly longer and that on the 9th long. The 10th somite with a short dorsal projection and a long lateral one.

Pupa shaped like that of a Syrphid, green with a brown dorsal

patch.

Foodplant.—A cultivated garden shrub with bright scarlet flowers. The larvae prefer the flowers and the young berries to the leaves.

Described from full fed larvae found in Calcutta 10.vii.32, pupated

12.vii.32 and males and females emerged 20.vii.32.

Seitz describes the larva as being "green with purplish-red cones of different length."

(To be continued.)

#### OTES ON COLLECTING, etc.

MICRO LARVAE COLLECTING FOR APRIL.—Examine the leaves of wild rose bushes for whitish blotches; to most of these are attached a flattened, serrated case, that of Coleophora gryphypennella, while the twisted together shoots will probably contain larvae of Notocelia In lanes, especially those in the Weald where the heart'stongue fern grows in such abundance, one may now find the larvae of Teichobia verhuellella burrowing among the spore-cases on the undersides of the fertile fronds. Old twisted birch trees may now be examined for distorted catkins; a good supply of the latter will probably furnish a series of Epiblema (Paedisca) bilunana. Old palings, especially near woods and under trees, will often have attached to their surface the longish cases of Taleporia pseudobombycella; care in removing them and attaching them subsequently to a similar surface must be observed if a series of the imagines is to be obtained. the sallow leaves (Salix caprea) have started to open out, the blotches formed by the larvae of Coleophora viminetella will be apparent, and any near-by old thistle stems may be examined for the round holes denoting the presence of the full fed larvae of Epiblema (Ephippiphora) pflugiana. The closely drawn together shoots of the furze with white web will contain the larvae of Scythris grandipennis, and the broom, so often in company with furze, will possibly have its long shoots spun together forming feeding galleries for the larvae of Depressaria assimilella almost ready for pupation. Under some of the hedge-rows one often finds the ground-ivy, Glechoma hederacea, extensively blotched by the larvae of Coleophora albitarsella in their long, black and curved cases, on the undersides. similar situations where masses of Stitchwort grow, the larvae of Coleophora solitariella will be noted making long galleries in the grasslike leaves, each with its slender, long, tubular, almost white case, while more locally on the same plant the similarly shaped brownish cases of the larvae of Coleophora olivaceella may be found making similar blotch galleries. The twisted shoots of the same plants may contain larvae of Gelechia tricolorella. The blotches on the leaves of the chalk-loving Helianthemum vulgare indicate the larvae of Tinea miscella. A search on the basal leaves of Echium vulgare, another chalk loving plant, will often yield numbers of the small blotches of

the young larvae of Coleophora onosmella, whose larger woolly cases can be obtained later on, and afford a good series of this beautiful and The more dwarf thistle leaves will often be found attractive micro. drawn together by the larvae of Depressaria nanatella. On the leaves of Lotus corniculatus, more rarely and very locally, the curiously curved cases of the larvae of Coleophora discordella may occur, perhaps more in Dorset than elsewhere, on chalky downs. The plantain growing in similar situations will often afford the larvae of Gracillaria tringipennella on its bunched up leaves. More or less aborted spruce cones collected and stored will eventually produce specimens of Laspeyresia (Coccyx) strobilana; bred specimens are well worth getting. daisy leaves are mined by the larvae of Bucculatrix nigricomella (aurimaculella), but the plants must be dug up and potted carefully. Mining in the radical leaves of Scabiosa columbaria in somewhat sheltered spots, the larvae of Lithocolletis scabiosella may possibly be found. Cerastium vulgatum, when found growing plentifully on the banks of the chalk where Helianthemum flourishes should now be searched, for its twisted shoots contain the larvae of Gelechia fraternella. In fields where current and raspberry bushes grow in quantity look for the drooping withering shoots; these will produce larvae of Lampronia capitella and Lampronia rubiella respectively.

CHORTOPHILA (PROSALPIA) BILLBERGI, ZTT. AND EGERIA ANTHRACINA, Czy.-Prior to 1933 I had only taken two or three odd specimens of this Anthomyiid, but on 30th April in that year whilst walking through one of the woods of Spanish Chestnut typical of N. Kent, and usually barren as regards Diptera at this time of year, I noticed on the carpet of dead leaves at my feet, one or two flies which on capture and examination proved to be this species. I then turned my attention to the ground and in the course of three-quarters of an hour took a nice series. The flies were most abundant on the mass of dead leaves filling up the damp and slightly sunken footpath, but were also to be found on the dead leaves covering the ground on either side. They flew off on my approach, but only for short flights and seldom rose more than two or three inches. I found this species again on 1.v.34 in the same locality, but not in such abundance as in 1933. I do not know if other species of Prosalpia have the same ground-frequenting habit, but hope that this note of its occurrence in P. billbergi, and the comparatively early date may prove useful to other collectors.

Another "good" species of Chortophila, Egeria anthracina, has also occurred to me in woods in April, this time settled on leaves (rhododendron in my case) after the normal fashion of Anthomyiids. My dates for this species range from 13th to 20th April.—H. W. Andrews

(F.R.E.S.)

CATEREMNA TEREBRELLA, ZINCK., IN BUCKINGHAMSHIRE AND HAMPSHIRE.

—I have now found larvae of this species at Chesham, Bucks., and near Romsey, Hants., as well as in the New Forest. It is likely to be present wherever the spruces bear cones at all freely. The larva feeds right through the winter in cones on the ground, but the expressions used to describe the cones are somewhat misleading. The authorities say "in distorted and stunted cones" or "in aborted cones." The cones containing larvae are certainly stunted or even aborted, but in

my experience not distorted. They fall from the tree long before they have attained full growth, and measure from two to four inches in length. They are rather light grey in colour when dry, but are almost black when wet, which is their usual condition in nature. They are always quite soft, often break with the fall, and are very easily overlooked among dead leaves and debris.—WM. FASSNIDGE (M.A., F.R.E.S.)

Gracillaria azaleella, Brants, at Southampton.—On the 28th February, 1935, I paid a visit to the Nursing Home in Southampton, where I spents ome months of last year, and found in the conservatory a few larvae and pupae of G. azaleella. I should judge that the insect is likely to be a serious pest later in the year, for the Azaleas were badly infested, showing many traces of feeding. A Tortrix larva was also present, which I identified as Pandemis heparana, Schiff.—Wm. Fassnidge, 47, Tennyson Road, Southampton.

Larvae feeding on Common laurel.—Apropos of Mr. Fletcher's note (p. 37) of *Phigalia pedaria* feeding on laurel, any larva naturally feeding on blackthorn, plum, or cherry ought theoretically to feed on laurel, since all these plants belong to the plum group of the Rosaceae, and contain prussic acid. As a matter of fact, besides *P. pedaria* and *O. antiqua*, the following are on record as having been found feeding on laurel: *Abraxas grossulariata*, *Malacosoma neustria*, *Taeniocampa gothica* and, most remarkable of all, *Smerinthus populi*.—C. Nicholson, Tresillian, Cornwall. [Rev. G. Wheeler reports *Diloba caeruleocephala* on laurel.]

Catocala nupta flying by day.—In my note on p. 38 the word "distributed," should be "disturbed," as I believe I wrote. The interesting point was that the specimen seen by Mr. Donisthorpe (p. 13) was flying, apparently naturally, in the sun. I personally should not consider it remarkable to see this species at rest in late afternoon sunshine on a fence, tree, or wall, but I doubt whether it would remain in such a position in hot sunshine, and possibly it was that that caused the one in question to fly.—C. Nicholson.

The Colorado Beetle.—We note that the Minister of Agriculture, in the House of Commons on 25th February, stated that the Colorado Beetle outbreak at Tilbury has been completely stamped out. We hope that this optimism is justified. As there is always a possibility of its reintroduction, no harm will be done if Entomologists will continue to keep an eye on potato-plants this summer. There is always a chance of finding a larva of Acherontia atropos, anyway!—T. Bainerigge Fletcher.

Maniola jurtina, Linn., Xanthic forms.—During the summers of 1933-1934, I have netted a large number of xanthic forms of M. jurtina on the Hampshire Downs in the neighbourhood of Winchester. I have several specimens, females, in which the light fulvous patch on the forewings is replaced by a dull white, also a male showing similar aberration. One female, caught in August 1933, is figured in the Journal of the Entomological Society of the South of England, Vol. 1, Part 4, 1933; it has light grey hindwings with five dark striations.

Another specimen, a male, captured by Dr. Hobby in the same locality in 1930, is almost pure white except for black striated patches near the thorax. It is figured on the same plate.—H. G. Harris (M.D., M.S.B.E.)

Early emergence of P. RAPAE.—I was informed by Mr. H. Williams, of Shrewton, Wilts, that on 23rd February, 1935, he observed a female P. rapae emerging from its pupa attached to a galvanised iron shed.—H. G. Harris (M.D., F.R.E.S.). Southampton.

#### **CURRENT NOTES AND SHORT NOTICES.**

In his fourteenth paper on "Minenstudien" (Zts. f. Pflanzenkrankheiten, XLIV. ii. 49-70, ff. 1-13, 1 tab. 1934), Dr. Martin Hering gives useful keys for the determination (1) of all mines found in oak-leaves

and (2) of the adults of the oak-feeding species of Lithocolletis.

Dr. H. Rebel has published (*Iris* XLVIII, 122-138: 1934) another paper on the Lepidoptera of the Balearic Islands, from which 335 species have now been recorded. In another paper in *Iris* (XLVIII 145-161, t. 3: 1934) he has revised the Dissocteninae, a small group of *Tineidae*, mainly on new material from Morocco, two new genera and several new species being described; to which he has added a new Psychid genus and species (*Pseudofumea umbrosella*), also from Morocco.

Numerous Insects have been described from Baltic amber, in which, however, Lepidoptera seem to occur very rarely (about one in a thousand Amber Insects). In a paper on Amber Lepidoptera (Palaeobiologica, VI. 1-16, 6 figs, t. 1: 1934) Dr. H. Rebel has described several Microlepidoptera, including a Tortricid larva, a Psychid case and several moths, which have been so well preserved that their generic structure can be indicated. As would be expected, in all cases they are very close to living forms.—T. Bainerigge Fletcher.

L'Amateur de Papillons for January 1935, contains a note by Monsieur Le Marchand on three Exotic Micros found in France, these being Paralipsa gularis, Zeller, Phthorimaea operculella, Zeller, and Dryadaula pactolia, Meyr. The first-named has turned up in London during the last two or three years; the second, whose larva is a wellknown pest of stored potatoes in warmer climates, is likely to turn up in this country also, although it probably would not survive in the open in England. Dryadaula pactolia is a New Zealand Lyonetiid which seems to have established itself in Gloucester City, whence it has been recorded in 1911 and 1915, and which succeeded in establishing itself for at least twenty years, as my collection contains a specimen, collected and kindly given to me by Mr. Clutterbuck, taken in 1931. Dryadaula is a small genus containing at present only seven species, all known from Australia, Tasmania or New Zealand. It is, therefore, interesting to find that D. pactolia has also reached France, where it has been found so far at Bordeaux and in the Departments of Seine-Inférieure, Calvados and Manche. It has perhaps been imported with grain, as it seems to occur in or near granaries.—T. Bainbrigge FLETCHER.

Why is it that reports of expeditions have such terribly ponderous titles? Surely they could usually be shortened. The results of the

Visser Karakorum Expedition are burdened with this: "Wissentschaftliche Ergebnisse der Niederländischen Expeditionen in den Karakorum und die angrenzenden Gebiete, 1922, 1925 und 1929/30, herausgegeben von Dr. Ph. C. Visser und Jenny Visser-Hooft, in Kommission bei F. A. Brockhaus, Leipzig, 1935. Zoologie. Zusammengestelt von J. B. Corporaal, Kustos am Zoologischen Museum in Amsterdam. Herausgegeben am 15 January 1935. Dermaptera, by G. Bey-Bienko, Leningrad."

Supplemented by a few specimens from other sources, the list includes seven species of earwig, some of which are of remarkable

interest.

There are two cosmopolitan species, the inevitable Labidura riparia, Pall., and Euborellia annulipes, Luc. Notable is Pseudisolabis burri, Bor., with which the author identifies Ps. tenera, Burr, from Kashmir and the Punjab, as the other species of the genus are Australian. Anechura zubovskii, Sem., seems to be the common earwig of Kashmir, and is recorded all along the road to Ladak. The author regards it as a local race of A. asiatica, Sem., but considers both as specifically distinct from the European alpine A. bipunctata, Fabr., of which I considered them races. He regards A. calciatii, Bor., as a local race of the Turkestan A. fedtschenkoi, Sauss., and compares this distribution with other well known cases of Central Asiatic mountainous endemics, such as Gomphomastax, Br., and Conophyma, Zub.

The other two species are typical Himalayan earwigs, Forficula

schlagintweiti, Burr, and F. planicollis, Kirby.—M.B.

The Supplement to the Palaearctic Main Volumes of Seitz continues to come out with great regularity. Parts 53 and 54 have just appeared. The former contains 3 sheets of Noctuid additions. Among them are additions to about nineteen British species to which some 70 additional forms are recorded and briefly described, including the Caradrina (Athetis) species, A. nickerlii which we have recently discussed, etc. We note that pallustris has only one l. in error. The latter part contains the beginning of vol. IV. the section devoted to the Geometers for which L. B. Prout is responsible. The part contains 8 pp. and 2 plates with 90 figures of new forms. Among the Brephinae, B. parthenias has 9 and B. notha has 2. The Oenochrominae have Alsophila aescularia, with 1; Aplasta ononaria with 5; and Odezia atrata, with 3. The Hemitheinae have Pseudoterpna pruinata with 8. This is a good opportunity for those interested in the British Geometers to start subscribing.

The Verrall Supper Meeting was held at the Holborn Restaurant on January 15th, 1935. The meeting was called for 6.30 and before supper, which was served at 8 o'clock, a Conversazione was held in the reception room. Prof. Sir Edward B. Poulton, F.R.S., was voted to the Chair as an expression of the Members' appreciation of the honour of knighthood recently conferred upon him. The guests are now too numerous to mention and in future a full list of names will not be published. In this case the attendance was 176 which is again a record. Mr. Jas. E. Collins, the Verrall Supper Member of the Club, again made all the arrangements and is to be congratulated on the wonderful success of the meeting. The details were perfect and the smoothness and pleasure of the evening were due to his excellent organisation. It is essential, however, that application for invitations must be in every case made direct to Mr. J. E. Collin, "Raylands,"

REVIEWS. 55

Newmarket, and in no other way can the issue of invitations be allowed. The Chairman made the usual reference to the memory of the late Mr. G. H. Verrall, the founder of the gathering, which was received in silence, the company standing. Later in the evening Mr. J. E. Collin spoke of the progress of the Verrall Supper Association of Entomology and again reminded his hearers of the existing rules framed to ensure the success of the gathering, and it was to be hoped that the Membership and subscription list might be increased to enable the function to be greatly extended. Mr. Collin gracefully referred to the honour of knighthood recently conferred on the Chairman and to the great services Sir Edward Poulton had rendered to Entomological Science and the inspiration he had given to all with whom he had come This distinction was not only a personal one but a into contact. gesture of appreciation to entomological Science. These remarks were received with great applause and musical honours for the Chairman. The meeting broke up at a late hour and was one of the most successful yet held.—H. Willoughby Ellis, Hon. Secretary.

The Sixth International Congress of Entomology is due this year and will be held in Madrid, from 6th-12th September. The President will be Prof. Ignacio Bolivar. All who wish to take part in any section of the Congress work should write to Prof. Bolivar, at the Museo National de Ciencias Naturales, Madrid-6. The subscription of members will be thirty shillings which must be sent to the above address. All full members will be entitled to a copy of the Congress Proceedings.

The Wasp.—Under this title we have received a small book of quarto size, written under the auspices of the Carnegie Trust by Dr. Laidlow, dealing with the genus Vespa, chiefly as it occurs in Scotland. The information is short, terse, and to the point, illustrated as it is by the eight excellent plates, three of which are in colour. The letterpress deals to some extent in tabulated form with the general external characters and structure, the genital apparatus, the specific characteristics, the life-history, habits and distribution. The get-up of the book is attractive and the matter spaced to facilitate consultation. No one with this book could fail to identify any British wasp he met with. The small price of this excellent work is 3/-.

#### REVIEWS AND NOTICES OF BOOKS.

Catalogue des Lépidoptères de France et de Belgique. Publié sous la direction de Léon Lhomme. Le Carriol 1923-1935. Volume I. 800 pages. Price 125 francs.—The concluding pages of Addenda and Indices having come to hand, we may heartily congratulate Monsieur Lhomme on the termination of this volume, which includes the so-called Macrolepidoptera of France and Belgium (incidentally we may note that some microlepidopterous groups are included). The species dealt with number 1676 and under each species are given (1) references to Staudinger's and Hampson's Catalogues and to figures in Seitz, Culot, Berce, Lampert, etc., (2) a list of localities, (3) named forms, with short descriptions and localities, and (4) larval food-plants. The Catalogue is therefore far more than a bare list of names and all these details will be of use to workers on the British species. Volume II., which will contain the Microlepidoptera, is in course of preparation and publication will, we hope, commence shortly.—T. Bainbrigge Fletcher.

#### BITUARY.

#### Florence Jane Kirk.

On 29th January last, my very dear friend, assistant, and constant companion for over 20 years, passed away at the early age of 38.

Left an orphan before she was 18 Miss Kirk devoted herself with untiring patience and self sacrifice to the care and education of her

four younger sisters; two of whom are now married.

Miss Kirk's great ability as an entomologist was recognised by all who had the opportunity of seeing her work in the field, or as an observer of living insects, a study to which in the words written by one of my friends "her whole nature responded so wonderfully."

She was always able, when visiting some widespread tract of country, to fix upon the exact spot in which we had collected years before; any insect or bird once seen by her was never forgotten; anything new or

strange instantly attracted her attention.

Although without previous experience, or teaching, Miss Kirk was very successful with the drawings and plans which were so great a help to me in my work. Many Fellows will recall her excellent drawings on the black-board at the meetings of the Royal Entomological Society of London.

I shall always remember with gratitude the great ability with which she planned all our equipment for the field, contrived new methods of collecting, etc. and would work for hours (as many of my friends know).

in helping us to find a species, or complete a series.

Although she published only a single Entomological note ["Lady-Birds hibernating in the House," Ent. Rec. 36 9-10 (1924)], Miss Kirk gave me unbounded help with my own books, writings, and library, etc. Her one brief note indicates, however, as was abundantly proved by her whole life as a naturalist, that she recognised in the study of living insects, a pre-eminent aim of Entomological Science.

The following short extracts, from kind letters written by friends

to her sisters, or to me, show the esteem in which she was held:—

"I think it extraordinary how cheerful she always was. She was a truly remarkable woman and will be missed by all who knew her."

"She was always so bright and cheery, and such a keen and clever collector; she seemed by instinct always to pick out just the right spots to work, and I owe many good species in my collection to her hard work and kindness in giving me the specimens I wanted."

"We realised fully her strength of mind and ability."

"I mourn with you in the loss of one for whom I had a great admiration and regard, both for her fine character and charming personality."

"A girl who was both charming and plucky, and who was held in such high esteem and affection by all who had the honour and pleasure of counting themselves among her friends."

"Few people I have met have so quickly inspired in me such

feelings of esteem and real affection."

"She was a fine character in every way."

"She was, you know, really a wonderful girl." Vale!

HORACE DONISTHORPE.

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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.

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.

Desiderata.—Urgently wanted for research work at the Royal College of Science,

Pupae normal form of Hemerophila abruptaria.

Duplicates.—Pupae of var. juscata of the same species offered in exchange.—J. A.

Downes, 5, Trinity Road, Wimbledon.

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.

Duplicates .- Many exceedingly rare species of moths from the Mediterranean,

especially Sardinia. Ask for List.

Desiderata.—British Z. exulans; D. barretti; A. nickerli-guenei; L. favicolor; H. crinanensis; Lar. ostregiata. Urgently needed.—Breeding material of all Ephestia-species except kuchniella. Will also pay cash if desired.—H. Bytinski Salz, John Innes Institution, Merton Park, London, S.W.19.

CHANGE OF ADDRESS.—Rev. C. R. N. Burrows, F.R.E.S., to Stanford-le-Hope, Essex: L. D. Wakeley, to 15, Berkeley Place, Wimbledon, S.W.19: B. C. S. Warren, F.R.E.S., to 3, Augusta Mansions, Folkestone, Kent. W. Parkinson-Curtis, to 17, Princess Road, Bournemouth; H. Donisthorpe to 332, Great West Road, Heston, Middlesex.

#### MEETINGS OF SOCIETIES.

Entomological Society of London.-41, Queen's Gate, South Kensington, S.W. 7.

8 p.m. May 1st.

The South London Entomological and Natural History Society, Hibernia Chambers, London Bridge. Second and Fourth Thursdays in the month, at 7 p.m. April 25th. May 9th.—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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A quarterly journal of Natural History, etc., chiefly for the Northern Counties

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Vol. XLVII. Plate II.



Stream at Kuopio; locality for E. embla.



Bog at Nurmi where O. jutta flies.



Photos. E. Scott.
Punkaharju, where C. silvius, M. maturna, C. minima, etc., were taken.



## Depressaria astrantiae, Heinemann 1870, an Oecophorid moth new to England.

By T. BAINBRIGGE FLETCHER, F.L.S., F.Z.S., F.R.E.S.

On 29th July, 1933, I took a very fresh specimen of a *Depressaria* by beating a large mass of Honeysuckle in one of the woods in the Stroud District, Gloucestershire. Recently I sent this specimen, with some other odds and ends of Microlepidoptera, to Mr. H. Stringer, of the British Museum (Natural History), and he has kindly determined it as *Depressaria astrantiae*, Hein. The specimen, being the first British

example, has been placed in the Museum Collection.

Depressaria astrantiae has hitherto been recorded from Sweden, Denmark, Germany, Austria, the Balkans, Switzerland and France. It's larva has been found on Astrantia major and on Sanicula europaea. The former plant is not strictly native in England but is recorded as naturalized at Malvern and Ludlow; the latter plant is common in woods and therefore seems to be the most likely foodplant in England. Meess (in Spuler) describes the larva as dirty green with small blackish warts, and black head, and a black prothoracic plate narrowly divided by white; in May and June on spun-up lower leaves of Astrantia major.

This species will find a place in our Lists next before D. angelicella, as No. 29a in Meyrick's Revised Handbook. Heinemann's original des-

cription is as follows:-

"Forewing pale ochre yellow, tinged with brown-red and irrorated with brown, yellow at base, with two black transverse dots before middle, two white dots before and on discoidal vein, and an oblique brown streak from the discoidal vein to the tornus. Like the preceding species [anyelicella, Hb.], which also has a dark oblique streak to the tornus, but larger and with two white dots, and with the pale basal patch also reaching as far as the costa; distinguished from cnicella by the broader, paler and more variegated forewing, the unspotted basal patch and the terminal palpal segment being not marked or slightly The forewing comparatively broad, with distinct apex and rather oblique termen, pale ochre yellow, but obscured almost all over with paler or darker brown-red and irrorated with brown, palest before the middle and beyond the transverse vein, darkened with brownish beyond the basal patch, above the white dots and before the termen, moreover a narrow blackish streak runs from the cross-vein to the tornus. The brightening [Aufhellung] beyond the transverse vein frequently takes the shape of a very indefinite, but tolerably distinct, sharply broken transverse patch. The basal patch is pale yellow, sharply edged anteriorly and forming a sharp angle exteriorly on the anterior middle-vein. The transverse dots small, the white dots distinct, usually narrowly edged with brown, the first placed on the line from the anterior transverse dot to the dot on the transverse vein, much nearer to the latter and often produced into a short longitudinal streak, in addition to which there is also a short blackish streak in the middle The terminal line blackish, interrupted, the cilia rosy-red with greyish base and parting-line. The hindwing yellowish pale-grey, darker posteriorly. Head and thorax pale yellow, the latter rather

tinged with reddish, the antennae blackish, basally yellowish beneath, palpi longer than thorax, pale yellow, second segment with tolerably strong bristles, irrorated brown and red outwardly and anteriorly, terminal segment two-thirds of second, with an indistinct ring or spot

below the tip, sometimes quite unicolorous."

Meess gives the expanse as 19-23 mm.; my English specimen measures 19.5 mm. In D. angelicella the expanse varies from 13 to 18 mm. Thus, D. angelicella is usually much smaller and lacks the conspicuous pale basal patch, which in astrantiae barely reaches the costa and contains some reddish scales. The ring or spot on the terminal palpal segment is a variable character in both species and cannot be relied on to separate them: in D. angelicella this segment is usually unmarked but is rarely spotted; in D. astrantiae this segment usually has a distinct black spot (which may be continued as a ring around the segment) a little below its tip on the upperside, but sometimes this segment is quite unicolorous.

The following references, all under the name Depressaria astrantiae,

are known to me, but there are doubtless others also: -

Hein., Kleinschm. Deutschl. II. i. 165-166, No 236 (1870)¹; Stt. N.H. Tin. VI. 16, No. 47 (1861) [non-descr.]²; Stt., Entom. Annual 1862, p. 127 [non-descr.]³; Stdgr.-Wocke, Cat. Lep. Eur., p. 287, No. 1737 (1871)⁴; Stt., Entom. Annual, 1874, p. 11⁵; Sand, Cat. Lep. Berry & Auvergne, p. 168, No. 1737 (1879?)⁶; Steudel & Hofman, Jahreshefte d. Ver. f. vaterl. Naturkunde in Württemberg, 1882, p. 197⁻; Hedemann, Entom. Meddel. IV. 265 (1894)⁶; Rebel, Cat. Pal. Lep. II. 172, No. 3244 (1901)⁶; Rebel, Ann. Hofmus, Wien. XIX. 360, No. 1386 (1904)¹⁰; Meess in Spuler, Schmett. Eur. II. 337, No. 58 (1910) [re-descr.]¹¹; Hauder, Beitr. z. Mikrolep. Fauna Oberösterreichs, p. 201, No. 784 (1912;? 1914)¹²; Müller-Rutz, Schmett. Schweiz. II. 461, No. 2107 (1914)¹³; id., t.c. p. 656 (1914)¹⁴; Hauder, Jahresber. Oberöst. Musealver. LXXX 285 (1914)¹⁵; [Rebel et al.], Prodr. Lep. Faun. Nied.-öst, p. 182, No. 2287 (1915)¹⁶; Schawerda, Wien. Ent. Ver. XXVI. 42, No. 408 (1916?)¹⁷; Larsen, Entom. Meddel. XI. 152, No. 18 (1917)¹⁷; Meyr., Wyts. Gen. Ins., fasc. 180, p. 175, No. 174 (1922)¹⁷; Müller-Rutz, Mitt. schweiz. ent. Ges. XIII. 237 (1922)²⁰; Larsen, Entom. Meddel. XVII. 77, No. 18 (1927)²¹; Benander, Zts. wiss. Insektenbiol. XXVI. 52 (1931)²².

C. Europe<sup>19</sup>.—Sweden, Oland Island<sup>22</sup>.—Denmark<sup>8 9 11 18 21</sup>.—Germany, Bavarian Alps<sup>1</sup>, Wurttemberg<sup>7</sup>.—Galicia<sup>9 11</sup>.—Austria<sup>7 12 15 16</sup>.—Balkans<sup>10</sup>.—Switzerland, Vättis<sup>13</sup>, Martigny<sup>14</sup>, Cresta<sup>14</sup>, Parpan<sup>20</sup>.—France<sup>4 9 11</sup>,

Nohant (Indre)6.—England, Stroud District (Glos.).

Biology<sup>22</sup>. Larva described<sup>11 22</sup>, on Astrantia major<sup>1 2 3 5 7 8 11 12 18 18</sup>, on Sanicula europaea<sup>22</sup>.

#### Noctuae and vars. in 1934.

By A. J. WIGHTMAN.

In view of the extremely hot and dry season of 1933, it was to be expected that many species would be found to have suffered from the drought, while others, perhaps, might have benefited from the unusual conditions.

I felt sure that the species in *Nonagria* and allied genera would have suffered severely, and in general this was so; *N. sparganii* and *N. neurica*, *Coenobia rufa* and *Calamia phragmitidis* being much scarcer than usual, but *N. geminipuncta* certainly had not lost ground. Probably

nothing short of a volcanic eruption could thin this creature out once

it has become well established anywhere.

Groups which appear to have benefited include *Leucania* and *Xanthia*. I have seldom seen such a show of *L. conigera*, *L. lithargyria*, *L. straminea* and *L. pallens* (both broods) as this year, while the normally very local, if not entirely rare *L. albipuncta* appeared in record numbers and *L. l-album* occurred in both Kent and Devon.

Xanthia aurago, always to be found in fair numbers near Arundel, was this year the most plentiful Noctua at sugar and yewberries during

September and October in the beech woods.

In early August I spent a few days with Mr. G. W. Wynn, on the Norfolk Broads. The weather, which had been hot and dry, changed at once on our arrival to cold, wet and windy, and handicapped us seriously; nevertheless we were successful in taking a number of species we desired. Celaena haworthii and Apamea leucostigma turned up at sugar in plenty; L. brevilinea came freely to light in most unpleasant cold, windy conditions; and during the day we succeeded in finding a fair number of pupae of N. algae (cannae), but the water-fowl had been far more successful and had accounted for large numbers. are often blamed for destroying this species and the allied N. sparganii, but coots and moorhens are the real culprits. No doubt they locate a good many by sound, when the larvae are eroding the rushes to make their "windows," but far more are found by sight. This is proved by the fact that tenanted rushes growing in long grass or other herbage which hides these "windows" are seldom touched, when all around rushes with exposed stems have been torn open and the pupae destroyed.

Another rather surprising thing I noted this year, was that Monima (Taeniocampa) gracilis, usually so heavily parasitized, was comparatively free, ninety per cent pupating instead of a normal ten per cent; against this, Cucullia gnaphalii, always heavily attacked, was this year so heavily stung that even tiny larvae had fallen victims and for the first time I bred from this species in addition to its usual enemy, (one to a larva) which develops quickly and destroys the larva before it is full fed, a minute fly which issued in large numbers from the cocoons after the larvae had gone down and apparently pupated. I think this is a species

which is often bred from pupae of C. chamomillae.

Leucania l-album.—A small batch of ova kindly given me by Mr. G. W. Wynn, from a ? taken on the Devon coast in September (vide Ent. Rec. XLVII. No. 2, p. 14), hatched in early October, and acting on the knowledge I had of the habits of the species, from Mr. Wynn's 1933 experience, and that of Messrs. Sharp and Edelsten some years ago, I fully expected the tiny larvae would go into hibernation as hatched, except for the egg-shell meal. This is what they did, retiring into a minute crevice between the double metal wall of the box, in such a compressed mass, that I fancied I had lost them by escape in spite of all precautions, and I had a bad half hour until I located them.

The situation selected appeared such an unsuitable one, that I removed them after a few days to another box, in which no possible retreat offered, other than the segment of dead phragmites reed I provided, and which I thought would be an ideal hibernaculum. Finding them restless and apparently not interested in the dead reed,

I provided young shoots of *Poa annua* in case any might be disposed to nibble it, and found next day on critical examination that some few larvae were in this grass and had eaten enough to show. Kept supplied daily with fresh food, soon all were feeding and progressing at an amazing pace, in fact, acting as if of the summer brood. This behaviour was almost certainly due to the fact that the weather was very mild and the food given was as a result palatable.

Kept in a warm room the larvae were fullfed twenty-eight days after commencing to feed. The larva has been described by Mr. Wynn, and beyond saying that to me the point of difference between it and that of *L. albipuncta*, with which I was most impressed, was that in an oblique light *L. album* appears wet, when really dry, owing to the

darker lines being "shiny," I can add nothing.

Twenty-one days after going down the imagines appeared usually about 8 a.m., but sometimes at 8 p.m. They developed quickly and were very alert but not active; all were larger than the parent 2, perfect and deep in colour; no doubt all bred specimens are. I can see no variation in those I have. The sex proportion, 3 3 18 2, is curious. I had no losses among the larvae or pupae, but of course I had but part of the batch of ovalaid by the 2.

A pair placed in a suitable box were kept alive for 10 days and the

? laid 180 ova. But none hatched.

(To be continued)

### An Account of my Studies in the Biology of Pieris rapae. III.

By ORAZIO QUERCI.

(Continued from p. 48.)

THE SITUATION ON 6TH JUNE, 1932.

If, as it happened in our broods, also at the Park Way all the larvae were killed by the heat, the situation may be as follows:—

Second Brood.—There are some more or less old adults, and some chrysalides the youngest of which were formed on 5th July. When it is hot the chrysalides in our cages never delay more than twelve days to produce the imagines, and therefore the last Pieris rapae of the second brood should emerge before June 18th, and their females, which live longer than the males, would be on the wing until the 23rd of that month.

Third Brood.—There are only the eggs laid after June 2nd. Both the eggs and pupae of Pieris rapae are not injured by 100°.

#### THE CLIMATE FROM 7TH JUNE TO 2ND JULY.

From 7th June to 2nd July three heat-waves occurred. That of 22nd June was short and little intense: at 8 a.m. the temperature was 76°, at noon 85°, and at 4 p.m. it was 90°, but soon it decreased to 85°, dropped to 70°, and remained so during the night. The wave of heat of 26th June was very short: 76° at 8 a.m., 89° at noon, 92° at 3 p.m., but the temperature promptly dropped to 76°, and it was about 72°-73° in the night. Both on 22nd and 26th June the heat injured only the larvae in our cages, which had delayed longer to pupate. I

believe that in the country, on 26th June, the larvae were less injured than at home because, while collecting at the Park Way in the afternoon, we did not feel much heat. The heat-wave of 1st July was not so long as that of 5th and 6th June, but it produced the same P. RAPAE TAKEN destructive effect, being more intense. At 8 a.m. the temperature was 79°, at noon 90°, at 5 p.m. 93°, DATE. and at 8 p.m. it was still 86°. During the night the temperature was always above 75°, and all our larvae rotted.

J<sub>UN</sub>.

7 78. 55. 14-The emergence of the second brood continues. 8 69. 50. 14 specimens on the wing are scarce because they are

76. 56. 10 produced by the chrysalides which develop rapidly, 9

10 77, 64. and they are only a few in each batch. Most pupae produce the adults, when it is hot, in 20 to 23 days after the egg is laid.

11 81. 61. 21—Pieris rapae are more frequent, but later on the 12 **69. 58.** weather is bad for three days, and the butterflies delay their emergence.

13 68. 60. 0—A few larvae of the third brood form their chrysalides.

14 74. 63. Instead, other larvae of the same batch are still small.

85. 65. 32-It seems that the chrysalides of the second brood, of 15

16 which the emergence was delayed by the bad 83. 69. 45 climate, emerge now all together.

17 81. 68. 46—On these days the emergence of the second brood should end.

18 74. 61. 18—The "Whites" on the wing are more or less worn,

19 and they fly in spite of the cloudy sky. 69. 59.

20 77. 58. 18—We take some fresh specimens. Probably the third

21 82. 64. brood begins to emerge meeting with the last specimens of the second brood.

22 90. 70. 8—In the afternoon it is hot, and the larvae in our

cages, which had delayed too long to form the 23 82. 61. 14 chrysalides, rot.

5—The flight period of the second brood should be ended. 24 77. 57.

25 85. 63. 7- The Pieris rapae on the wing are all fresh, but they are scarce.

92. 72. 5—It is hot for a short time, and a few larvae die 26 at home.

27 The scarcity of the earliest specimens of the third 87. 74. 28 85. 74. 6 brood can be explained looking at the data for the

86. 72. beginning of June. Then, very few specimens were 29 7

89. 71. on the wing, and in the small place where Pieris 30 rapae emerged at the Park Way, we took most of JULY them.

1 93. 75. 5—It is very hot for the whole day and night, and all

2 80. 65. the larvae, which we are rearing in the open air die. Only those which we put in the ice-box are not killed by the heat.

(To be continued.)

#### Two Visits to Finland. (With Plate.)

By Dr. E. SCOTT.

As there are few recent records of English collectors visiting Finland, it may be of interest to give an account of two short holidays that I spent there: the actual dates in the country being 26th June-12th July, 1933 and 11th June-27th June, 1934. On the first visit my wife and I were accompanied by Rev. G. Wheeler, who has written an account in the Entomologist's Record for October and November, During this holiday we made two places our headquarters. Mouhijärvi in S.W. Finland is rather a well cultivated district with flowery meadows reminiscent of subalpine valleys, and steep rocky woods mainly of pine, birch and larch, but little primitive undrained bogland. Savonlinna in the S.E., is situated in a wilder area, where cultivation has made little progress. The town itself, of picturesque, wooden houses, is built on two islands and the shores of a channel connecting two lakes in that complicated maze of land and water, which is central Finland. Our visit last summer was timed a fortnight earlier in the hopes of obtaining certain northern species, for which we were too late in 1933. My wife and I took a small Singer car and succeeded in covering a good deal of ground, and visiting places, which would otherwise have been inaccessible in the limited time at our disposal; for travelling by rail in Finland, though comfortable enough, is a slow business. After landing at Helsingfors we travelled east along the coast as far as Viborg; thence we proceeded north, following the Saimaa canal, a very beautiful road, eventually turning North-East for Punkaharju. Our journey led North to Koli and Kajaani. then turned South to Isalmi, Kuopio and South-West through Yvaskÿla and Tampere to Mouhijärvi. From Mouhijärvi we travelled direct to Helsingfors staying for one night at Aulanko-Karlberg. This tour encircled south and central Finland. Our furthest north was Kajaani between latitude 64° and 65°, but, as our trip there was spoilt by continuous rain, no collecting was done north of Isalmi between latitude 63° and 64°. This was very disappointing as our run in the rain traversed the wildest and most promising country that we had seen and we had no time to wait for the weather. On the whole, weather conditions were unfavourable but several interesting species were found in some numbers and as a pleasant holiday in novel surroundings it was hard to beat. The simplest way to visit Finland is by sea from Hull to Helsingfors on the Finnish line, for which John Good and Sons are agents and from whom all particulars and much useful information can be obtained. The Finnish boats are comfortable without being The journey occupies 4½ days which includes a day very spacious. spent at Copenhagen. There is much of interest to be seen on the voyage as land is in sight for most of the journey. The cuisine must be experienced to be believed, as neither the Finn nor the Scandinavian believe in under nourishment and the Smorgäsbord offers a bewildering variety of dishes to appeal to all palates. A day of enforced abstinence owing to the vagaries of the North Sea or the Baltic comes as a blessing in disguise.

The butterfly season in Finland commences in the middle of May and is virtually over by the end of July. Most of the purely northern species are to be taken in June, unfortunately a very uncertain month

as regards weather. July can be relied upon to be fine and very hot but by that date, except perhaps in Lapland, freija, frigga, embla, jutta, etc., are quite over. The flight period of a species tends to be very short. In the south and west the country is undergoing rapid development, the clearance of forest and peat bogs, the hunting grounds of the naturalist, going on unceasingly. However, as we travel east or through Central Finland towards the north, we traverse vast areas of virgin country, forest and marsh, and realise that much of its primitive beauty is likely to remain unspoiled for many years to come. The tourist travels either by rail or bus or lake steamer. these the bus is probably the quickest. By taking the car we had a great advantage in spite of the unavoidably bad condition of many of the roads. On seven of the nights of the tour we slept out in a small There are not enough mosquitos south of Lapland to be The nights during June are bright but rather cold and we understood from the natives that camping out is not generally

indulged in by holiday makers until July.

There is a pocket book, published recently in Finnish, dealing with the Rhopalocera, Sphinges and Bombyces. This is well illustrated and contains methodically compressed information on all the known species that occur in the country. As a guide to areas of distribution, time of emergence, foodplants of larvae, etc., it is invaluable, and can be readily understood without any real knowledge of the language. 105 species of butterflies are recorded as Finnish. Of these Pieris napi var. bryoniae, Colias nastes var. werdandi, C. hecla, Melitaea iduna, Brenthis chariclea, B. polaris, B. pales, Erebia medusa var. polaris, E. disa, E. lappona, Oeneis norna, O. bore, Latiorina aquilo, and Hesperia andromedae are only to be found in Lapland and the extreme north. remarkable that such southern species as Brenthis amathusia, Epinephele lycaon and Scolitantides orion occur locally along the southern coast which boasts a dry climate and, in spite of a long severe winter, can offer a cloudless July with a temperature which can vie with the During these two visits we encountered 58 species of butter-Many of these have been dealt with by Mr. Wheeler, and the reader is referred to his article. I append comments on a few additional species and on others which I had a better opportunity of observing than on our first visit.

l'apilio machaon.—Rather common. A large pale form. We found both sexes commonly on 13th June, by the roadside along the Saimaa canal and met with it frequently during the succeeding week.

Aporia crataegi.—Common. First met with on 12th June. The 3 s are dead white with the nervures rather heavily dusted with black

scalès. I do not possess a 🛛 .

Colias palaeno.—A fine medium sized form. The 3's of a pale greenish yellow and 2's white. Palaeno breeds in the peat bogs, where its foodplant Vaccinium uliginosum is common, but it is a wanderer and can be met with flying along roadsides and banks at some distance from a suitable habitat. I took both sexes as early as 18th June, and as late as 4th July in good condition.

Melitaea maturna, var. uralensis.—This butterfly is considered common in Finland but I only met with it at Punkaharju and around Savonlinna. It is very common at Punkaharju where I found larvae, pupae and a few forward imagines on 14th June, 1934 and a few worn

specimens on 8th July, 1933. I could not determine the foodplant of the larva.

Brenthis aphirape var. ossianus.—This butterfly swarms in the bogs and was first found on 13th June near the Saiman canal. It is virtually over by the end of the month when it is replaced in identical situations by B. arsilache. It has a peculiar crawling flight like that of Melitaea aurinia. It never leaves its breeding grounds and, in my experience, is attracted to Vaccinium oxycoccus, which I believe to be its foodplant and is invariably present in its habitats. I have seen  $\mathfrak P$  s settling upon this plant but have not found the ova. Both upper and underside of this pretty butterfly are extremely prone to variation.

B. euphrosyne.—Occurs commonly: particularly in dry woods. First met with on 11th June, it was going over by the end of the month when B. selene was getting common in meadows and ditches. It is a small dark race, fingal, with a neat undersurface which sometimes in the 2 strikingly resembles that of aphirape var. ossianus. I have seen

B. euphrosyne on the wing as early as 7 a.m.

B. freija.—I took a slightly worn 2 in a large bog near Isalmi on 19th June. This was the only specimen seen. B. freija flies throughout Finland but is most common in the north. It is the earliest Brenthid to emerge and must be sought in southern and central Finland from the middle to the end of May. It has a very short flight period.

B. frigga.—I took a fresh ? in a sloping field near Kuopio on 20th June, and a very worn specimen in a bog near Nurmi on 22nd June. B. frigga is locally common in Finland. I do not know whether my want of success was due to ill luck or whether I was too late for its period of emergence.

(To be concluded.)

#### OTES ON COLLECTING, etc.

Beating for Calymnia Larvae in May.—The larvae of all four British species in this genus are to be found upon the foliage of the common elm (Ulmus campestris), the most plentiful, C. trapezina, being all too easily obtained. But while this larva is a cannibal as regards many species of other larvae, it does not attack its own kin and can be reared in quantity. Many fine forms are to be obtained and it is a species well worth breeding.

C. affinis is the next more easily obtained species; it can be beaten in quantity in most areas where elm is plentiful; it falls on the sheet and at once compresses itself in such a way as to appear angular; being bright green marked in white, it is at once to be distinguished from the dull grey green, almost transparent, larva of C. trapezina with

its black raised dots.

C. diffinis is almost as plentiful in its favoured haunts as the last, but dislikes daylight and is seldom beaten from the branches proper. It favours the foliage springing directly from the trunk, where it can lie concealed in groups of pendulous leaves. This beautiful clear, pale green, cylindrical larva has a mahogany red head, and cannot be confused with any other larva that I know of. (One form of the larva of affinis has a black head.) [But, unlike diffinis, the tubercles are black in this form.—E.A.C.]

C. pyralina is decidedly more local if not actually much rarer than the other three species. It seems to prefer small bushy Elms growing in wood clearings or along wind blown ridges, its larva can be beaten like those of C. affinis from the branches. It is green, cylindrical and has a small white line with a black edge to it, just behind the head on the sides.

As before noted *C. trapezina* varies greatly. *C. affinis* has 4 distinct and equally plentiful forms. Greenish grey with and without white costal markings; reddish ochreous with and without white costal markings, and a rarer form which is slatey grey. There are also nice abs. to be had outside the general variation.

C. diffinis varies little; the two main forms being pale red with greenish tinge on the darker markings, and dark red without such green

tinge, the first form is usually found in the ??.

C. pyralina has three colour forms, pinkish red, purple and brown, of which the last is much the rarest.

All these larvae are full fed in late May.

A Few Days Collecting at Killarney.—My friend Mr. Bullock having told me that *Pterostichus aterrimus*, Herbst., and *Otiorhynchus porcatus*, Herbst., were to be taken at Killarney, I decided to run over in March and try for them. Some 15 of the former were taken under turf on the bank of a small lake or swamp, and 21 of the latter by sifting moss. The following other captures may be mentioned:—

In moss, Calodera aethiops, Gr., not uncommon, Myrmedonia collaris, Pk., with Myrmica laevinodis, Nyl.; Gymnusa brevicollis, Pk.; Encephalus complicans, West.; Philonthus micans, Gr., Gabrius appendiculatus, Shp.; Lathrobium quadratum, Pk.; Evestethus ruficapillus, Lac. Stenus vafellus, Er., S. fuscipes, Gr.; Silpha subrotundata, Leach, red form (the red form of the English S. atrata, L., is called ab. brunnea, Hbst., but the aberration of the Irish insect has not got a name. I propose ab. castaneicolor, n.ab. for it); Bibloplectus pusillus, Denny, common; Bythinus bulbifer, Reich.; Bryaxis sanguinea, Reich. ab. nigropygialis, Fair.; Lamprosoma concolor, Strm.; Phyllotreta exclamationis, Thnbg.; Caenopsis waltoni, Boh., common; Alophus triguttatus, F., not nncommon; Liosoma ovatulum, Clair.; Sciaphilus muricatus, Fb.

Running on roads, Staphylinus caesareus, Ceder., this beautiful insect is much commoner in Ireland than in England; Leistotrophus murinus, L., Hister 12-striatus, Gyll., a very large specimen (at Mallow); Hylurgus piniperda, L., with red elytra = ab. rubripennis, Reitt. (also at Mallow). This aberration has not, I believe, been recorded by name

in either Irish or English literature.

By beating blackthorn blossoms, Calodera aethiops, Gr., Bibloplectus pusillus, Denny, Cryptophagus scanicus, L., Otiorhynchus scabrosus, Marsh., and Anthonomus rufus, Schön., new to the Irish List of Coleoptera, of which some 15 specimens were taken. In England it has only been found at Fairlight near Hastings, where a specimen was beaten off blackthorn in 1892, by the late W. H. Bennet. I introduced it to the British list on this specimen. Another example was taken by Sir. T. Hudson Beare under ivy bark in the same locality a few years later, and in 1930 Mr. Tomlin secured a few examples in the same locality.—Horace Donisthorpe, F.Z.S., F.R.E.S., etc. (Entomological Department, British Museum, Natural History.)

RESTING HABITS OF CATOCALA NUPTA, POLIA CHI AND BRYOPHILA PERLA. - Mr. Nicholson's note on Catocala nupta prompts me to write on the subject of the resting habits of this and the other two abovementioned species, which I have observed over a series of some four or five years on our house and buildings at Pebworth, Worcestershire. On two occasions in one year I saw a C. nupta resting at midday on a cottage door, which was painted red. One of them I disturbed as I thought children might damage it, and it flew straight across the road to a half-timbered cottage, white with black wooden beams, finally settling on one of the black beams, which was in full sunlight as it faced south-east.

There are two main resting places for C. nupta on our buildings one on a stable facing due south, and one on part of the house, which faces east, both positions getting a considerable amount of sun, particularly the stable. The stable front is about twelve feet high, eight feet at the bottom being grey stone, the remainder at the top being old red brick. They usually choose the very top of the red brick portion, close to the eaves but not in the shade. Very often they are lower down on the grey stone—whichever position they choose is exposed to the full heat of the sun. It is quite a usual occurrence to find four or five at once on this stable.

Their alternative position—which is not so favoured but where, on occasions, I have seen three at once almost touching one another, about ten feet up (almost invariably)—is on the end of a small wing which faces east and which therefore gets a good deal of morning sun. This is entirely grey stone. I have only once seen them anywhere else on the house and that also faced east, and was in a sunny corner. The other side of the house is also grey stone and in the shade until evening, but they never rest there.

Polia chi rests only on this shaded side of the house, always on the northern end, and I have not seen them elsewhere, neither does it seem to rest higher than about four feet from the ground. Bryophila perla rests on the stable where C, nupta goes and on the northern end of the shaded side of the house with P. chi, but is found at all heights up to about twelve feet on either wall. C. nupta, of course, also rests on telegraph poles in the district, usually within reach, but often at the very top, and it seems to favour the south-westerly side of them.

-P. SIVITER SMITH. Pebworth, Stratford-on-Avon.

WICKEN FEN FUND.—As most of our readers know, the endowment for the upkeep of that famous collecting ground is inadequate to maintain the area in such condition, that the peculiar flora and fauna does not deteriorate in its character. It is always necessary to ask for additional support from those who are interested in the preservation of this portion of ancient England. The Funds are necessary, not only to support the local custodian, but to ensure labour sufficient to cut portions where the reed is increasing to the detriment of other vegetation, to insure that no one inhabitant increases to such an extent as to threaten the existence of others. To procure this help it is still necessary to ask for contributions towards the expenses of such work. The Committee of Management are strongly supported by the Royal Entomological Society, and every nature lover is asked to contribute towards their labours. The Hon Treasurer is W. G. Sheldon, "West Watch," Oxted, Surrey, who will at all times be pleased to issue permits for observation or collecting on application.—Hy.J.T.

Butterflies of Salonika (Greece).—The following species were taken on the hills around Salonika, up to the level of about 2,000 ft., by Enzo, Erilda and Lycaena Romei, Clorinda Querci and I, from 23rd March to 28th April, 1935. Pararge aegeria, P. megera, Coenonympha pamphilus, Argynnis lathonia, Melitaea phoebe, Vanessa cardui\*, V. polychloros\*, V. atalanta, Polygonia eyea\*, Libythea celtis\*, Tarucus balkanica, Cupido sebrus, Aricia medon, Polyommatus icarus, P. thersites, Cyaniris cyllarus, Scolitantides hylas, Schiff. (baton, Berg.), Lycaenopsis argiolus, Heodes (Rumicia) phlaeas, Callophrys rubi, Leptidea sinapis, L. duponcheli, Pieris brassicae, P. rapae\*\*, Pontia daplidice, P. krueperi, Euchloë crameri\*\*, E. cardamines, E. gruneri, Colias croceus, Frery., (edusa)\*\*, Gonepteryx rhamni\*, G. cleopatra\*, Papilio podalirius, Zerynthia hypsipyle, Schiff. (polyxena, Fb.), Erynnis tages, E. marloyi, Carcharodus fritillarius, Poda. (alceae, Esp.), Pyrgus orbifer, P. malvoides and P. armoricanus.

\* Only old specimens which had gone over the winter. \*\* By the end of April a few specimens of the second brood emerged and flew together with those of the first brood.—Orazio Querci. Salonica.

#### QURRENT NOTES AND SHORT NOTICES.

With the current issue we publish the Title Page of Volume I. of the Supplement to Tutt's British Noctuae. A complete set of the parts unbound is obtainable from the Treasurer, Mr. H. W. Andrews, 6, Footscray Road, Eltham, S.E.9, on receipt of 10/6 including postage. Now is a good opportunity for those interested in the British Noctuae and their Variation to commence subscribing to the magazine to ensure the continuation of the work from June next.

May we ask for information as to the variation in the Agrotids which are the next group to be considered. We do not anticipate that Vol. II. will take as long to complete, as most of the species were dealt with in a much more thorough manner than were the species in Vol. I.

Part 3 of Vol. I of the Jr. of the Society for British Entomology is issued. It contains nearly 30 items in its 28 pages, with one plate and one diagram. Much of the matter deals with what lepidopterists call "other orders," Hymenoptera, Neuroptera, Diptera, Trichoptera, etc., mostly valuable records of the occurrence of British insects but little studied so far.

The first part of the second volume of the Magazine published by the Deut. Ent. Institut of Berlin Dahlem is to hand. It consists of 80 pp. with 2 plates and sundry figures, and is a worthy successor of the previous issues from this Museum. The Notes on the Entomological World remind us of the 75th birthday of Dr. Seitz, the 70th birthday of Dr. Handlirsch and the 90th of Raffaello Gestro of Italy.

We have to thank Herr G. Warnecke of Kiel, who has sent us a separate of his contribution to the commemoration number of the 50 years existence of the International Entomological Association of Frankfurt a. Main, "Fidonia (Isturgia) carbonaria, Cl., a northern and alpine Lepidopteron as a native of Schleswig-Holstein." There are 26 figures and maps. The two last are very enlightening as to the

distribution: the Alps of Switzerland, the higher mountains of Scotland, Denmark, Norway and Sweden, Finland, N. Russia, and N.E. Siberia. A very discontinuous distribution. A group of figures show the extreme similarity of *T. carbonaria* and *Ematurya atomaria* f. minuta, which fly together. There are a few records in other far scattered places, but the author throws doubt on these as probably either *E. atomaria* or *Parascotia* (Boletobia) fuliginaria forms.

A reprint of an article in the Jr. of the Min. of Agri. dealing with the Colorado Beetle, since the first account in January, 1934, has been received. It contains information up to February, 1935, as to the occurrence of this dreaded pest. Intensive search only produced two living examples and a very few dead ones, showing that the precautionary measures have been so far eminently successful, although time must be given to learn whether absolute success has been reached. A reproduction of the section of the survey map is published, showing the exact positions of the various occurrences of the beetle on both the Essex and Kentish areas infested.

Bulletin 93 of the Ministry of Agriculture, Pests and Diseases of the Sugar Beet, is an exhaustive treatise on the subject, the result largely of a visit to the beet-sugar growing areas of the continent, by the Advisory Officers of the Ministry. It is illustrated by a number of figures of plant and animal pests and of the damage caused by them, with suggested methods of dealing with the various troubles. It would seem that such a Bulletin would have been more useful earlier in the ten year period, while such huge government subsidies were being bestowed on the industry, rather than at the end of the experiment when it is recommended that owing to the non-economical results no further aid be granted. May cane-sugar come to its own again.

#### REVIEWS AND NOTICES OF BOOKS.

Still another of those admirable little books on the Fauna of the British Isles has reached our table from Messrs. Fred. Warne and Co., The Spiders and Allied Orders of the British Isles, by T. H. Savory, M.A.: Although not exhaustive as to species this volume is yet so admirably arranged and illustrated as to inform us clearly of the characteristics of all those species likely to come under notice in most areas and at the same time indicating those species which are extremely local and evasive by reason of their specialized habits and requirements. Thereare 95 plates with 63 figures in colour and 130 illustrations from drawings and photographs, and 61 additional diagrams in the text. The Introductory Remarks deal, in a general way, with structure, lifehistory, collection, methods of study and classification. These details are followed by the treatment of each family with the genera and many The Allied Orders treated of at the end include a brief account of the Harvestmen, False Scorpions, and Mites. A complete list of British species in each of the two first is given, which lists are for the first time available for the general student, but the last order has such a vast number of little known species that it is impossible to give much detailed information in the small space available. The presentation of the volume is in the usual adequate way of these publishers and the book can be recommended as of great value to all lovers of nature. Its price is half a guinea.—Hy.J.T.

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#### EXCHANGES.

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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.

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.

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Greece.

#### MEETINGS OF SOCIETIES.

Entomological Society of London.-41, Queen's Gate, South Kensington, S.W. 7.

8 p.m. June 5th.

The South London Entomological and Natural History Society, Hibernia Chambers, London Bridge. Second and Fourth Thursdays in the month, at 7 p.m. June 18th.—Hon. Secretary, S. N. A. Jacobs, "Ditchling," Hayes Lane, May 23rd. 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,

Entomological Section, Birmingham Natural History and Philosophical Society.—Field Meetings.—26th May (Malvern); 7th July (Whixall Moss); 18th August (Cranbam); (Dolgelly, date not yet fixed). Evening Meetings .- Third Monday in every month, recommence in the autumn.-Hon. Corresponding Secretary, P. Siviter Smith, Pebworth, Stratford-on-Avon.

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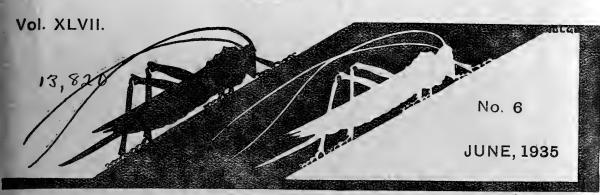
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#### The Entomology of a Heron's Nest.

By HORACE DONISTHORPE, F.Z.S., F.R.E.S., etc. (Department of Entomology. British Museum. Natural History.)

On 21st December, 1934, Mr. C. L. Collenette brought to me to the Museum a nest of a Heron (Ardea cinerea, L.), which had been blown down from the branches of a Spanish Chestnut in Sidmouth Plantation, Richmond Park, Surrey, between 14th and 21st of December, 1934.

The nest consisted of a large number of twigs and small branches, and after being sifted, it was finally established in a large glass recepticle, enclosed by muslin.

The following creatures were either taken by sifting the nest, or

have since bred out of it.

#### COLEOPTERA.

Hydrophilidae.—Cercyon flavipes, F.

STAPHYLINIDAE.—Crataraea suturalis, Mann.; Oxypoda lividipennis, Mann., O. opaca, Gr., in numbers; Atheta (Bessobia) fungivora, Th., A. (B.) occulta, Er., A. (Atheta) nigricornis, Th., abundant, A. (Dimetrota) marcida, Er., in some numbers, A. (Acrotona) fungi, Gr.; Sipalia circellaris, Gr.; Tachinus humeralis, Gr., T. subterraneus, L. and ab. bicolor, Gr., T. marginellus, F.; Quedius mesomelinus, Marsh, several; Xantholinus longiventris, Heer.; Lathrimaeum atrocephalum, Gyll.; Homalium rivulare, Payk.; Proteinus ovalis, Steph.

SILPHIDAE.—Choleva grandicollis, Er., C. tristis, Pz.

HISTERIDAE.—Carcinops 14-striata, Steph.; Gnathonous punctulatus, Th.

Cryptophagus scanicus, L.

Dermestidae.—Dermestes lardarius, L., in some numbers.

Of the above species the only ones which can be considered "birds' nests" species, and are usually, or often, found in such situations, are Atheta (Atheta) nigricornis, Th., Carcinops 14-striatus, Steph., and Gnathoncus punctulatus, Th.

The *Dermestes* is usually confined to towns and houses, occurring in bacon shops, groceries, and the like. It is not often found in the open, and was no doubt attracted by the remnants of fish, and other

carrion in the nest.

#### DIPTERA.

BIBIONIDAE.—Scatopse notata, S., generally bred from stable manure, etc.

Anthomyia procellaris, Rud., probably breeds in various kinds of decaying matter. Fanniata lineata, Stein., has been recorded as being bred from rotten débris in a hollow tree (Verrall Ent. Mo. Mag., 1912, 194).

Helomyzidae.—Tephrochlamys tarsalis, Zett., the larvae of these

flies are scavengers, feeding on animal and vegetable refuse.

Opomyzidae.— Chiromyia sp.? in some numbers. Mr. Wallace Pugh has bred specimen of C. inermis, Coll., from nests of Missel Thrush. He suggests this species may be C. flava, L.

PIOPHILIDAE.—Piophila vulgaris, Fln., is sometimes found on dead birds.

Chloropidae.—Chloropisca notata, Mg., swarming in the nest when first received in very large numbers. Sometimes appears in large numbers in houses. It has been bred from the stems of wild grasses.

AGROMYZIDAE.—Neoneura neotiophila, Coll., has been bred on a number of occasions from birds' nests (Collin, Ent. Mo. Mag. 1930,

87).

Borboridae.—Sphaerocera subsultans, F., the commonest species of the genus, abundant on carrion, etc. Phaerocera sp.? (probably vaporariorum, Hal.) ??

#### LEPIDOPTERA.

Tinea pellionella, L. (Larvae); T. lapella, Hb.

The larvae of these two moths always feed on animal matter, dry excreta, wool, feathers, etc.

Oecophoridae.—Endrosis lactella, Schiff., Borkhausenia pseudo-spretella, Sta.

#### HEMIPTERA.

HETEROPTERA.—Lyctoris campestris, F., usually found in stables and granaries. It occurs in the deer pens at Windsor. Probably feeds on mites, and the eggs and young of other insects, etc.

#### HYMENOPTERA.

Ichneumonidae.—Phygadeuon rusticellae, Bridg., is always bred from birds' nests. Is probably parasitic on Anthomyiid flies.

PROCTOTRYPIDAE.—Phaenopria cameroni, Kieff.

CHALCIDIDAE.—Muscidifurax raptor, Girault and Saunders.

Pachyneuron sp.?

Cynipidae.—Kleidotoma gryphus, Thoms.

#### COLLEMBOLA.

Entomobrya albocincta, Templ. generally taken under loose twigs, also in old bird's nests.

#### DIPLOPODA.

Millipedes.—Trichoblanjulus sp. (probably guttulatus, Bose).

#### PSEUDOSCORPIONINA.

Obisium muscorum, Leach, often found under stones, among dead leaves and débris on the ground. I have taken it in F. rufa nests.

#### ARANEINA.

Amaurobius fenestralis, Stroem. Stearodea bipunctata, L. Linyphia montana, Walck. Diplocephalus fuscipes, Bl. Dr. A. R. Jackson says these species might be expected to be found in any heap of twigs and sticks.

#### ACARINA.

Pergamasus crassipes, Herm., 5 ♀ ♀.

The common Earwig (Forficula auricularia, L.) and the common woodlouse (Porcellio scaber, L.) were present in more or less numbers.

We are indebted to Mr. C. H. Wallace Pugh for names of the Diptera and remarks, Mr. H. Stringer for the Lepidoptera, Mr. W. E. China for the bug, Dr. Ch. Ferrier, Mr. G. E. J. Nixon and Mr. J. F. Perkins for the Hymenoptera, Mr. H. Britten for the Mites and Millipede, Mr. H. Wallis Kew for the Chelifer, Dr. A. Randell Jackson for the spiders and Mr. H. Wormsly for the Collembola.

#### Cornish Notes for 1934.

#### By CHARLES NICHOLSON.

In Cornwall generally 1934 was on the whole an average year for insects with one outstanding feature of more than ordinary interest. The weather to the end of July was generally dry and sunny, like that of 1933; but, with August, more or less rainy weather succeeded and brought to an end the danger of drought throughout the greater part

of the county.

Although Danaus plexippus favoured Bucks, Devon, Hants, Kent, Pembroke, Somerset, and even Yorkshire, with its gracious presence, Cornwall did not share in the honour, but enjoyed instead the privilege of the extension of Polygonia c-album from the adjoining county of Devon, across which it has been spreading since 1925.\* The Rev. J. H. Adams saw a female of var. hutchinsoni in his study at Landulph Rectory, near Saltash, on 7th (or 9th) July, and another in the same place a few days later. The next was taken by a Plymouth collector near Cawsand on the 18th, and as it was a female (var. hutchinsoni) he kept it for eggs and got about 30, of which he gave me 5, and a dozen to another collector. For some reason there was considerable mortality, a certain number of them failing to hatch, and of those that did a proportion died soon afterwards. Of my 5 only 2 came through and proved to be males with the dark, rather marbled underside. His 8 survivors emerged as 5 males and 3 females, and he writes that, as regards the undersides, the females were lighter in colour and more uniform in shade; the males were darker, much richer in colour, and had fairly prominent white markings at the tips of the forewings, almost invisible in the females, from which I gather that the females were all var. hutchinsoni and the males of the form illustrated at Fig. 4 on Pl. 35 of South's British Butterflies. The next record was a specimen found dead but undamaged at Quethiock, near Liskeard, on 19th July. Then, on Buddleia in my garden, I took a male on 16th September with the very dark, almost uniform, slaty-brown underside with slight green washing, and on the 19th I saw a var. hutchinsoni on the same bush, but unfortunately failed to catch it. I saw neither it nor any others afterwards. Then a perfect specimen was seen on

<sup>\*</sup> Since this was written I have received a letter from Dr. Saunders, of Launceston, who writes that in August, 1933, there was a comma butterfly in his garden "on and off for over a week, and that it was the same specimen I am quite certain, as it had some scales rubbed off from one of its wings." This is therefore the first record for Cornwall so far reported.—C.N.

single asters in a garden at St. Tudy, near Bodmin, on 25th September, and finally a specimen of var. hutchinsoni was seen on 27th September at Newquay, in company with many V. atalanta and a few A. urticae on Escallonia montevidensis. This shrub is one of the less commonly grown species and has very fragrant white flowers. In addition to these records there was a letter in the Western Morning News reporting this species "in large numbers in North Cornwall on 16th April, and again on the 24th we found them surprisingly abundant in the neighbourhood of Maristow, S. Devon." As the writer went on to speak of Colias myrmidone (the Clouded Yellow) having been seen near Bere Alston on several occasions, I wrote to him about both species, expressing doubt as to identity, and, receiving no reply, think it best to ignore the report altogether, in the absence of substantiation.

Aglais urticae, Vanessa atalanta, V. cardui, and Nymphalis io, have been in about normal numbers and all on the Buddleia. V. atalanta and V. cardui were first seen flying about and bickering together around the monument on Carn Brea (740 ft.) in the afternoon sunshine on 15th June; the last V. cardui seen was on Buddleia in the garden on 18th September and the last V. atalanta flying strongly over rough land in the afternoon sun on high ground at Merther near here on 25th

November. There were still ivy and bramble flowers about.

Colias croceus was scarce. First seen in a neighbouring garden here on 27th May; then several in different parts of the county, and finally

one in a Truro garden on 7th October.

Gonepteryx rhamni has been much more frequently in evidence than usual. First seen (3) on 25th March near Tresillian Village. May and subsequently many ova were found on my small buckthorn bushes in the garden. As there is no Rhamnus catharticus in the county, except in my garden, so far as is known, the local butterflies must feed up on frangula, which is local and none too common; but I noticed that most of the eggs were laid on catharticus in the garden although frangula (of which I have only 2 bushes against 7 catharticus) was well patronised also. The larvae were so generally victimized by Anilasta ebenina (the ichneumon that comes from the small black-banded dullwhite cocoons so commonly found on buckthorns) that scarcely any could have survived. I saw about half-a-dozen well grown ones in July, but could not find any pupae, although I searched. there was a sprinkling of butterflies on the Buddleia in August, so perhaps some of the larvae came through, and I saw a pair near Tresillian Village also, which are not likely to have been any of mine!

Of the "Whites," P. brassicae was very common, especially on the Buddleia. First seen 12th May, last seen 5th October. Rapae was decidedly less common than brassicae. First seen 29th April, last 5th October. Napi was decidedly scarce; in fact it has been getting

scarcer of late years and I am at a loss to understand why.

Eumenis (Hipparchia) semele. Although there is no heathland hereabouts except the patch in the garden, this species turns up yearly (since 1930) and there was a female on the Buddleia on 30th July and

another (or perhaps the same one) on 18th August.

Pararge aegeria and P. megera were as common as usual in the district, the latter perhaps rather commoner than usual. P. aegeria first seen (in garden) 30th April; last on 9th October. P. megera first (in the verandah) 29th May; last at Lady's Wood near Truro, 26th August.

Aphantopus hyperantus. First seen (on the River Drive here) 1st July. One at Tresillian 6th July. One in garden 3rd July. One in verandah 18th July. These last two may have been the same individual as this species is scarce hereabouts.

Coenonympha pamphilus as scarce as usual hereabouts, but several

seen near Lady's Wood, 22nd August.

Chrysophanus phlaeas. Not so common as in 1933. First seen (a few near Lady's Wood) 14th August; then several hereabouts, including one on Buddleia (17th August), one on Sedum spectabile and one on Eupatorium weinmannianum on 25th September. Last seen 5th October.

Polyommatus icarus. Commoner generally than I have seen it hitherto in Cornwall. First seen (in garden on Hippocrepis comosa) 7th June. Many at Lady's Wood 14th and 22nd August. Common on rough rushy ground near Tresillian Village on 26th August, the

last date on which it was noticed.

Lycaenopsis (Celastrina) argiolus has also been much commoner than in recent years. First seen (in garden) flying around holly and laurestinus flowers 4th May, and then daily until the 26th. Second brood in garden 14th July, 18th and 19th August, These Lycaenids are not attracted to Buddleia, probably because the corolla tubes are too long for their tongues.

(To be concluded.)

#### An Account of my Studies in the Biology of Pieris rapae. III.

By ORAZIO QUERCI.

(Continued from p. 61.)

THE SITUATION ON 2ND JULY, 1932.

After the massacre of larvae, produced by the heat on 1st July, the situation is about as follows:—

Second Brood.—Ended.

Third Brood.—There are the adults emerged by the end of June and at the beginning of July, and many chrysalides formed from 19th June to 2nd July, which will produce adults from 3rd to 14th July.

Fourth Broad.—There are many chrysalides, formed from 30th June to 2nd July. The larvae hatched on this last day were not injured by the heat, nor were eggs laid from 29th June to 2nd July.

Note.—From 20th to 23rd June, the adults of the second brood flew together with those of the third. Probably some crosses were formed.

#### THE CLIMATE FROM 3RD JULY TO 20TH JULY.

From 3rd to 8th July it was not very hot, and but a few larvae in our cages died. Later on, the heat increased, and only some of the larvae which became mature more rapidly succeeded in pupating. All those which, having less vitality, or living upon a stem which dried, delayed to grow and rotted. The vital limit for the larvae was surpassed on 13th and 14th July. The intense heat began at noon of the 13th, at 4 p.m. the temperature rose up to 92°, and it was about 84°-86° until midnight. All our larvae died. The day following the

heat continued, reaching 90° at 2 p.m. but it soon decreased to 80°, and in the night the temperature was about 76°. A few of the larvae, which had hatched (after three days only since egg laid) in the evening of 14th July, did not die. On 19th July the temperature was 90°-91°

for a long time in the afternoon, and in the evening it was still 88°, dropping to 71° near midnight, when all our larvae, kept in the open air, were collapsing. By the end of July the meadows of the Park Way were barren and, for lack of any shelter, I think that, also in that place most larvae were killed by the heat. This seems to be proved by the scarcity of *Pieris rapae* from 26th July to 10th August.

T... W W G

- 3 81. 63. 15—The chrysalides of the third brood continue to produce adults.
- 4 78. 68. 0—The bad weather delays the emergence of the pupae.
- 5 82. 62. 14—Only a few "Whites" are on the wing in spite of the lovely day.
- 6 73. 65. 0—The temperature is low, and it is quite cloudy and raining.
- 7 85. 66. 58—Specimens of the fourth brood should begin to
- 8 85. 68. 53 emerge, and they meet with those of the third
- 9 89. 68. 60 brood. Eggs of the fifth brood are laid, some crosses being among them.
- 10 89. 70. 56—The heat increases, and some larvae die.
- 11 89. 74. 62—Owing to the quantity of heat the eggs hatch after
- 12 84. 69. 49 three days, however the duration of the life-cycle
- 13 92. 74. 55 was never shorter than 18 days for the "Whites" which we reared in the year 1932. It is very hot.
- 14 90. 76. 51—The heat continues, and all our larvae die, except
- 15 87. 71. 52 those which we put, for some time in the afternoon, in the ice-box at about 60°.
- 16 86. 70. 83—The emergence of the third brood should be ended,
- 17 88. 70. 88 but the chrysalides of the fourth brood continue to produce many adults.
- 18 87. 72. 88—When it is very hot the "Whites" have a short life,
- 19 91. 71.125 and I believe that the flight period of the third brood ends to-day.
- 20 83. 73.108—All the larvae which we are rearing die save those in the ice-box. The country is barren, most plants are dry, but the *Lepidicum virginicum*, on which the caterpillars of *Pieris rapae* feed, is yet verdant.

(To be continued)

#### Notes on a Visit to Northern Natal and Zululand.

By J. SNEYD TAYLOR, M.A. D.I.C., F.R.E.S.

At the end of January, 1930, while my headquarters were still at Barberton in the Eastern Transvaal, I was sent to the cotton growing areas of Northern Natal and Zululand to investigate the status of the Red Bollworm (Diparopsis castanea, Hmpsn.) in those parts. For some time past it had been thought that this pest was kept in check by

natural agencies in these areas, as reports of extensive damage on the part of the insect had been few and far between. Considerable numbers of the Chalcid egg parasite, *Trichogramma lutea*, Gir., had been obtained from the eggs of the bollworm near Magut, Northern Natal, a year or two earlier. The main object of my journey was to ascertain whether it was the case that Red Bollworm was controlled by its natural enemies, as well as to investigate the question of its

wild host plants.

Accompanied by my wife and a native boy, I left Barberton by car on 28th January. Our first port of call was to be Magut, and the direct route lay through Swaziland. Owing to wet weather, however, and the appalling state of the roads, we had to make a long deviation through the high and middle veldts of the Eastern Transvaal, but even so, we were held up by the state of the road, and met with various vicissitudes, including being bogged up to the axles and smashing the oil sump on a boulder. On the last day of the journey to Magut, and between that place and Vryheid, we passed through some beautiful country, and were crossing and travelling along the tops of mountain

ranges most of the time.

Magut is situated on the top of a high and steep hill surrounded by undulating country with mountains beyond. The place consists of a hotel, store, post office and a few dwelling houses. Until shortly before the time of my visit it was the headquarters of a large cotton growing company, since defunct. From the hill there is a fine view which includes parts of Natal, Zululand, the Transvaal, Swaziland and Portuguese Territory, while glimpses of the Pongola River are also to be seen. The climate on the hill is comparatively pleasant, but down below in the valley it is intensely hot, and malaria is common. Most of the land below had been, and some of it which belonged to private individuals still was, under cotton. There were many acres of abandoned cotton lands formerly belonging to the company, an ideal

During the ten days while we were there I spent most of my time collecting Red Bollworm eggs at the spot where T. lutea had been found before. This was in the neighbourhood of Pongolapoort on the Lebombo Flats, some twenty-six miles from Magut. The country hereabouts is low lying and most of it is covered by bush. The climate is intensely hot and parts of it are infested by tsetse fly (Glossina pallidipes, Austen). To reach this place from Magut one has to descend into the valley, cross the latter, climb a range of hills known as the Rooirand, and then descend into the Lebombo Flats. The latter lie between the Rooirand and the Lebombo Mountains, through which the Pongola River makes its way to Portuguese territory at Pongola

Poort.

breeding ground for pests.

It was not work collecting eggs, of which there were considerable numbers to be found on abandoned cotton, in the broiling sun. All those collected were sent to Barberton, and some 60% of them were found to be parasitized.

There was little time for general collecting, but a few miscellaneous insects were picked up. These included the Reduviid, Rhinocoris tibialis, St., which I have also obtained at Barberton; the Cerambycid, Pycnopsis brachyptera, Thoms., a common and widespread species; and the Rutelids, Popilia bipunctata, F., also taken at Barberton, Pachnoda

leucomelans, G. & F., and Porphrynota maculatissima, Boh., all three of which were found on cotton. The Eumolpid, Syagrus rugifrons, Baly., a serious cotton pest, of which more anon, was also observed in the

Magut area.

After a stay of ten days duration at Magut we proceeded on into Zululand, entering that territory on crossing the Mkusi River a few miles from Pongolapoort. We then travelled south, passing through park-like and mountainous country most of the time. From Mkusi onwards the roads were excellent. The first night out from Magut was spent at the little town of Nongoma, near which is situated the Royal Kraal of the Zulus. The next morning we crossed the Black Umfolosi River and, later in the day, the White Umfolosi. the country was mountainous and very beautiful, and we passed near the scene of the battle of Ulundi where the Zulus were defeated by After leaving Melmoth, a little town the British troops in 1879. among the mountains, we descended into the Nkwaleni valley, through which runs the Umhlatusi River, and then up again into Eshowe, our headquarters for the next month. Eshowe is the capital of Zululand, and is situated in the mist belt, 1.647 feet above sea level. It is some twenty-five miles from the sea which is visible on a clear day. A pretty little town, it has a strip of natural forest running right into it. trees in the forest are of great height and many of them have creepers and orchids growing upon them, while they afford shelter to large numbers of monkeys. The fields of sugar-cane, which surround the town, together with the forest, give the place a delightfully green appearance, reminiscent of some village in England.

Cotton was being grown in the Nkwaleni Valley, some twelve miles away, and I spent most of my time there with my native boy, by now an adept at the job, collecting eggs and larvae of Red Bollworm, but very few egg parasites and no larval parasites were found. The other bollworms, Heliothis obsoleta, Fabr., and Earias spp., were also in evidence, as well as Syagrus, known among the growers as "Beetle." Among the other insects observed were the Meloids Coryna lugens, Fhs., and Decapotoma lunata, Pall., var. omega, Mars., both of which were feeding on cotton flowers; the Tenebrionid Eurychlora crenata, Sol., which I have taken also at Pretoria; the Brenthid Eupsalis vulsellata, Gyll., a common species at light at Barberton; and the Acridiid, Bulla longicornis, St. The latter is a thick and curious looking grasshopper, a little over two inches in length, and green in colour. The body and wings are of a paper-like consistency. Several people, quite ignorant of insects, however, have taken it for an artificial, and not a real

specimen.

About the middle of March we moved on to Ntambanana, some fifty miles from Eshowe by road, but much nearer as the crow flies, the nearest part of the settlement being only a few miles down the Umhlatusi River from Nkwaleni. At Ntambanana there is nothing except a hotel, post office and store. The district was opened for settlement shortly after the Great War, and most of the farmers are ex-service men. They have had a hard time what with drought, floods and pests, including tsetse which has taken tremendous toll of their cattle. Although most of these settlers are badly off financially, and some in great poverty, they are a fine cheery crowd, and we received much kindness and hospitality from them. The country is undulating,

some of it covered with bush and some grass-covered with thorn bushes scattered about. It would be fine grazing country but for the tsetse fly. At the time of my visit many of the farmers were planting cane, but there was a considerable amount of land under cotton, as well as many acres of abandoned cotton.

(To be concluded.)

#### OTES ON COLLECTING, etc.

MICRO-LARVAE FOR THE MONTH OF JUNE.—This should be a busy month in every class of locality, for the larva collector. in open woods should produce the larvae of Eurhodope suavella, in a dirty looking web attached to the stems, more easily detected by fresh web at one end. In a small mass of dead and drawn together leaves of oak, the larvae of Acrobasis tumidella = zelleri will be found. Rolled up leaves of the maple will produce the glassy looking larvae of Argyrotoxa forskaleana, and the neatly folded up leaves of the wild rose will produce larvae of A. bergmanniana. The rolled leaves of birch will produce larvae of Eucosma solandriana, a species well worth breeding again and again for the numerous varietal forms that are always bred. In the chinks of bark of the oak one may find the cocoons of Cerostoma alpella and sloe and wild apple when beaten will afford the larvae of C. horridella, recognised by their activity when in the tray. The species is local at Epping and Ashtead. In the same way we can get C. scabrella larvae from hawthorn. At the same time the cases of Coleophora nigricella are generally abundant, and the dense webs of the gregarious larvae of Scythropia crataegella will often be met with in similar situations. Dogwood may have its leaves mined by the larvae of Antispila pfeifferella, which cut out an oval case and fall to the ground, waiting until spring before they emerge. The snail-like tracks on poplar leaves produce the larvae of Phyllocnistis suffusella. Artemisia vulgaris in waste places with drooping shoots indicate the presence of the larvae of Exacritia allisella. search in the early part of mid June on the undersides of leaves of Centaurea nigra may show the cases of Coleophora conspicuella. Of good size, black, straight, with a curve at the anal end, the cases are quite conspicuous, but to breed are usually most difficult. of the same plant may harbour some small, thin, straight cases which will produce later the imagines of C. alcyonipennella, while the drawn together shoots will contain the larvae of Depressaria liturella. Similarly in the drawn together shoots of Burdock the larvae of D. arenella may be found locally. On the basal leaves of Ballota nigra below, the flat, fiddle-shaped cases containing pupae of Nemotois fasciellus (schiffermüllerella) occur and the ground below should be well searched. Angelica sylvestris in damp places will have the tops drawn together by larvae of Depressaria angelicella and similarly the tops of meadow-sweet will produce larvae of Peronea shepherdana. The reddish larvae found by pulling apart the spun-up shoots of Genista anglica in the silken galleries are larvae of Stomopteryx (Gelechia) albipalpella, and the curiously folded up leaves, three together, of Lotus corniculatus will, by their partially bleached appearance, indicate the presence of the larvae of S. (C.) taeniolella. The neatly folded conical habitations made of the leaves of Hypericum perforatum indicate the presence of the larvae of Gracillaria

auroguttella. Similar cones on willows and sallow are formed by the larvae of G. stigmatella. Oak trunks will always produce the crawling larvae of Coleophora lutipennella seeking suitable places for settling down to pupate. Conspicuous blotches on bramble leaves will often indicate the presence of the green, hairy larva of Chrysocorys festaliella on the underside, where later the beautiful net-like cocoon may be found. The mines of Lithocolletis sorbi are to be found on the underside of the leaves of Pyrus spp. and Prunus padus. The species of Pyrus and Prunus should be well searched for mining larvae of the Lithocolletids L. concomitella, L. blancardella, L. spinicollella and L. cerasicolella may be expected on their respective species of bush. In early July the webs of the larvae of Ilythia carnella become more conspicuous in their dense white webs with blotched leaves of Lotus. The green, red-lined larvae of Rhodophaea advenella can now be beaten from hawthorn. the living bark of ash, pollarded trees as a rule, the larvae of Euzophera (Myelois) pinguis are to be found, their presence being indicated by a few long grains of frass blocking the original round holes of entrance. Where Sedum telephium occurs it may be searched for the rambling webs of the larvae of Hyponomenta vigintipunctella. This is the great month for Depressaria larvae particularly on Umbelliferous plants.

The Larval Period of Aegeria apiformis, Cl.—In the Entomologist's Record, 1933, 47, 95, I wrote a note on the life-history of this species and said that larvae apparently in the last instar were found between February and April, and drew the conclusion that the larvae pass nearly a year in their final instar. My conclusion is incorrect. This year I found a larva on 20th April, which appeared to be full-grown. It continued to feed and changed its skin between 7th and 14th May. The head however is almost the same size as in the previous instar. This shows that the large larvae found in the early spring are not in their last instar. They change skin again and make their cocoons in the autumn, but in the final instar they are very little larger than in the penultimate one.—E. A. Cockayne (D.M., A.M., F.R.E.S.), 116, Westbourne Terrace, W.2.

Resting Habits of Catocala nupta and Bryophila perla.—Mr. Siviter Smith's notes on p. 66 are very interesting and certainly show that nupta has a taste for resting in the sunshine at Pebworth, but the only three specimens that I have any recollection of finding at rest in the day time do not conform to this. One of these was on a close fence in Epping Forest and one was on the fence around Chingford Mount cemetery; both these face due east. The third was just under the stone capping of a brick pillar terminating a wall at Clapton, and this one faced W.N.W. The first two would get the early morning sun only, and the other the late evening sun shining just above the houses on the other side of the road at a considerable angle. I can't remember whether the third specimen would have the sun in its eyes or not, but none of them would have been incommoded by its heat.

Bryophila perla is certainly not troubled by direct hot sunshine, for I have seen many of them on the flint walls at Sidestrand and Trimingham near Cromer, some of which faced due sonth, and the moths were in all positions on and around the nodules of flint. I used to go down before breakfast to pick specimens before the sun was on them, as there

were very beautiful forms of var. flavescens on the Sidestrand wall amongst the orange patches of lichen so prevalent in the district.

Incidentally, I may say that on that wall I found a specimen of Macroglossum (Sesia) stellatarum on 22nd July, 1894, resting on one of the nodules, where it had presumably spent the night with its head inwards facing the mortar and was waiting for the sun to come around and wake it up.—C. Nicholson, Tresillian, Cornwall. 1935.

XIPHYDRIA CAMELLUS, L., IN WINDSOR FOREST.—On 30th May a specimen of this rare sawfly was taken in Windsor Forest, where it was resting on a pile of wood-what is called "cord wood" in the New Forest. It is very widely distributed—specimens in the British collection of sawflies in the B.M., are from Nethy Bridge, Newcastle, New Forest, and Devonshire, etc., but it is decidedly rare, or at any rate, not often met with. Mr. Perkins tells me you require to find alders in the right condition to take it. I have never seen it at Windsor before.—Horace Donisthorpe.

Dendrophilus pygmaeus, L., in Windsor Forest.—Although I have been searching Formica rufa nests in Windsor Forest for 13 years, I never found Dendrophilus pygmaeus, L., a not uncommon guest with that ant, until 26th May last, when a single specimen was found in a new branch rufa nest. The late Mr. G. Blatch captured it in rufa nests in Windsor Great Park in October, 1887. [Ent. Mo. May. 24 138 (1887)]. Stephens records it from Windsor [Stephen's Manual 152 (1839)].

Formica rufa was more abundant in the Windsor district in those days. It no longer occurs in the Park; near Virginia Water, and beyond Ascot are its nearest localities. This beetle was one of the 147 species recorded from Windsor up to 1923, since that date I have retaken 88 of those species, including the present capture.—Horace

DONISTHORPE.

THE BROAD-BORDERED BEE HAWK MOTH (MACROGLOSSUM FUCIFORMIS) IN WINDSOR FOREST.—On 26th May also, a specimen of this Hawk Moth was found resting on the ground in a ride in Windsor Forest.— HORAGE DONISTHORPE

#### AND NOTES SHORT **CURRENT** NOTICES.

A few sets of the unbound parts of the Supplement to Tutt's British Noctuae are on sale at half a guinea per set and may be obtained from

Mr. H. W. Andrews, 6 Footscray Road, Eltham, S.E.9.

Parts 55 and 56 of the Supplement (English edition) to Seitz Macrolepidoptera of the Palaearctic Region have just come to hand. They consist of 24 pages and three plates of the Geometridae, Mr. L. B. Prout being the author. The plates contain 200 figures of which about a dozen are of aberrations of British species. Short descriptions of the additional forms to ten British species are given, some 38 in number. To Hipparchus papilionaria, 5 new forms to the 4 in the main volume; to Comibaena pustulata, 1 new form; to Euchloris smaragdaria, 3 new forms to the 9 previously; to Thalera fimbrialis, 2 additional to 5 previously; to Hemistola chrysoprasaria, 2 additional to 2 previously;

to Calothysanis amata, 5 additional to 8 previously; to Cosymbia pendularia, 7 additional to 11 previously; to C. annulata, 2 additional to 2 previously; to C. punctaria, 2 additional to 12 previously; and C. linearia, 9 additional to 4 previously. In our List of Varieties of British Geometridae,\* issued with the revisionary aid of Mr. Prout, some of these forms were listed. Altogether among these 10 species no less than 95 named forms with descriptions are included in the Main Volume and the Supplement.

All, who are interested in the Geometers, must have access to these volumes and all institutions, which have libraries, should endeavour to obtain a copy of this work as an essential part of their equipment. Hitherto no work in the English language has given the information here contained, and only, with the greatest difficulty and with almost unlimited time, is it possible for any student to work out the identity of his aberrant forms or to carry on further studies in variation with-

out its aid.

The parts of the main volumes which have just been issued are of the African Fauna; 3 parts of Vol. XV. the African Noctuae, 56 pp. and 2 plts. of 141 figs., and 1 part of Vol. XVI. African Geometridae, 16 pp.

and 1 plt. of 76 figs.

All those interested in Variation should not miss the articles now being published in the fine little Belgian magazine Lambillionea by my friendly correspondent Herr B. J. Lempke of Amsterdam. year so far he has dealt with the early descriptions and the named aberrations of Issoria lathonia, Phragmatobia fuliginosa, and Maniola Variation is one of the lines of entomological study largely to the front in the magazine. The photographic plates of aberrations of Lepidoptera, previously mentioned in this magazine, still continue regularly month by month, and include many forms of species occurring in this country, Argynnis aglaia, Colias croceus, Melitaea aurinia, M. cinxia, Brenthis selene, and Phragmatobia fuliginosa are species of which aberrations have been illustrated recently. The collector of Micros will find "Some observations on the genus Nepticula" very The Editor M. F. Derrenne has kindly pointed out a lapsus calami I made in a letter to him on the identification of the Dianthoecia of the Pyrenees named gedrensis as a ssp. or race of andalusica, in quoting Wagner as the author instead of Schawerda.

In recent numbers of L'Amateur de Papillons during the present year several articles are found which should prove useful to British entomologists. The editor M. Lhomme has contributed a series of articles on the mining Lepidoptera. He has taken the various plants subject to the attacks of these small moths and given the names of the attackers and a short diagnosis of each. Such notes might prove useful in suggesting the discovery of species not yet recognised as occurring in Britain. "Migration of Lepidoptera" contains a large number of references of such occurrences from all parts of the world. There is a list of plants attacked by species of the genus Coleophora each with a list of the case bearers, which have been found attached to it. Nearly every number contains an account of a locality from a collector's experience. Unfortunately the exchanges are so much against this country that but very few collectors from Britain now go on the con-

tinent for a natural history holiday.

<sup>\*</sup> Copies of this List can still be obtained from Mr. H. W. Andrews.

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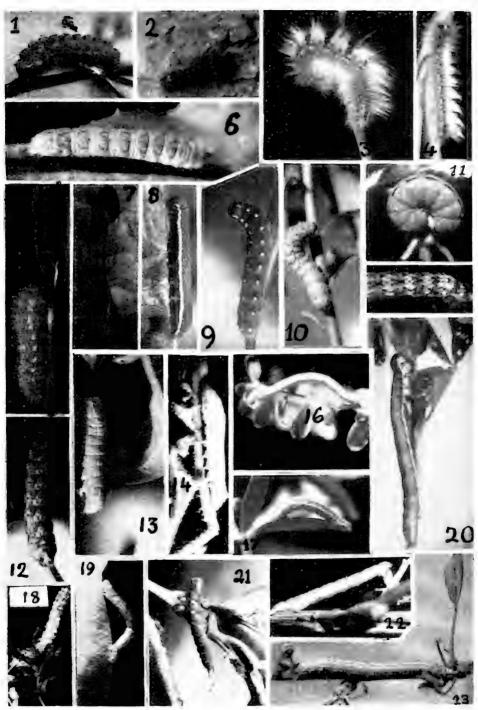
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By Hy. J. TURNER, F.R.E.S., F.R.H.S.

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Vol. XLVII. Plate III.



Entomologist's Record.

Photo. E. P. Wiltshire.



## Notes on a rare publication by Jacob Hübner and its effect upon modern interpretation of Hübnerian Nomenclature.

By FOSTER H. BENJAMIN. (Bureau of Entomology and Plant Quarantine, Washington, D.C.)

The Lepidopterologische Zuträge, by Jacob Hübner, Augsburg, 1820, is recommended by his student, Carl Geyer, in the "Necrolog Jacob Hübner" (1827, Thon's Archiv, pp. 28-31), but seems to have been

disregarded by modern writers, or to have been overlooked.

It is a key to the older systems of nomenclature, and a glossary of terms. It solves the problem of interpretation of Hübner's system both by definitions and by direct comparisons. Hübner's term "stirps" is stated to be nomenclatorially equal to "Phalanx, Linn.," and his "coitus" equal to the unnamed group of Linnaeus marked "\*".

Thus it is shown that Hübner, like Linnaeus, had only a single

genus of butterflies, Papilio, with subdivisions.2

Startling as this may seem to modern authors accustomed to a multitude of genera, the fact also becomes quite clear if the introductions to the various Hübnerian works are carefully read, special attention being paid to those of the Zuträge zur Sammlung exotischer Schmetter-

linge and of the Systematisch-alphabetisches Verzeichniss.

Contemporary workers did not fall into the error of considering that the "stirpes" names were intended to be of generic rank. The reviewer of Hübner's Sammlung exotischer Schmetterlinge for the Allgemeine Literatur-Zeitung (19th December, 1807) very carefully put "Papilio" or "P." before of the names of each of Hübner's plates. Thus the plate of zygia is listed as "P. Lemonias maculata Zygia," with "Lemonias N [obis]" as an elevation of the subgeneric Lemonias, Hübner, to generic rank, the reviewer considering himself responsible for this name as of generic rank. He discussed such Hübnerian names as belonging to families, "Familien" (a term commonly used by most German and English authors of that period to denote generic divisions, i.e., subgenera; see 1812, Trans. Ent. Soc. Lond., Vol. 1). This reviewer also stated that he had 2 text sheets accompanying the The text pages are headed with "coitii" names, but the reviewer considered such names so trivial that he did not comment upon them, although he apparently adopted the name Eurybia from the text of the species halimede and elevated it to generic rank as "Eurybia N." Latreille (1810) and Hoffmansegg (1818) each adopted this attitude, while Ochsenheimer (1816) cited the "stirpes" as "Familien [subgenera] mit gattungsnamen," accepting some, rejecting others, and this was followed by Treitschke.

Furthermore, the Lepidopterologische Zuträge removes any lingering doubt in regard to Hübner's own attitude concerning the publication of the disputed Hübnerian Tentamen. Quoting from page 4, "Ich machte deshalben auch ver fünfsehn Jahren auf Veranlassung der

<sup>2</sup> I consider all such subgeneric names available nomenclatorially as generic

names, provided they do not violate the rules governing generic names.

I had previously recognised the parallel presented by the systems of Linnaeus and of Hübner (see 1926, Proc. Ent. Soc. Wash., 28, 89, last paragraph) but erroneously thought that Hübner had followed Fabricius, rather than Linnaeus, in the nomenclatorial rank assigned relatively large divisions, viz., the "stirpes" (l.c., p. 92).

Natur und ihrer Scheuung einen Versuch eines Schmettlingssystemes...," and from page 9, "Dieser Entwurf ist von dem bekannten Tentamen..." 3

Thus I believe the single rare Lepidopterologische Zuträge, considered in connection with the data presented in my 1926 paper, disproves approximately two-thirds of Opinion 97 of the International Zoological Commission. This Opinion advanced three grounds for discarding the "Tentamen": (1) publication subject to debate; (2) the contained "stirpes" names supergeneric; (3) the contained "stirpes" names "essentially" nomina nuda because of supposed difficulty in the interpretation of such specific names as Papilio machaon except by reference to subsequent literature.

3 My own view is that the Tentamen was issued as the introductory pages of the serial plates of the Sammlung exotischer Schmetterlinge, and its Zuträge zur Sammlung exotischer Schmetterlinge, so that subscribers would understand the generic divisions employed and would purchase the plates as they appeared instead of waiting years for completed texts and indexes. This seems substantiated by Hübner's statements in the Verzeichniss bekannter Schmettlinge, p. 3, and by Geyer's statement in his obituary of Hübner, 1827, Thon's Archiv, p. 29. This is emphasized by Hübner's treatment of Tentamen names in his 1808 Erste Zuträge zur Sammlung exotischer Schmetterlinge (a facsimile obtained through the courtesy of Hy. J. Turner). This treatment constitutes virtual references to the Tentamen. He speaks of "meinen gemeinen Leucomen"; places a new species, gracilis, as a dubious Euclidia; and a new species, tenera, as a false Hypercompe. Without the Tentamen such names as Leucoma, Euclidia, and Hypercompe would have been practically meaningless to subscribers in 1808

<sup>4</sup> While I have personally had no difficulty in interpreting these names by consulting prior or contemporary literature, the *Tentamen* groupings being in the form of a key largely based on larval characters cited as adjectives, the concluding argument of the Opinion seems largely voided by Hübner's own publication of accurate and coloured figures representing each species name employed. These figures were offered for sale many times by Hübner, and were advertised for sale (with two exceptions) in 1805 and again in 1806 (the *Tentamen* was published at a date between late in 1805 and November, 1806). Thus anyone who might have any doubt regarding the original authorship of any specific name cited in the *Tentamen* has only to assign that name to the author, Hübner, in order definitely to fix the name and hence to realize that each of the monobasic "stirps" names (denominated by metonymy, cf. *Tentamen*) is connected to a recognizable and prior published (or contemporary) species name. Hübner should not be condemned for refraining to repeat his own name uselessly 107 times.

#### Pancalia latreillella, Curtis.

By T. BAINBRIGGE FLETCHER, R.N., F.R.E.S., F.L.S., F.Z.S.

This species was very briefly described in 1830 by Curtis from a specimen of which he says "I forget its locality." In 1834 Stephens redescribed it, after Curtis, and gave locality as "near London." Wood (1837) figured it in his Index and gave localities as Cumberland and near London, to which Westwood (1845) added Norbury Park. Stainton's Manual (1859) gives Lewes, Pembury, Epping and near Edinburgh as localities, but since then there seem to have been few records of its capture. I have, as latreillella, one specimen labelled "Rannoch; G. H. Conquest; 17.v.1911"; Mr H. Stringer writes that the Bankes Collection contains a series taken at Aviemore in June 1909 and that the British Collection at the Natural History Museum also

contains specimens, labelled as latreillella by Stainton, from "Pentlands; R. F. Logan; 30.iv.1885"; and Mr. F. N. Pierce writes that he has specimens, without data, from the Threlfall Collection. In his Revised Handbook (1928) Mr. Meyrick stated:—"Locality of Curtis'

example unrecorded, other records doubtful."

From the end of April and throughout May 1935 I have found Pancalia latreillella in some numbers on the slopes of Rodborough Hill, where it was flying freely in the sunshine both in the morning and afternoon and visiting any yellow flowers (Dandelion, Hieracium, the vellow centres of the Daisy, Bird's-foot Trefoil); in the case of the trefoil the moths are always found not actually in the flowers but on the flower-stalks, where they are very inconspicuous, but on the other flowers they are readily visible, although they may burrow down into a Dandelion flower until only the tips of the wings project. leuwenhoekella, Linn., occurred in the same places and at the same time but on some slopes one species or the other appeared to predominate; thus, on one area perhaps eighty per cent. of the individuals were leuwenhoekella whilst on another there was almost a pure culture of latreillella. Under these natural conditions the two species are very similar but latreillella is usually larger and looks darker. however, are readily separable by their antennae: in latreillella the male has the antenna wholly blackish (very occasionally with a faint trace of a whitish bar), the female antenna has an ante-apical white bar and its shaft dilated with scales between this white bar and its base: in leuwenhoekella both sexes have a conspicuous white band before the tip of the antenna, but the shaft is not perceptibly dilated with scales in the female. Also, in latreillella the black apical portion of the antenna beyond the white portion is longer than the white portion (in the female only, of course), whilst in leuwenhoekella this black apical portion is shorter than the white portion. There is no doubt that these two species are amply distinct, although latreillella was sunk as a form of leuwenhoekella by Rebel (Cat. Lep. Pal. II. 188, No. 3616a, 1901) in which he was followed by Spuler. Whether nodosella, Mann, 1854, described from Tuscany, is identical with latreillella, Curtis 1830, as indicated by Rebel and Meyrick, must remain doubtful for the present; it is possible that more than one species may be concerned. present I am not wholly satisfied that the Scotch specimens are really conspecific with the English latreillella, but a German specimen, received from Staudinger as latreillella, seems to be identical with my example from Rannoch.

The larva of Pancalia leuwenhoekella has been found to feed in the leaf-petioles and later on the roots of Viola canina and V. hirta (Fletcher, E.M.M. XXIX. 81-82: 1893). There are scattered plants of V. canina on Rodborough Hill, but, I should imagine, insufficient to feed the large number of larvae which must live here, and perhaps the larvae feed on other plants, such as Helianthemum, which occurs in profusion. As the specimens of P. latreillella found sitting on flower-stems of Lotus corniculatus were nearly all females, it is possible that they oviposit on this plant, but examination of the flower-heads on which they were found failed to reveal any eggs.

#### The Genus Athetis, Hb. (Caradrina, Ochs. & Tr.).

The following analysis is an abstract of a table of the whole genus communicated to the magazine L'Amateur de Papillons. The complete table includes the whole of the species at present considered as members of the genus. The abstract here given contains only that portion which deals with the limited number of species found in the British Isles.

1.	Orbicular large, distinct, with light surround.	2
	" small or suppressed.	6
2.		3
	,, most part whitish.	4
3.	Reniform with complete light surround. alsines, Brah	m.
4.	fw. reddish grey; coarsely powdered with black. superstes, '	Γr.
	,, clear grey, to grey brown, finely powdered with black.	5
5.	Inner and outer lines suppressed on fw. blanda, Sch	
	,, ,, distinct. ambigua, Sch	iff.
6.	White points around reniform.	7
	No white points around the reniform.	16
7.	Submarginal line continuous or formed of thick lunules.	13
13.	Submarginal line distinct, preceded by reddish teeth.	14
14.	Orbicular present, not marked by yellow.	15
<b>15.</b>	,, brown, small, sometimes diffuse, but not reduced	
	to a point, posterior wings whitish in both sexes.	
	$clavipal  ho is,~{ m Sc}$	op.
16.	fw. grey-brown to deep brown.	17
17.	A yellow spot in the middle of the external border of the	
	reniform, and the orbicular cloudy. morpheus, Hu	fn.

#### A Holiday in Piedmont.

(Read before the Society for British Entomology, February, 1935.)

#### By Dr. H. G. HARRIS.

The part of Piedmont visited lies south of the main railway line, Modane to Turin. Piedmont is reached by rail from Paris to Modane,

and thence by the Mt. Cenis tunnel into Italy.

My interest in this district was first aroused by an article by Norris, in the Entomologist of 1892. He collected for about three months during that summer at Certosa di Pesio, at one time a monastery then a Hydro, but now in private hands, so there is no longer any accommodation there for visitors. Later on I found a most comprehensive account by Dr. Higgins in the Entomologist of 1980. He collected in about six localities for the space of a month in July, 1929, and obtained no less than 148 species of Rhopalocera, and established the specific value of an apparent form of Brenthis pales as the same as those forms hitherto named pales var. graeca, Stdgr., and pales var. balcanica, Rebel., adopting the name graeca as the new species, and differentiating the liedmont form as subsp. tendensis.

In his paper he refers to de Prunner's work published in 1798, called Lepidoptera Piedmontana, also to the Faunula Valderiensis of Turati and Verity, as well as to the papers by Tutt, and those by Ashby

published quite recently in the Entomologist's Record.

The collecting centres to which I wish to refer, are Susa including the summit of the Mt. Cenis, Oulx, Sestrières, Caesana, and Clavières; the height of these districts varies from 1,650 to 6.900 ft. with mountain ascents up to 9,000 ft. Then there are Crissolo, Torre Pellice, the neighbourhood of Turin, Certosa de Pesio, Limone Tenda,

and finally the Baths of Valdieri.

Susa.—This is a small town of altitude 1,650 ft. beneath the Cottian Alps—occupied with military manoeuvres whilst I spent three days there, and not easy to find collecting grounds—however such rare insects as Cosmolyce boeticus, Lycaena iolas and Libythea celtis are to be found there. Tutt in one of his articles says "Am I never to find this elusive insect?" So that I may be excused in sharing the same fate. Polygonia egea is also said to be common in the neighbourhood. I was lucky in finding there my only specimen of Everes argiades. Of the Erebia, neoridas and aethiops were abundant, also E. ceto and E. evias are found there, as well as Parnassius mnemosyne.

On my only visit to the top of Mt. Cenis I was extremely disappointed in seeing only two *Erebia*, which eluded my net, and a certain number of *Plebeius* (Aricia) donzelii. Kane gives this as a

locality for Erebia pronoë.

Oulx. I have not collected here myself, but Ashby has written several articles in the *Entomologist's Record* in 1934 and previous years. Higgins states that *Limenitis populi* was common there in July, 1930.

From Oulx one takes a motor-bus to Caesana and Clavières, also

referred to by Ashby in last year's Entomologist's Record.

Sestrières, 6,900 ft., famed as a winter sports centre but very empty in the summer. There are two mountain railways which will carry one up to 8.000 ft. This is an excellent collecting ground; the golf links stretch for about a mile, above this grass and flowers, uncut, and then pine trees. I have never seen such an array of butterflies, especially on the thick vegetation bordering the rivulets running down from the hills.

Colias palaeno is stated by Higgins to be common—I caught, however, five only and they were extremely passés. In July they would doubtless be as common as C. phicomone. C. croceus (edusa) was not seen.

The Fritillaries and Melitaeids were represented by aglaia, cydippe, varia, pseudathalia, didyma, phoebe, and pales (in large numbers). The Blues were icarus, eros, donzelii, minima, astrarche, argyrognomon, orbitulus, optilete and coridon—Lycaena arion was not seen. A few Parnassius apollo occurred but very worn.

The Vanessidae were conspicuous by their rarity in the two visits I have paid to Piedmont in August —I have actually only seen two V.

cardui.

Heodes virgaureae. The form here resembles that known as zermattensis—both sexes much smaller than those found in the other localities, especially at Crissolo and the Baths of Valdieri.

Heodes hippothoë was also common, with fine dark females.

Turin. The neighbourhood of Turin has had several papers in the past devoted to it by Ashby in the *Entomologist's Record*, and I have no personal experience of it, or of Crissolo or Torre Pellice, where *Neptis lucilla* is found.

Chrysophanus rutilus is obtained in the river bed of the Saugone.

From Turin the railway runs due South to Cuneo; from there I made an excursion to the great springs of Bennette in search of rutilus, which

however was absent, though the food plant was in evidence.

The Baths of Valdieri.—These are reached by motor-bus from Cuneo. This is a charming spot situated in a rocky defile through which runs the river Gesso. Altitude 4,400 ft. There is a Hydro here, but no other habitation except military buildings. It is an easy collecting spot, directly on leaving the hydro extensively wooded (beech and pines) and meadows with flowering Euphorbia attracting large numbers of the Lycaenidae. H. virgaureae was a fine large form compared with that of Sestriéres, especially the females.

H. alciphron var. gordins—the females very dark specimens and Limenitis rivularis (camilla) not uncommon—and Brenthis daphne quite a common insect. I took also a nice number of Carcharodus alveus. It would be quite possible to walk in about 8 hours to St. Martin Vesubie thus saving a long journey to Nice and then up again by bus.

Dr. Roger Verity has dealt very fully with this locality.

Limone Piedmonte, 3,300 ft., and the Col di Tenda, 5,000 ft. This town is reached by train from Cuneo on the main line Turin-Nice. I was particularly keen on finding the species B. graeca subsp. tendensis mentioned at the beginning of this paper, but no pales form or any Brenthids were seen so that I either missed the localities or the month, mid August, was too late. Polyommatus meleager was not uncommon, I obtained one female of the bluish form and several of the dark variety steeveni. Of the Fritillaries B. daphne (not common), A. cydippe f. cleodova and A. paphia (one valesina); of the Erebia, euryale and tyndarus were the commonest. In these four localities, Susa, Sestrières-Valdieri, and Limone, in two seasons (both August) I took or observed ninety-two species and was able to add four to Dr. Higgins' list, viz.—Coenonympha iphis, Heodes dorilis, Everes argiades, Erebia mnestra.

## An Account of my Studies in the Biology of Pieris rapae. III. By ORAZIO QUERCI.

(Continued from p. 74.)

THE SITUATION ON 20TH JULY, 1932.

After the control of the abundance, made by the heat on 13th and 19th July, the situation should be as follows:—

Third Brood.—Ended.

Fourth Brood.—Besides the adults, emerged after 14th July, there are many chrysalides, formed from 10th to 14th July, which will produce butterflies until the 26th. The other chrysalides, formed on 20th July, will produce adults from 28th July to 1st August. There are also a few larvae, hatched on 20th July, and the eggs, laid by the last females of the third brood, on 18th and 19th July.

Fifth Brood.—There are a few chrysalides, formed on 20th July, some larvae, hatched on the same day, and the eggs, laid by the

females of the fourth brood, on 18th to 20th July.

#### THE CLIMATE FROM 21ST JULY TO 11TH AUGUST.

From 21st to 31st July the temperature was often high and the ground was barren because the heavy rains of 21st and 22nd July

needed some time to produce their effect. The heat-wave of 27th and 28th July killed all the larvae which we reared at home, save those which we put in the ice-box when it was very hot, and certainly most of those spread, without shelter, in the meadows of the Park Way. The country became verdant by the end of July, and the vegetation was luxuriant at the beginning of August, when it rained again on the 3rd. The weeds were tall and bloomed, and there were many low plants with large and thick leaves which offered fresh shelters against the heat. There is no doubt that, in similar condition, many

larvae of *Pieris rapae* were not injured by the intense heat of August 5th to 10th, and this is proved by the abundance of specimens which emerged later, many of which I set, and they are now in my collection. Instead, at home, we were unable to make up an arrangement like the natural one. The larvae, which we put in the ice-box, remained alive, the others, which we kept in open air, ran across the cages, trying to escape, until they collapsed.

MAN MAN E. H. L. H

21 86. 72.101—The large number of "Whites," which are now 22 86. 69. 83 emerging, belong to the fourth brood. This out-

23 89. 68. 89 break should cease about twelve days after 14th

24 78. 65.100 July, when the last chrysalides of the first group of

25 86. 67.106 the fourth brood were formed.

26 86. 67. 29—Almost all the Pieris rapae on the wing are worn.

27 90. 71. 28 Many larvae would be killed by the heat.

28 89. 73. 36—Fresh specimens are now emerging because the few

29 86. 71. 16 chrysalides, formed on 20th July, produce adults.

30 79. 64. 67 Among them there are the earliest of the fifth brood. 31 85. 66. 5—In spite of the fine weather the butterflies are very

31 85. 66. 5—In spite of the fine weather the butterflies are very Aug. scarce.

1 88. 68. 27—On this day should end the emergence of the pupae formed on 20th July.

2 83. 71. 1—The weather is bad for two days.

3 78.67.0

4 87. 74. 24—The climate condition seems to be the best for

5 90. 73. 47 the larvae which feed actively, and a few of them

6 91. 71. 18 form the chrysalides. The pupae, formed on 26th

7 86. 73. 21 July and later on, from the eggs laid after 17th July, begin to produce adults of the fourth and fifth broods, altogether. Some pupae of the sixth brood should be formed.

8 90. 74. 13—On these two days the weather is fine but the butter-

9 88. 73. 9 flies are scarce, owing to the control on 27th July.

10 90. 71. 16—To-day a big rain falls.

11 84. 71.133—To-day the large emergence of the chrysalides of the fifth broad, formed at the beginning of August, in spite of the heat, begins.

#### Two Visits to Finland.

By Dr. E. SCOTT.

(Concluded from page 64.)

Oeneis jutta.—I was fortunate with this very fine butterfly. occurs throughout Finland, but is reported to appear in South Finland only in alternate years, 1934 being correct. Whether this is actually so, I hardly like to say, as we were rather late for it in 1933. Certainly, however, last season it was to be found in nearly all the bogs, sometimes exceedingly commonly. We first met with it on 13th June near the Saimaa canal, but the most thrilling experience occurred at Isalmi on 19th June, when the sun broke through very hot after two days continuous rain, and I found myself in a great bog in the middle of the woods, with both sexes of this insect crawling up the grass stems to dry their wings after emergence. It was also exceedingly abundant near Nurmi on 22nd June. Jutta likes rather open brown bogs with a few scattered dead larch trees on which it loves to rest and tantalise the pursuer. It is a large butterfly compared with aello, measuring 54-56mm., and my specimens vary greatly in respect of size and shape of honey coloured patches and the size of the black spots they contain. The underside hindwing is very beautifully variegated with gray.

Pararge hiera.—A very common butterfly in Finland occurring along roadsides in the first half of June, until its place is taken by the equally common very dark form of maera. On 11th June both sexes were well out, but we met with the butterfly in good condition everywhere we visited during the next 10 days. It is rather dark but calls

for no special comment.

Coenonympha tiphon=tullia.—Is common locally in marshy meadows with cotton grass. First noticed on 15th June, we found it commonly in a sloping meadow near Korpilahti on 22nd June, and it was swarming in a marsh not far from Tampere on 25th June, where A. arsilache was just emerging. It is the smallest form of tiphon I have seen, just about the size of the pamphilus we meet with in England. Care has to be taken to distinguish the male from iphis, but the type of locality is different, as tiphon never chooses cultivated meadows.

Heodes (Loweia) amphidamas.—Local in South Finland, common in the north. I only met with it on two occasions; near Kuopio on 20th June, when I took 2 worn 3 3 and a fresh 2, and on 22nd June in a field near Korpilahti, where aphirape form ossianus and tiphon were flying. Here the 3 s were worn, but I was fortunate enough to take a magnificent freshly emerged 2 with radiate spots on the underside. A small dark race. The foodplant appears to be Polygonum vivipara.

Polyommatus (Aricia) eumedon, Esp. (chiron, Rott.).—Rather common in fields and roadsides where Geranium pratense abounds. Differs in no particular from Swiss specimens except that the orange lunules

on the underside hindwings are more conspicuous.

Cupido minimus.—Accounted a rare butterfly. I found it swarming at Punkaharju on 14th June. They are larger than the English race but not so large as alsoides, from the Lacquinthal. I did not notice Anthyllis vulneraria at Punkaharju but they seemed much attracted to patches of a somewhat similar plant, which I have not been able to identify.

Carterocephalus palaemon.—A rare insect, which I only met with near Kuopio where I took 2 fresh 3 s on 20th June. Very small and dark with marked diminution in the number and size of the orange

patches.

Carterocephalus silvius.—Common in grassy paths and at the edges of woods. We met with it everywhere from 11th June, but as the 3 s began to get worn, I was unlucky in failing to meet with the 2 s of which I only took 2. On the beautiful wooded hillside of Koli it was particularly abundant on 17th June. Fond of resting in the sun on ferns and leaves of shrubs.

An indifferent botanist, I am, yet loth to leave my subject without some reference to the flora. Finland is constructed, so to speak, on granite, sand and peat bog. Over large areas particularly in the forest, the immediate integument is one of deep moss, iceland, reindeer, sphagnum, etc. Heather takes no part in the landscape and only occurs in small patches in woods. The forests are composed mainly of larches, other conifers and birches with an undergrowth of sallow, alder, juniper and others. As we proceed north the birch predominates, beautiful straight trees with large leaves. The oak only grows in the extreme south of Finland. One of the commonest characteristic plants is the Whortleberry, of which 2 species Vaccinium myrtillus and V. vitisidaea grow everywhere in the woods, and V. uliquosum is restricted to Trientalis europaea is common everywhere and at the end of June Linnaea borealis is equally abundant in woods where it creeps among the moss at our feet. Rubus arcticus with its single pink flower is a gem, which never fails to attract attention, and shady spots can often boast a thick carpet of Lily of the Valley and Solomon's Seal. At least 4 species of Winter Green are common, of which rotundifolia is the most conspicuous. When we leave the woods for the cultivated fields, we explore a country like the subalpine valleys of Switzerland in which Geranium, Campanula, and Vetches lend gaiety to the scene. The borders of lakes are often interesting with stretches of reeds and damp meadows gay with cotton grass and sometimes a crimson streak of Pedicularis palustris. More often, however, the forest and rock come abruptly to the water's edge. The peat bogs, however, are the main attraction of the entomologist, where the flora is more restricted and can be described in more detail.

The collector sinks in a precarious bed of thick moss in which grows a thin wiry grass, presumably the foodplant of *Oeneis jutta*: entwined among the grass and moss hillocks are the dainty tendrils and delicate flowers of *Vaccinium oxycoccus*, the cranberry, with occasional flowerheads of *Andromeda polifolia*. If the swamp is large the trees grow sparse until a few dead larches alone stand up and relieve the monotony

of a brown desolate stretch. At the edges where the forest trees encroach there is a dense growth of Vaccinium uliginosum and Ledum palustre, a shrubby plant with conspicuous composite, white flower heads and stems smelling strongly of turpentine. Sometimes we encounter a carpet of a plant with large strawberry-like leaves and a This is Rubus chamoemorus (the cloudwhite flower on a single stem. berry) the foodplant of Hesperia centaureae. In the wooded parts of the swamp there are pools of sherry coloured water with their ebony depths encumbered with dead decaying branches and their shallows gay with the arum-like flowers of Calla palustris. It is in such a peat bog that the majority of the characteristic butterflies find their home. Of the fells and forests of Lapland and the north of Finland I have no experience, but I hope to have an opportunity to make their acquaintance at a later date.

#### OTES ON COLLECTING, etc.

Marshes and Reed-Beds in July and early August.—This is the period for taking the pupae of a number of species rarely to be obtained in good condition by any other means. The larva of Coenobia rufa mines the dead stems of Juncus effusus in the wettest spot in the marsh where that rush can be found. The presence of J. lamprocarpus may be desirable but in my opinion not essential. To obtain pupae, cut the whole tuft of rush off just on a level with the moss, and carefully scrutinize the tops of standing rush bases. A neat hole partly filled with dry frass gives away the stems in which larvae are pupating or in which larvae lie. It is necessary to cut selected stems at the extreme bottom, as the pupae are often very low indeed. Those stems which contain larvae or pupa will have an eroded patch or window for emergence of the moth as in the allied Nonagria species. As these pupae are always in a dead stem it is of course well to select Juncus tufts, which contain a good number of largish dead stems.

Among Phragmites in those localities where Nonagria geminipuncta occurs, a number of very dead and red reed tops will be seen. If the reeds are in a fair depth of water the pupae are likely to be found in the base of these feeding reeds, if however the reeds are merely in mud the quickest way to get pupae is to look over the lower parts of the reed stems, when the typical Nonagria emergence "window" is to be found, almost always at the top of a reed section where the leaf sheath

is parted and can be easily seen.

Both N. algae (cannae) and N. sparganii are very local, but plentiful in their special haunts, and being large larvae the stem selected for pupation, which may be in Iris, Typha or Scirpus, soon shows signs of being tenanted. These two species suffer greatly from Moorhens and Coot, and the most likely stems to contain undamaged pupae or larvae are those on which the central leaf is just beginning to fade and is yellowish, but of course some of the fully dead stems must contain pupae or none of the insects would ever reach maturity.

N. neurica and N. dissoluta (arundineta) are also local, and as these larvae choose a stem of last year's growth (dead) the pupae are almost

impossible to find. The moths however are greatly attracted to light and will come during their first flight after emergence to a bright light placed among the reeds. They are however best obtained in the larval stage in June. N. dissoluta leaves signs very like those of geminipuncta but neurica is so much more delicate a species that unless one has knowledge of its presence in a given spot and is prepared to work all the "small" unhealthy looking stems which are hidden in the general growth, not likely to be found. After the larvae leave the stems they turn colour, but while tenanted they usually are merely a little faded and dwarfed.

N. typhae leaves tracks that are patent to every eye. It is worth breeding in bulk because in many places fine red-brown and even black forms occur. This species suffers less from the attacks of birds than do sparganii and algae, probably because its pupa being above the "window" instead of below, is missed, the birds pecking downwards from the "window."

The best date to take pupae of geminipuncta is mid July. Stand cut reed sections in damp sand and, if very hot weather, spray occasionally to prevent shrinkage and consequent crushing of pupae. Remove window with a sharp knife as it is liable to get hard. Pupae of sparganii are at their best in late July and algae in first few days of August. Treat as for geminipuncta. Typhae has an extended period, usually the same date as algae; neurica emerges mid-July; dissoluta and form arundineta a week or so later; rufa are best taken as pupae in third week in July, but the freshly emerged moths can be found with a light at the end of July. All these species emerge and develop quickly from dusk till midnight.

Additional Food-plants of the Larva of Parascotia fuliginaria, L.—On 22nd June, Mr. C. N. Hawkins and I found a larva of fuliginaria resting close to a fungus with a black shining rounded surface, which appeared to have been eaten in two places. I took the fungus home and, on placing three larvae on it, two of them started eating it at once. The fungus has been identified as Daldinia concentrica (Bolt.) Ces. and De Not. On another stump of dead pine there was a mass of a large brown fungus, rather decayed, with three larvae of fuliginaria on it. In both cases there was circumstantial evidence that larvae had been feeding on the fungi in a wild state, and this was confirmed by their behaviour in captivity. Placed in a box with a piece of this fungus they ate it readily. The fungus is Polyporus schweinitzii, Fr. Miss F. L. Stephens of the British Museum kindly identified both species.—E. A. Cockayne (D.M., A.M., F.R.E.S.), 116, Westbourne Terrace, W.2.

Daphnis (Chaerocampa) nerii in Croydon.—Mr. W. J. Wenham of Canning Rd., Addiscombe, Croydon, reports a specimen of D. nerii (Oleander Hawk-moth) observe by him and his son, in a small greenhouse under the benches, at 9-30 p.m. on 28th June, a calm, sultry evening. It was in perfect condition but very sluggish when captured. It was subsequently placed on the lawn where it "taxied" across with rapidly vibrating wings, but did not attempt to fly. It was then placed in the centre of a large yellow rose, where it remained wholly quiescent, even when quite dark and a flash-light was turned on it. In the morning it had flown.—Hy.J.T.

THE WEST COAST OF DENMARK. MACROLEPIDOPTERA. — We have recently received a personal separate from Dr. Hoffmever dealing with the Lepidoptera met with by him on the West Coast area of Denmark, and illustrated by a coloured plate of 30 figures, and 8 text-figures. note that many of the species met with also occur in Great Britain; some are a modified form which the author has registered by additional nomenclature. The area investigated was wholly dune-lands from which 432 species of Macro-lepidoptera are recorded Leucania literalis, Curt., Tapinostola elymi, Tr., Miana literosa, Haw., f. onychina, H.-S. and Hadena sordida, Bork., are all very common. The form of Lasiocampa quercus, L., is the ab. olivaceofasciata, Cockrl. (2 figs.). Miana bicoloria, Vill., occurred in a new form in which a longitudinal blackish band runs from the anal angle of the forewings above the inner margin almost to the base on a mottled grey ground (2 figs.). This the author has named ab. latistriata. Only 3 specimens of this species were taken. Only one Mamestra trifolii, W., was taken and that was a well characterized new form (fig.) and named ab. lodbjergensis by the author. From the figure it appears to be a melanic form: the general coloration is a deep black brown, with the usual transverse lines well developed in olive-brown, the reniform and orbicular with partial surround of the same colour; the basal transverse line incomplete and the hindwing dusky becoming gradually lighter towards the base. Apamea testacea, Hb., are black-brown on the east of Jutland, but those met with on the West Coast were black-grey. Leucania favicolor, Barr., and Spilosoma (Diacrisia) lutea, Hufn. (lubricipeda, L.) f. zatima, Cr., are not known from Jutland, strange to say. Hydroecia crinanensis, Burrows (fig.) is well distributed in Jutland and on the West Coast occurs in a special form which the author has named race jutlandica, and is characterized by its small size and its dark, narrow wings; the aberration in this race is considerable (5 figs.). Most of the Noctuae recorded are those that occur with us in more or less similar areas, including Agrotis subrosea, Steph., A. depuncta, A. ripae, Hb., Anarta cordigera (highlands with us), Anaitis paludata, Thnbg., Triphaena orbona, Hfn,, T. comes, Hb., etc. Curiously Brenthis arsilache, Esp., and Polyommatus optilete, Knoch, are met with there. Five of the text figures are diagrams of species distribution and three illustrate the character of the dune-land area.

Grecian Butterflies.—After 28th April, 1935 (see Ent. Rec., XLVII., p. 67) the bad weather prevented us collecting, but on 7th May it turned very fine and in that month we took the following species near Salonika. Pararge megera, Satyrus larissa, Eumenis (Hipparchia) semele, Maniola jurtina, M. lycaon, Coenonympha pamphilus, Argynnis lathonia, A. maja, Cr. (pandora, Schiff.), Melitaea phoebe, M. trivia, M. didyma, Eugonia polychloros, Limenitis rivularis, Tarucus balkanica, Cupido sebrus, Aricia medon, A. anteros, Polyommatus icarus, P. thersites, P. bellargus, Plebeius zephyrus, Glaucopsyche cyllarus, Scolitantides hylas (baton), Jolana jolas, Heodes (Rumicia) phlaeas, Callophrys rubi, Strymon spini, S. ilicis, Leptosia sinapis, L. duponcheli, Aporia crataegi, Pieris bassicae, P. rapae, Pontia daplidice, Euchloë ausonia, E. cardamines, E. gruneri, Colias croceus, Papilio podalirius, Nisoniades (Erynnis) tages, N. (E.) marloyi, Carcharodus fritillarius, Poda (alceae, Esp.), C. altheue, Hesperia (Pyrgus) orbifer, H. (P.)

malvoides, H. (P.) armoricanus, H. (P.) sidae, Augiades sylvestris, Poda (sylvanus, Esp.), Adopaea flava. In the Tempe Valley (Thessaly) we took Melitaea cinxia, Pieris narcaea, Frr. (ergane, Geyer), P. krueperi, and in the Chalkis (Southern Macedonia) we collected Argynnis dia, Pieris manni, Euchloë gruneri, Zerynthia hypsipyle and other widespread species.—Orazio Queroi. Salonika. 31st May, 1935.

Colias croceus (Edusa).—On 12th June I saw a C. croceus (edusa) here at West Malling, Kent, sitting in the hedge. It flew a little way off when I went near, but settled again. It then went over the hedge and I failed to follow it. Its condition was such as to appear as if it had recently emerged.—H. S. Fremlin (F.R.E.S.).

#### **WURRENT NOTES AND SHORT NOTICES.**

The first volume of the Supplement to Tutt's British Noctuae and their Varieties is now completed and the unbound parts can be obtained from Mr. H. W. Andrews at half a guinea net including postage. 364

pages with title and index.

The current part of the Supplementary Volume to Seitz Palaearctic Noctuae, Vol. III., contains the record and descriptions of additional forms to about 30 of the species found in Britain, some 140 forms in all, none of which were included in the main volume. The four Apamea species: oculea (nictitans) 9, fucosa (paludis) 23, lucens 8, and crinanensis 9 additional forms. Hydroecia micacea 3. Meristis trigrammica 9. The three Calymnia species: affinis 5, pyralina 5, and Dicycla oo 3. Rhizedra (Calamia) lutosa 4. Arenostola species: phragmitidis 1, fluxa (hellmanni) 5, pygmina (fulva) 7, extrema 1, and morrisii 2. The five Archanara = Nonagria species: geminipuncta 3, dissoluta 4, neurica 2, sparganii 10, and algae (cannae) 1. Coenobia rufa 3, Nonagria (Senta) maritima 4. Oria musculosa 2. Chloridia dipsacea 2, and C. peltigera 2. Anarta myrtilli 6, and A. cordigera 1. Lithacodia fasciana 2. Eustrotia uncula 2. The above list should well urge our local societies to add these supplements to their libraries, since the study of the British Lepidoptera has now got beyond the mere getting of a series of a species, and before the future student of the Order can do effective work he must have access to records such as the present work affords. As I have said before, our popular S. London Entomological Society possesses the six completed double volumes of the Palaearctic Fauna so far published.

The Entomological contributions to the London Naturalist, 1934, recently received, comprise a summarized report of the six indoor meetings and five field meetings of the Section, a short report of the Plant Galls Section, notes on British Butterflies in 1934, the Plant Gall Records for 1934 compiled by Mr. H. J. Burkhill, a note on Dragonflies and one on the pupation of Papilio podalirius, and last a most interesting and delightful paper by Mr. L. B. Prout entitled "Entomology of Yesterday and To-day." The whole report dealing, as it does, with the Botany, Entomology, Ornithology and Plant Galls of the Greater London area, as well as Archaeology and Rambling, is a credit to all concerned. We note (a) eyeria and hyperant(h) us as persistent errors in priority, and surely the terrible Ochlodes venata ssp.

septentrionalis is an untraceable name to 99 per cent. of our lepidopterists, and needs translation to ordinary text-book nomenclature for a long period, just as did the croceus for edusa of a few years ago.

#### REVIEWS AND NOTICES OF BOOKS.

The Fauna of British India series, since the issue of the first part (Mammalia) in 1888, has included numerous volumes little known to most British Entomologists. Those on Insects deal with Moths to Pyralidae (4 vols.), Butterflies (part only) (2 vols.), Coleoptera (14 vols.), Hymenoptera (3 vols.), Diptera (5 vols.), Rhynchota (7 vols.), Orthoptera, Dermaptera, and Odonata (2 vols.), whilst others are in preparation. Of those recently issued we may call attention here to the volume on Anopheline Mosquitos by Colonel Sir S. R. Christophers and to the two on Dragonflies by Lieut-Colonel F. C. Fraser. Both of these groups are scantily represented with us and we may congratulate ourselves that this is so in the case of Anophelines, at least. Our small Dragonfly Fauna of about 42 species compares poorly with the 500 Indian species, about half of which have been turned up within the last twenty years by Colonel Fraser's enthusiasm. Although comparatively few of the insects found in India are conspecific with those occurring in England, many of the genera are common to the two countries, and in any case these volumes will well repay study by English Entomologists as models of what can be produced in this way. With very few exceptions we have no books on English Insects other than popular Handbooks and elaborate and expensive publications, out of reach of most collectors, and hardly anything in either class is either tolerably complete or up to date. The popular Handbooks dealing almost entirely with Lepidoptera, and only the larger species at that, the result is that about eighty per cent. of collectors occupy themselves with the Butterflies and larger Moths; comparatively few seem to take up Beetles nowadays and those interested in other Orders are remarkably few. In a paper in Trans. Linn. Soc. (2) (Zool.) XIX. 317 (March 1933), Dr. Hugh Scott published a very interesting census of the Insect Fauna of the British Islands, and he gave the following figures of the species and genera of the various

		Species.	GENERA.
Thysanura	• • •	22	7
Protura	•••	13	4
Collembola	• • •	154	50
Orthoptera	• • •	32	22
Dermaptera	• • •	7	6
Plecoptera		32	12
Psocoptera	• • •	51	28
Anoplura	• • •	?	?
Ephemeroptera	• • •	41	15
Odonata	• • •	42	20
Thysanoptera	• • •	156	39
Heteroptera and			
Homoptera	•••	883	219
Sternorhyncha			
(Aphididae, etc.)	•••	<b>502</b> .	75

			Species.	GENERA.
Neuroptera		•••	57	18
Mecoptera		• • •	4	<b>2</b>
Trichoptera			180	62
Lepidoptera			2146	486
Coleoptera		• • •	3597	826
Strepsiptera			?	?
Hymenoptera		circ.	8100	?
Diptera		est.	4600	700-800
Aphaniptera	• • •	• • •	?	?

Totals. At least 20600. 3000-4000

What seems to be required to stimulate interest in some of the less-known groups is a series of monographs on the model of the Fauna of British India series. Eighty years ago such a series was projected "under the immediate sanction of the President and Council of the Entomological Society of London" and some volumes were actually published, but apparently this excellent scheme fell through owing to want of support. Is it too much hope that such a British Insects series may be initiated and carried to completion in our time?—T. Bainbrigge Fletcher.

#### BITUARY.

#### Robert Adkin, F.R.E.S.

We deeply regret to record the death, at the advanced age of 86, of Robert Adkin, F.R.E.S., one of the best of men, who, for more than half a century, has been closely associated with the South London Entomological Society, which he joined in the autumn of 1881. Quiet, modest and unassuming, with a quick grasp of all matters in which he was concerned, he soon gained the confidence of all who, either in private life, or in business connection, came in contact with him. Born to the business of a tobacco merchant he became a Director of the Imperial Tobacco Company and for long years up to his illness he never failed to attend the Councils of this great concern. 1915 Mr. Adkin lived in Lewisham and year by year the Society's officers and others enjoyed his hospitality at a conversazione, a function which was considerably extended after his removal to Eastbourne, where he occupied the house previously the residence of the late Prof. Huxley. Perhaps he attended more meetings of the S. London Society than ever any other member has done, and his exhibits were always coupled with cogent, useful remarks, albeit often of common species, but interesting for some new point in its life-history or association. Of late he had worked regularly with a light-trap and had by its means added numerous species to the local fauna lists, which he had a few years ago published in the Proceedings of the Eastbourne Natural History His value as an entomologist and as a business man was early recognized by the S. London Society, for at the close of 1883 he was elected to the Council. In that year too he commenced his long series of exhibits and also of donations to its cabinets. the latter were examples of Nola centonalis and Lithosia pygmaeola; in 1884 he added 29 species to the collections. In 1885 he was elected Vice-President and in 1886-7 was President; it was during this period that the writer of the present memoir joined the Society and first came to know him. At the end of his term of office he expressed the wish that the Society "may go on and prosper." This wish he lived to see amply fulfilled, the success being in no small way due to his material co-operation year in and year out often unknown to the ordinary member. He was again President in 1897 and also during 1906-7, with long periods on the Council and Committees. For many years past he has read all proofs of the Society's publications and always made himself responsible for the illustrations. In 1885 Mr. Adkin became a Fellow of the Entomological Society and subsequently was on the Council for four separate periods, and although twice a Vice-President, his natural modesty persistently made him refuse to hold the office of When in 1922 this Society acquired permanent premises President. in Queen's Gate, South Kensington, Mr. Adkin helped generously with a series of handsome donations and subsequently on more than one occasion added materially to the efficient equipment of the meeting room; the presentation of a costly epidiascope and screen being a conspicuous instance of his thought and foresight. On the inception of the South-Eastern Union of Scientific Societies he fully agreed with the scheme, entered on its management and for a considerable time was its Treasurer, incidentally more than once assisting in making the balance sheet show a balance rather than a deficit. At each of the Annual Congresses he was for many years a Representative of the South London Society. For some years past he had filled a similar part as Representative at the meeting of delegates of the Corresponding Societies with the British Association at their Annual Congresses. He was also a member of the Council of the Ray Society and one of its Vice-Presidents. As one of the eight members of the famous Entomological Club he annually invited as many of his personal entomological friends as his residence could accommodate to luncheon and supper. Latterly want of accommodation made him extend his kind invitations and the meeting took place in the leading hotel at Eastbourne. great and well appreciated privilege it was to be present at these gatherings. For forty years he was on the panel of the Entomologist, of which journal, at the death of Mr. R. South, he became part proprietor, and to its pages he continued to send notes of interest. the National Trust and the Footpaths Preservation Society and suchlike associations he gave his adhesion and we find his name in the list of members of the London Natural History Society and even in that of the more recent Society of British Entomologists. In addition to the frequent notes referred to above, numerous interesting papers are published in the Proceedings of the South London Entomological Society, and the three small well illustrated volumes dealing with the Lepidoptera of the Eastbourne Area were from his pen. He confined his interests to British Lepidoptera alone, of which he made a fine Collection. This, we believe, goes to the British Museum. He had got together a very considerable Library of useful books on general natural history and on Lepidoptera in particular, all very finely bound. Of this the Royal Entomological Society are to have the selection. We have lost one, who had not only the power to help on the study of our science, but one who had the will to forward its interests, based upon his own intimate knowledge of the needs. Such men are rare; we all will feel his loss.—Hy.J.T.

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Duplicates.—Pyralina\*, Salieis, 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.

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Greece.

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8 p.m. October 2nd.

The South London Entomological and Natural History Society, Hibernia Chambers, London Bridge. Second and Fourth Thursdays in the month, at 7 p.m. July 25th. Aug. 8th, 22nd. Sept. 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 Section, Birmingham Natural History and Philosophical Society.—Field Meetings.—7th July (Whixall Moss); 18th August (Cranham); (Dolgelly, date not yet fixed). Evening Meetings.—Third Monday in every month, recommence in the autumn.—Hon. Corresponding Secretary, P. Siviter Smith, Pebworth, Stratford-on-Avon.

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#### Cornish Notes for 1934.

By CHARLES NICHOLSON.

(Concluded from page 73.)

Hesperia malvae.—One on Hippocrepis on 7th June. This species is scarce about here, and Augiades sylvanus is by no means common, but one came into the verandah on 20th June and several were seen

on the River Drive on 1st July.

Amongst the moths, Eumorpha elpenor was a local feature last year. In June 3 specimens emerged in my breeding cage, from larvae brought to me in 1933; almost invariably one or two of these larvae are brought to me to name in the autumn, but last year, curiously enough, was an exception! A moth was seen flying in the verandah at 10.30 p.m. (S.T.), probably attracted by flowers of variegated honeysuckle (Lonicera tlexuosa), on 20th June. This honeysuckle is usually very loth to flower, but the hot weather in 1933 evidently persuaded it to last year, and as it is out before our native species it was in time to attract elpenor and another was flying in the verandah at 10 p.m. on 26th June. On 6th July two eggs were found on leaves of Gentiana sino-ornata growing in a pot in the garden and these hatched on the 11th, the survivor emerging last June. Macroglossum (Sesia) stellatarum was first seen (on Buddleia in the garden) on 7th August; then fairly often -2 at once on the 26th and again on 4th September—until 9th Sep-After that one was noticed resting in the verandah on the tember. white supports of the glass roof on the 15th, 18th, 29th and 30th; but possibly these 4 appearances were of the same individual, beginning to think about retiring for hibernation! A bunch of young (1 inch) larvae of Phalera bucephala, found (26th July) eating leaves of Amelanchier canadensis in the garden was removed to oak, after our pet wild thrush had without any hesitation eaten several offered to him; but a young robin would not touch them. Although bucephala larvae exhibit the warning colours, yellow and black, these are evidently not necessarily protective in their case.

Plusia gamma was not obviously common last year. First seen flying (in verandah) at 7 a.m. on 29th Aug. One at Clematis viticella flowers—a great attraction to this species—and one on Buddleia auriculata in the evening of 13th Sept. One at rest in the verandah 29th Sept., and another on 21st Oct. One trapped by a flower of Araujia sericifera in the verandah on 16th Sept., and another on the 19th, both of which I released. On 22nd Oct. a third was caught but got away

without assistance.

I believe that *Hapalia* (*Phlyctaenia*) ferrugalis, classed as an immigrant species, lives in the garden permanently, because it is always more or less in evidence in the autumn and there is plenty of strawberry, Stachys and Eupatorium for the larvae. A fresh specimen was

seen in the verandah on 31st August.

There is very little of interest to report in "other Orders." The suggestion I made in my Cornish Notes 1932, that probably the outbreak of Strangalia aurulenta in the garden in 1931 was the culmination of the periodic time of this beetle and would be followed by a scarcity for several years, seems to have been borne out so far, for only one example was seen in 1932, none in 1933 and last year again only one, a small male on a lilac on 29th June.

15.ix.35.

In Hymenoptera the outstanding event was the capture of a nice female of Bombus distinguendus flying in the verandah on 10th October. This is the first example I have seen hereabouts, as it is by

no means a common species in most parts of the country.

Having had a request for particulars of the occurrence of Formica rufa in the Truro district and having never yet met with it in my wanderings in the county, I found on inquiry that it occurred at Lady's Wood near Truro, and two visits (my first) there on 14th and 22nd August amply confirmed this, but one would not expect it to be a rufa locality at first sight. The wood is of oak coppice with thickish undergrowth of bramble, etc., and no conifers! But part has been long cleared and here and on the edges there were many workers of this species running about on the ground and low herbage, with occasional nests. The latter were, of course, not the huge mounds of pine needles one usually associates with this species, but quite small and low collections of cut stems of dry grasses, furze and other debris, rising in most cases only a few inches above the ground. In the neighbouring lanes, however, I discovered about a dozen nests on the banks under the hedges and these cascaded downwards towards the road level, sometimes to a length of 2 feet, but otherwise they resembled those in and around the wood. I had never come across this form of nest of this species before, but Mr. Donisthorpe tells me that it is not uncommon.

#### Notes on a Visit to Northern Natal and Zululand.

By J. SNEYD TAYLOR, M.A. D.I.C., F.R.E.S.

(Concluded from p. 77.)

A considerable amount of time was spent collecting Red Bollworm eggs on cotton, as well as on the known wild host plants, viz. wild cotton (Gossypium) and Cienfugosia hildebrandtii, Garcke., another Malvaceous plant. A few individuals of T. lutea were obtained from A larval parasite of Red Bollworm, Apanteles diparopsidis, Wilk., was found in some numbers. The white cocoon is a conspicuous object and is frequently found on a cotton boll. From the cocoons collected a few adults were obtained, but the majority yielded hyperparasites of which six species were bred out. Some attention was also given to Syagrus rugifrons, the Emolpid mentioned above, and which had caused serious losses to the growers in the district. The adults feed upon the leaves of cotton, inflicting severe damage, particularly to seedlings, frequently necessitating replanting, while the larva attacks the roots. Adults were also found on Cienfugosia, and several other Malvaceous plants were found, which are strongly suspected to be hosts. These include Hibiscus calycinus, Willd., Abutilon spp., and wild cotton.

Larvae of Earias spp. (Spiny Bollworm), were found feeding on the fruit of Abutilon sonnerationum and H. calycinus while Dysdercus ssp. (Pyrrhocoridae) (Cotton Stainers) were also found on the latter.

Amongst the other insects observed were the following:—

RHYNCHOTA. Plataspidae: —Hotea subfasciata, Westw.—Frequently

found on cotton, and has also been observed on *Abutilon* sp., near Barberton. When lifted between finger and thumb this species stridulates loudly with the third pair of legs and the abdomen.

Atelocera notatipennis, St., on Cienfugosia, and also on Acacia sp.,

at Barberton.

 ${\it Caura~rufiventris}, {\it Germ.}, {\it on~a~Malvaceous~plant}; {\it also~taken~near~Barberton}.$ 

Myrochea sp., on cotton.

Ricaniidae: —Mulvia albizona, Germ., taken on grass.

Coccidae: —Pulvinaria jacksoni, Newst. on cotton.

Pseudococcus filamentosus, Ckll., on cotton.

Coleoptera. Carabidae:—Graphipterus fasciatus, Chaud.

Eudema nobilis, Dej., a handsome black and yellow species.

Polyhirma notata, Perroud, also taken at Barberton.

Harpalus cursorius, Pér., a common species under stones; also at Barberton.

Nitidulidae:—Ithyra sp., on Cienfugosia.

Melolonthidae:—Schizonycha sp. Found in soil at roots of Cienfugosia; also taken at light, Pretoria.

Tenebrionidae: Trachynotus griseus, Fhs. Taken under stone; a

common species in cotton fields at Barberton.

Anomalipus grandicostatus, Frm. Taken under stone; also at light; Barberton.

Trigonopus typhon, Muls. A common species under stones: often found under stones in company with ants; mountains, Barberton, 4-5,000 feet.

Eumolpidae:—Rhembastus variabilis, Har. On Cienfugosia; also on cotton, Barberton.

Liniscus sp. On Cienfugosia.

Chrysomelidae:—Ageniosa sp. On herbaceous plant.

Curculionidae: — Brachycerus scelectus, Gyll. Under wild cotton plant.

Xanthochelus tropicus, Fst. On ground.

Lycidae: Lycus zonatus, Fhs. Common on grasses; also taken at

Barberton and Pretoria; a common and widespread species.

While at Ntambanana we took the opportunity of visiting the Tsetse Fly Camp, some twenty-two miles away, on the borders of the Umfolosi Game Reserve, the headquarters of the Government's tsetse fly research staff. As we were nearing the camp the car was suddenly invaded by a number of the flies, one of which bit my wife on the leg. We had to remain at the camp until after sundown in case we should carry any of the flies with us in the car. In pursuance of the antitsetse policy large numbers of game had been exterminated, and, with the exception of a couple of small buck (duiker), we saw nothing in the way of game during our stay of two months at Ntambanana.

About the middle of May we returned to Eshowe for a few days, and then retraced our steps northwards to Magut. After a couple of days there, and a final visit to Pongolapoort, where very few eggs of Red Bollworm were now to be found, we proceeded towards Barberton, via Swaziland, the route by which we ought to have travelled on the outward journey. After crossing the Pongola River, and while on the borders of the Transvaal and Swaziland, we collected a number of Red Bollworm eggs from wild cotton plants on the roadside, and from these

a few parasites were later obtained. We passed through some beautiful mountainous country in the neighbourhood of Mbabane, the capital of

Swaziland, and a couple of days later were back in Barberton.

As to the objects of the journey, it certainly did not appear, from the results of the investigations made, that Red Bollworm was of lesser incidence in Zululand than in the cotton growing areas of the Transvaal. With the exception of one place (Pongolapoort) the egg parasite, T. lutea, was not found in any appreciable numbers, while the larval parasite, A. diparopsidis, had too many natural enemies of its own to constitute a serious check on the bollworm. The information on the incidence of Red Bollworm obtained from growers was conflicting and far from satisfactory. Some stated it to be a serious pest, and others not. It would be necessary to carry on observations for a number of years in order to arrive at a definite conclusion.

I am much indebted to the Director and Staff of the Imperial Institute of Entomology for determining the majority of the insects

mentioned in these notes.

Through the kindness of the Imperial Institute of Entomology the aquatic insects referred to in "Notes on a Visit to the Northern Transvaal" (Vol. XLV, pp. 113-119) have now been determined, and the following list includes those which had not been named when the notes were written. It will be noted that the species of Rhynchota, about the classification of which there was some uncertainty, has been placed in the Belostomidae, and that there are seven species of Dytiscidae, and not six, as originally stated.

RHYNCHOTA. Hydrometridae: Hydrometra albolineata, Reut. Gerridae: Gerris capensis, China; G. diversa, Mayr. Nepidae: Laccotrephes fabricii, St., Ranatra spp. (two in number; not in British Museum). Notonectidae: Anisops varia, Fieb., (the most numerous insect in the tank); A. hermes, Hutch.?; Enithares sobria, St., (the largest of the three species). Belostomidae: Sphaeroderma capensis, Mayr.?

Coleoptera. Dytiscidae: Hydaticus servillianus, Aubé.; Rhantaticus signatipennis, Cast., (referred to as R. congestus, Klug., in the original); Laccophilus taeniolatus, Rég., L. lineatus, Aubé., (the two small species). Hydrophilidae: Hydrophilus senegalensis, Perch.; Regimbartia inflata, Br.

#### Noctuae and vars. in 1934.

By A. J. WIGHTMAN, F.R.E.S.

(Concluded from page 60.)

Leucania albipuncta.—This species was much more plentiful this year than is usual, even in its special haunts, and I obtained a few 3 s quite near Pulborough on heather bloom, but could not get a 2. Mr. G. W. Wynn, however, came to my aid and gave me some larvae from an early August 2 and later a larger batch of ova from some late August 2 s, he having been very successful with the species on the Kent Coast.

The larvae began to feed as soon as hatched, making no attempt to hibernate small, but they could not be persuaded to feed up rapidly like *l-album*; and although kept under exactly the same conditions as the larva of that species, they fed slowly and steadily for from sixteen

to twenty-two weeks, moths emerging approx. 26 days after the larvae had gone down, usually in the morning, but some appeared at midday, and others at night. The variation is considerable, and yet less than I had expected among so great a number, from more than one ?.

There are four main colour forms, A. deep red; B. deep ochreous red; C. rich yellowish brown; D. greyish ochreous; of which the first and last appear to be the less plentiful forms. Each of these colour forms has an almost unicolorous form and one on which markings are clear and distinct, also a few examples in which the ground colour is much clouded by blackish atoms, giving the insect a very dark appearance. Outside the above there is nothing of note in those I have, beyond a single deep pink and well marked example, which is no doubt a pale form of A. None of the forms is sexual; I have both sexes in all, and in about equal proportion. In every specimen I bred the

characteristic white spot is pure white.

Probably the theory that the large increase in the numbers of this species taken this year was due to immigration will be generally accepted but personally I think immigration had little if anything to do with it; the species is always present in certain south coast areas in small numbers, and its continental history and distribution show it to be a species likely to multiply rapidly under suitable weather conditions. Those conditions were present in this country in 1933 and the species occurred more freely than usual. This year again the weather has been favourable and the multiplication has gone on. The past season was not, I think, a good one for immigrants. True l-album has been taken more freely than ever before in this country, but there is evidence that they were present in 1933 and probably before. Also S. zollikoferi has broken all British records. But here again there is the best possible ground for saying if the specimens taken were due to immigration, it must have been in 1933 or earlier. It is many years since the south coast, where the creature has been captured, has been worked by so many and for so long, under such favourable conditions.

Senta ulvae.—I bred only one ab. of this species in 1934; this was a form I had not previously bred from Sussex larvae. It is a combination of abs. nigrostriata and bipunctata = ab. combinata, Edelsten.

Acosmetia caliginosa.—Among a small number of this species bred from Hants. mainland larvae, one very beautiful 2 specimen occurred. It is normal as regards ground colour but is clearly and strongly marked in purplish-red, the insect appearing pink rather than grey.

Cirrhoedia verampelina.—From a small number of larvae taken near Pulborough, I bred a number of the usual English form and one extreme ab. It is deep terra-cotta red, the central fascia being rather darker than the rest of the wing, the only pale markings are two fine yellow lines edging the central darker area. It is evidently the form Tutt treats of in Brit. Noct. and Vars. IV. 16, as unicolor, Stdgr., but the opposite extreme to the form figured by South as unicolor, Moths of British Isles, II. Plate 4, fig. 9. My specimen is exactly parallel with the ab. fucata, Esp. of the next species, X. aurago.

#### A few Orthoptera from Yorkshire.

By MALCOLM BURR, D.Sc., F.R.E.S.

Mr. T. Stainforth, of Hull, has been good enough to send me a few Orthoptera from his neighbourhood, and as almost every capture north of the Midlands is a definite addition to our knowledge, they are worth recording. The new locality for *Metrioptera roeselii*, Hag., our most northerly one so far, is interesting; it is characteristic that it is on the east coast.

Anisolabis annulipes, Luc., Hull, 6 females, 18th July, 1932. "Very common in some of our dock wastes, together with Periplaneta americana and Gryllus domesticus."

Labia minor, L., 2 fems. Hess. 21st August, 1925. Forficula auricularia, Linn., fem. Spurn, 7.ix.34.

Blattella germanica, L., male and 2 nymphs; Hull, Alexandra Dock,

"on board ship" August 22nd. Among dock rubbish, Hull.

Metrioptera roeselii, Hag., 2 males. On the Humber shore, between Easington and Skeffling, 15.ix.34. "It occurs on a damp, grassy bank of the embankment that serves to prevent flooding by the river Humber at high tides, and on the landward side of it, which faces north, and slopes in this direction towards a brackish ditch.

Acrydium kiefferi, Saulcy. Strensall. Common, Yorks., 5.v.35, male and fem. The male has the wings tolerably well developed, but not reaching the tip of the pronotum; this would be the form corresponding to what Haij calls acuminata in A. bipunctatum, a step towards his form sjöstedti. Houghton Woods, E. Yorks., 2 males and 1 fem., 6.iv.35: also 1 male, 2 fems., 7.vii.23. These July specimens all appear to be mature.

Chorthippus albomarginatus, De Geer., Humber Bank. In a typical habitat, among scanty grass on sand with sea holly; Easington, E.

Yorks., 3 & 14.ix.34, 4 fems.

Ch. parallelus, Zett., Allerthorpe, E. Yorks., 8.ix.34, m. & f. Ch. bicolor, Charp., Spurn, 8.viii.33, male, 7.ix.34, 2 pairs. Anacridium aegyptium, L., Hull Docks, male. E. Bilton.

Gryllus domesticus, L., in the open among fermenting rubbish, dock grain sweepings and stable refuse; for three successive years, in association with Periplaneta americana, L., and occasionally Blattella germanica, L.

### SCIENTIFIC NOTES AND OBSERVATIONS.

EMIGRATION OF PLUSIA GAMMA.—The following letter has been received by the Hon. Sec. of the Zoological Section of the S.E. Union of Scientific Societies from the Keeper of the Start Lighthouse:—

"On Sunday, 4th August, I observed a very large (e)migration of P. gamma; it was the largest I have ever seen, the sight was wonderful. It started at ten minutes past one, when a few hundreds of them coming away from the north and proceeding out to sea in a southerly direction. By half past one the main body of the moths came over and their course altered to the S.S.W. There were thousands upon thousands of them, it was just like a fairly heavy snowstorm. Over 300 settled on the lantern glass and within a second or two I had captured 40 in the killing bottle. The (e)migration finished passing here

at 2.35. I also captured a good many alike and released them after 3.30; they also went away to the S.S.W. The weather at the time was cloudy with a very slight northerly wind dropping to a dead calm by 2.0. Temperature 63°F."

#### OTES ON COLLECTING, etc.

Some Micro Larvae for the end of September and October .-Search the ground where there is an abundance of oak trees for discoloured acorns which probably contain larvae of Laspeyresia (Carpocapsa) splendana; similarly a large quantity of beech nuts may be gathered for the larvae of L. (C.) grossana\* which they may contain: these latter seeds must not be thrown away as the imagines may not emerge until the following year. On the undersides of the large leaved sallows (Salix caprea), in the woolly surface, may be found the burrows of the larvae of Eucosma (Grapholitha) subocellana, and on oak trees one may find large cones made by the larvae of Gracillaria alchimiella, Scop. (suederella, Thnbg.). On privet one may find cones made by G. syringella and also on ash and lilac. The seeds of Angelica and Heracleum will be webbed together by Cataplectica fulviguttella. On nutleaves locally one may find the brown stumpy cases of Coleophora fuscocuprella, and on bramble and whitethorn the puckered up cases of C. paripennella. Where yarrow grows abundantly one may be sure of finding the short brown cases of the larvae of C. argentula on the dried brown seed heads. Where there is plenty of wild golden rod (Solidago) a bag of the fluffy seed heads may be taken for the small straight, hairy cases of C. virgaureella. In the N. of England to the Clyde and also in Devon on the same plant the larvae of Phlyctaenia (Botys) terrealis may occur, but are difficult to get through the winter like those of C. fuscocuprella. Oak leaves may often be found blotched by the larvae of Tischeria complanella, and laburnum leaves mined by the very small Leucoptera (Cemiostoma) laburnella larvae. The collecting of the larvae of the genus Lithocolletis all of which mine between the cuticles of leaves each with their own peculiarly characteristic shaped track sometimes visible better from the upper, sometimes from the lower side of the leaf, may now be commenced, although it is better to wait somewhat later for most species. L. tenella blotches the underside of hornbeam leaves and L. carpinicolella the upperside. L. blancardella, Fb. (pomifoliella, Zell.) mines the leaves of hawthorn and apple, and L. spinicolella in sloe leaves, L. faginella in beech leaves, L. salicicolella in sallow leaves, L. viminetorum, Stein. (viminetella, H.-S.) in mined and curled over edges of osier leaves, and L. spinolella in the leaves of the broad-leaved sallow. L. ulmifoliella larvae mine leaves of birch. L. quercifoliella larvae mine oak leaves and those of L. viminiella nut leaves. L. schreherella mines leaves of common elm, and in nut leaves the larvae of L. coryli mine. Honeysuckle leaves are mined by larvae of L. emberizaepennella, and they pucker up nearly the whole leaf. rear quantities of these beautiful little mites it is necessary to place

<sup>\*</sup> In this district the larvae of L. grossana walk down the beech truncks at the end of August and beginning of September, for pupation.—T.B.F., Rodborough, Glos.

the leaves in a large flower pot and cover with lino. The pots must be placed out of doors in a somewhat sheltered place so as to be cool; beneath trees, as the fallen leaves would be in nature, will give a clue to the kind of shelter.

THE FREEDOM OF PARASCOTIA FULIGINARIA, L. FROM PARASITES.—Mr. C. N. Hawkins and I have bred this species for the last four years from wild larvae taken either in the penultimate or final instar, but have not yet found a single larva parasitized. This year some larvae were taken in the last instar but two, and others very late in the season after the earliest moths had already emerged. We thought that there might be a parasite, which destroyed the larvae at an earlier stage, than that at which we had taken them previously, or, if there was a parasite, which destroyed the larger larvae, those, which were the last to pupate, were the most likely to contain it. As before none of the larvae, young or old, were parasitized. Enquiries from others, who have had larvae, showed that their experience had been the same as The total number of larvae taken wild by ourselves and others is not less than 240, not including those found in Mr. E. E. Green's garden at Camberley. The numbers are sufficiently large to prove that, if parasitism occurs at all, it must be very rare.

Mr. J. L. Perkins suggested that the insect might have a pupal parasite. We had bred none from 17 cocoons found wild two years ago, but to obtain further evidence Mr. Hawkins and I collected 65 cocoons this year. Twenty-three, nearly all of them cocoons of this season, were empty, the moths having emerged, but all the rest were free from parasites and have produced moths. It is very remarkable that with a larva and pupa so vulnerable, the species should be so free from the attacks of both hymenopterous and dipterous parasites.—

E. A. Cockayne. 116, Westbourne Terrace, W.2.

ABUNDANCE OF LUCANUS CERVUS, L., IN WINDSOR FOREST.—During all the years we have explored Windsor Forest for Coleoptera we have only found the "stag beetle" four or five times, and always singly. This year on 3rd July, it was seen in the greatest abundance on a road outside the Forest. A few live females were seen walking in the road, but hundreds of dead, mostly females, occurred along the road for over a mile. Every few yards five or six could be counted, which had been knocked down or run over by motor cars. Has anyone else noticed this beetle in numbers this year?—Horace Donisthorpe.

Two other Insects in great Profusion.—On 1st October, 1933, when evening sweeping in a copse in Windsor Forest several hundred specimens of *Stenus picipes*, Steph., were swept up in one sweep of the net. It seems impossible to explain why so many of this beetle should

have been present in one spot.

Somewhat earlier in the same year, when evening sweeping in another part of the Forest, we noticed that the herbage, shrubs, etc., over a limited area were quite black as with mould or something. After sweeping at this spot the net was found to be literally full of the small fly Sepsis cynipsea, L. There must have been millions of the insect present. Mr. Edwards tells me that it often occurs in great numbers.—Horace Donisthorpe.

THREE WEEKS COLLECTING AND OBSERVING IN S. CORNWALL.—The following items from a 3 weeks holiday in S. Cornwall about 31 miles from Looe in a quiet well-wooded valley, may be of interest. Referring to Mr. Nicholson's article in your June issue I am glad to report that during the second week in July Polygonia c-album was abundant in the valley of the W. Looe river. Most of the 2 s seemed to be of the var. hutchinsoni and were in excellent condition. I was interested to note the rather unusual occurrence of a 3 Argynnis paphia mating with a ? P. c-album. The two insects were actually in cop. for a few minutes and the 3 paphia carried the 2 c-album a short distance suspended from the anal claspers. This 2 was a worn specimen. is all the more remarkable, as in each case the opposite sex was already on the wing in some numbers, the 2 paphia having apparently emerged quite recently. I should be interested to hear whether such matings of species belonging to different genera have frequently been observed in a state of nature. Presumably the ova in such a case would invariably prove sterile; or more probably there was no actual fertilization taking place at all. Among other insects of interest in the same valley I took Hesperia malvae var. taras, Atolmis rubricollis, Noctua triangulum, N. ditrapezium, Hadena adusta, Euphyia cuculata (sinuata), E. picata, and some finely banded dark forms of Angerona prunaria ab. corylaria.—T. G. Edwards (M.A.).

[I remember the record of a similar case between Aryynnis paphia

2 and Thecla quercus & .- T.B.-F.]

SECOND? BROOD OF ALUCITA PENTADACTYLA.—On 25th August I found a perfectly fresh example of this species in my garden at Cheam. Usually the species is common here throughout June, but I have not previously found it in late August. Tutt remarked, Pterophorina of Britain, p. 155, "The species appears from the middle of May until August, and there is possibly a partial second brood from the moths which are the earliest to emerge, although the species on the whole appears to be only single brooded. The May specimens are very infrequent, but the moth is abundant in June, July and August continuously and I have always supposed, although I have no actual proof of the matter, that part of the larvae from the eggs laid by the May moths usually feed up rapidly and emerge in late July and August, whilst part hybernate with the larvae from the later moths. so generally the case with moths whose appearance is spread over a considerable period of time and whose larvae hybernate, that there is very good reason for supposing it may be so with this." This was written in 1894. Have we yet obtained "actual proof" of this supposed second brood?—Hy.J.T.

[A. pentadactyla usually occurs here at Rodborough from the second week in June until mid-July, but I have taken odd fresh specimens later (15.viii.33; 17.viii.34). As such abnormally late individuals seem to occur singly. I think that they are more probably late emer-

gences than a second brood.—T.B.-F.]

NEPTICULA SUBERIVORA, STT. AT SOUTHAMPTON AND WORTHING.—A few mines containing living larvae of this species were found on *Quercus ilex* in Portswood Road, Southampton, on 7th March, 1935, and one moth was bred from them. At Worthing on 5th April, 1935, while

calling to see the Rev. Geo. Wheeler after viewing his collection in the Public Museum, empty mines of this species were noted commonly in Gratwicke Road, but only two full mines were found at this late date. Probably the insect is widely distributed along the south coast.—Wm. Fassnidge (M.A., F.R.E.S.). Southampton.

LARVAE OF HEMIMENE ACUMINATANA, ZELL. AND H. CONSORTANA, STT. NEAR SOUTHAMPTON.—Both species occur in a rough field near Baddesley Great Cover about five miles from Southampton, the former commonly, the latter rarely. Larvae of H. acuminatana were found in 1935 on 27th March, varying in size from small to nearly full fed, indeed some of them had spun their cocoons by the end of March. They feed in the very young shoots of Leucanthemum chrysanthemum, L., preferring the barer places and the older thicker rootstocks. They are not hard to find if one is prepared to crawl about among the herbage. On 17th April the young daisy shoots were already overtopped by other growth, and it was difficult to find those affected. Emergence took place over some weeks and a number of parasites were bred. H. consortana is about a month later than H. acuminatana. Mr. L. T. Ford and I searched for it on 29th April, finding still a few belated larvae of acuminatana and a few of consortana. From 6th May, when acuminatana was seen on the wing, till the great frost round about the 17th, I found larvae sparingly, feeding in the unopened buds, entering at the base, and causing the head to droop sideways or downwards in most characteristic fashion. The frost killed a good percentage of the daisy flowers, though it was not so severe around Southampton as elsewhere, but I bred a short series, and Mr. Ford was also successful.—Wm. Fassnidge (M.A., F.R.E.S.). Southampton.

Box HILL, SURREY.—We note that during the last week in July larvae of Vanessa atalanta and of V. cardui were found there and that imagines of Polygonia c-album, Limenitis camilla (sibilla) and Urbicola comma were captured at the same time.

DISTRIBUTION OF LIMENITIS CAMILLA (SIBILLA)—On 30th July L. camilla paid us a visit, sunning itself awhile on a hydrangea; the day was very warm. I have not heard of it near Windsor before.—M. Burr, Windsor.

Collecting in Darjiling.—I spent a month's holiday including the first half of June in Darjiling and I thought that it would interest you to know that the result of some very superficial collecting was about 1000 specimens of just under three hundred species. The weather was not good, misty without rain. I caught hardly any butterflies. Most of my catch was made at the lights of the hotel.—D. J. Sevastopulo (F.R.E.S.), Calcutta.

#### **EURRENT NOTES AND SHORT NOTICES.**

At the first Congress of British Entomologists which was held at Oxford, 27th, 28th and 29th July, Mr. Thos. Greer showed the following Lepidoptera from Northern Ireland:—(1) A very beautiful and interesting series of *Polyonmatus icarus* from various Irish localities,

including both &s and &s of the intense and vivid lilac blue; three gynandromorphs 1 3-2 and 2 2-3; several males with red scales on the hind margin of the secondaries; & s without black or red spots on the hind wing margin; &s with only black spots ditto; &s with only red spots ditto; & s with both black and red ditto; seven specimens from Derry of which six had the outer margin of the left forewing flatter than that of the right; and 9 examples of underside aberration. (2) A particularly fine series of 6 Pieris napi ab. semifasciata, Cabeau. (3) A series of 5 Pieris brassicae ab. nigronotata. (4) Several Epinephele These last three species all showed extremely jurtina ab. addenda. intense coloration, the E. jurtina being especially black. very fine aberrations of Euchloë cardamines including ab. major, Tutt, ab. minora, Selys., ab. flava, Wms., ab. williamsi, Greer, and ab. ochrea, Tutt., two 2s were present with faint yellow apical areas, specimens with very large and very small discoidals, and the further aberrations ab. umbrosa, Culot, ab. despila, Raynor, ab. caulosticta, Wms. and various forms of intersex.

The 28th annual volume of the Portici Institute, Boll. Lab. Zool. Gen. Agraria, contains a number of essays and reports of investigation on the life-history of certain insects of more or less economic importance. As usual these articles are illustrated by a profusion of diagrams

and other illustrations.

Part 58 of the Supplement to Seitz Palaearctic Volumes continues the fresh matter relating to the Geometers. In the 3 sheets, 24 pp., the two chief genera dealt with are Scopula, Schrnk. and Sterrha, Hb. Regarding the former name the author, Mr. L. B. Prout, refers again to the necessary abandonment of the previous name Acidalia, see Seitz. Vol. XVI. p. 48-51, which falls as a synonym, and also he states that "Almost all authorities are now agreed that the distinction between Sterrha and Ptychopoda (on the basis of the number of spurs on the & hind-tibia) is not of generic value. Sterrha being the older name Ptychopoda falls. Again this part is another of special interest to British entomologists as it deals with 16 British species to which 61 new forms are described and a good proportion have been or will be figured. Scopula immorata has 3 additional forms; S. ternata (fumata) 3; S. rubiginata 7; S. marginepunctata 10; S. floslactata (remutata) 2; S. immutata 2; S. virgulata 8; S. nigropunctata (strigilaria) 6; S. emutaria 1; S. imitaria 6; and S. ornata 3. In Sterrha there are S. ochrata with 2 forms; S. rusticata 2; S. muricata 2; S. dimidiata 1; and S. eburnata (contiguaria) 3. Owing to the kindness of the authorsome 20 of these aberrational names were given in the Ent. Record "List of British Geometers," published a few years ago. Now short descriptions are available of all these forms with more than 40 Members of all natural history societies should urge their officials to endeavour to obtain this invaluable source of reference.

Dr Burr reminds us that he will be unable to acknowledge correspondence for the next few weeks as he will be away collecting in the south-east of Spain after attending the International Congress of Entomology at Madrid in early September, at which he represents the

Oxford University.

The Royal Entomological Society is adopting a very proper revision of their procedure at ordinary meetings. Fellows are requested to notify the Secretary of their intention to exhibit, and to forward a short note

as to purport of such, at least fourteen days before each meeting. The Council will then draw up an Agenda to be forwarded to each Fellow not later than the Saturday before the meeting on the Wednesday following. It has further been decided that all Fellows should lay their exhibits on the table for inspection not later than 7 p.m. on the day of the meeting. This revision was talked of long ago; it will, it is hoped, give all Fellows the opportunity not only to see the exhibits but to give additional information and join in the general discussion.

Messrs. F. N. Pierce and J. W. Metcalfe have recently announced the early appearance of their long awaited volume "The Genitalia of the British Tineidae." It will be illustrated by some 2000 outline drawings inclusive of the female organs. The arrangement will be

that indicated by the genitalia alone.

A further portion of the proposed series of Lists of British Insects has recently been published by the Royal Entomological Society. "The generic names of the British Odonata, with a check List of the species." For some period this group has been largely known as the "Paraneuroptera." This designation is now dropped without reference or comment. One would like it stated on what ground. On page 47 one reads the definite statement that "Throughout the work generic and specific names should be spelt exactly as in the place of first publication." It is a great pity that this rule is not carried out, for we find that out of 43 specific names no less than 10 are not in accord with this absolutely necessary rule. Consultation of the original publications will show that isosceles was spelt by its author isoceles, pratense was spelt pratensis, najas was spelt naias, etc. Although the commonly spelt word, Aeschna is properly corrected to Aeshna, Fab. (1775) we rather suspect that the family name was first spelt Aeschnidae and if priority applies should be now so spelt and not Aeshnidae. Unless we stand out for absolute priority correct to the letter, the next generation of workers will feel that they must revise the work now done. We much prefer the comma to the bracket for separating the author's name from the specific name. We believe that the bracket is used in Botany in quite another sense, and there indicates the omission of the author's name and the name of the author of the genus is substituted. many of these "tricks" are unnecessarily confusing. The get up of the publication is quite good and thorough, although the price 3/6 for 16 pages is rather incommensurate.

The Society for British Entomology continues its issue of interesting and useful matter relating to the British Fauna. Part 1, of Volume II of the Transactions contains six papers (1) Notes on the Hemiptera-Heteroptera of the Slough Biological Field Station; (2) The Trichoptera of the Oxford District; (3) A Key to the Coleopterous Family Bruchidae of economic importance in Europe; (4) The Ichneumonidae new or rare in Britain, with Notes on recent British Lists; (5) a discussion of the two Hymenoptera Bombus muscorum and B. smithianus; (6) And part 2 of the List of Cornish Diptera (Syrphidae, Tachinidae and Muscidae.) There are four plates and a map. The whole part of 116 pages does great credit to the Society and the editors Messrs F. J. Killington and B. M. Hobby are to be congratulated.

All MS. and EDITORIAL MATTER should be sent and all PROOFS returned to Hy. J. TURNER, "Latemar," 25, West Drive, Cheam.

We must earnestly request our correspondents nor 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.

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.

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.

Desiderata.—Urgently wanted for research work at the Royal College of Science,

Pupae normal form of Hemerophila abruptaria.

Duplicates.—Pupae of var. fuscata of the same species offered in exchange.—J. A.

Downes, 5, Trinity Road, Wimbledon.

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.

FOR SALE.—A complete set of "The Vasculum" is on hand for disposal. Particulars

and price on application to William Carter, 13, Kimberley Gardens, Newcastle-upon-Tyne.

CHANGE OF ADDRESS.—Malcolm Burr, D.Sc., to "The Hermitage," Dorney, Winchester. Rev. C. R. N. Burrows, F.R.E.S., to Stanford-le-Hope, Essex. H. Donisthorpe, to 332, Great West Road, Heston, Middlesex. Orazio Querci to 3 Lysimaxoy, Salonika, Greece.

#### MEETINGS OF SOCIETIES.

Entomological Society of London.-41, Queen's Gate, South Kensington, S.W.7.

8 p.m. October 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. Sept. 26th. Oct. 10th, 24th (Exhibition).—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 Section, Birmingham Natural History and Philosophical Society.—Our first meeting is on October 21st and we expect to hear communications of great interest. We extend to all local entomologists and those who mey be temporarily in the district a hearty invitation to join us for this and any other evening. This, and subsequent meetings on the third Monday of each month, takes place at 7.45 p.m., at 55, Newhall Street, B'ham.—P. Siviter Smith, Pebworth, Stratford-on-Avon.

#### FOR SALE

Romanoff, Mémoires sur les lépidoptères.

Vols. I.-VI., IX. (Macrolep.)

in half-calf (1884-1897). (very good copy).

Koenig, Catalog of the Nido-Oologie-Collection in the Koenig-Museum, Bonn.

4 Vols. with 18 coloured plates of bird-eggs.

ALFRED KERNEN, Stuttgart-W., Schloss-Str. 80.

Communications have been received from or have been promised by Dr. Verity, Capt. K. J. Hayward, Rev. C. R. N. Burrows, H. Willoughby-Ellis, Hy. J. Turner, H. Donisthorpe, O. Querci, D. G. Sevastopulo, A. J. Wightman, T. Greer, H. W.Andrews, T. Bainbrigge Fletcher, T. Sneyd Taylor, Dr. M. Burr, E. P. Wiltshire, R. E. Ellison, F. D. Coote, and Reports of Societies.

All communications should be addressed to the Acting Editor, Hy. J. TURNER, "Latemar," 25, West Drive, Cheam.

#### IMPORTANT

TO ENTOMOLOGICAL SOCIETIES and MUSEUMS.

#### BACK VOLUMES OF

# The Entomologist's Record and Journal of Variation.

(Vols. I-XXXVI.)

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# ENTOMOLOGIST'S RECORD AND JOURNAL OF VARIATION

EDITED

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#### The Geographical Aspect of Argentine Entomology.

By KENNETH J. HAYWARD, F.R.E.S., F.R.G.S., F.Z.S.

Surprise is sometimes expressed at the number of forms of certain butterflies that are described from this country, often from the same Province. One sometimes feels that there lurks a suspicion that we entomologists out here are creating new forms and subspecies on very insignificant grounds and that so many variants cannot really exist in any one country. Before leaving England for these shores in 1923 I made extensive inquiries as to the entomological fauna of the Argentine with but very scanty results. To-day, nearly 12 years later, interest in our insects is much greater, and a great deal of matter is annually finding its way into print, both within and without the country. It may perhaps not be out of place therefore to devote a few lines to the geographical aspect of Argentina.

I fear that to the majority of people who have had no direct or indirect connection with the country, it is more or less an unknown quantity, just a country coloured differently from others on the maps of South America and in the rare cases where the atlas gives a separate map of the Argentine, divided up into several provinces which are apt to be mentally compared to the English counties. It comes therefore as a staggering fact to many, that the total area of the Argentine is approximately one third that of Europe (including Russia), and that the apparently insignificant internal divisions have areas equal to European countries. Arbitrarily divided into 24 political divisions, 14 of which are Provinces with their own legislatures, and 10 National Territories under direct Federal control, its vast area is best realized if at the expense of a little space we compare these divisions to the countries whose areas they represent.

Commencing with the smallest, Tierra del Fuego is slightly smaller than and Tucumán equal to, Turkey in Europe, Misiones equals the Netherlands, and Jujuy and Los Andes are slightly in excess of

Esthonia and Albania respectively.

Entre Rios and San Luis separately equal Austria, whilst the area of Hungary does not differ from that of the Territory of Formosa, and is exceeded by San Juan and Neuquen, whilst Córdoba is equal to Austria-Hungary combined. Both Corrientes and La Rioja may be compared to Portugal and Catamarca and Salta to Greece, whilst Santa Fé is slightly larger. The Chaco equals Bulgaria, Mendoza is larger than Czeco-Slovakia and Santiago del Estero and La Pumpa are both four times the size of Denmark. Finally, the largest four divisions consist of Rio Negro, which has twice the area of Bulgaria, Chubut equal to Greece and Bulgaria combined, Santa Cruz exactly half the area of Germany, and the largest, Buenos Aires, equal approximately to the British Isles or to Italy.

Thus entomologically we must look upon the Argentine, not as a country, but more in the light of a continent that stretches from the tropic of Capricorn to the sub-antarctic, that rises from sea-level to the mighty peaks of the Andes. Within its boundaries are to be found almost every type of vegetation and terrain, forests of many kinds, tropical, sub-antarctic, riverine and dry, mountain and plain, the lagoon-studded Chaco and the waterless areas of the northwest, rolling grass-covered pampa and bare salt marshes, sandy deserts and sheltered

upland valleys, the great lake system of the southwest and the seaboard of the East. Many of these features are often found in a single Province, so great is their extension. We may perhaps compare the thousands of valleys in the isolated sierras, the pre-cordilleras and the mighty cordilleras themselves to the Swiss valleys where so many separate races of certain butterflies exist, but here we have 2,000 miles of such mountains, many of whose peaks tower above the twenty thousand foot level and whose valleys are influenced by climates that range through all the grades from sub-tropical to sub-antarctic.

Hence for a single species of butterfly, apart from lowland forms, there may appear several mountain forms influenced by such varying climatic conditions as are not found in any single European country. So isolated are these valleys that I do not suppose one in a thousand has ever been entomologically explored, nor has the 360,000 square miles south of Buenos Aires except around one or two of the lake resorts and other better known points. Salta and Jujuy where the Bolivian influence is felt, have as yet received no serious attention and the same can be said for Formosa. I know of no insect specimens from Los Andes and from San Juan and from San Luis only those few I have brought back myself. Misiones, the Mecca of all Argentine entomologists is known only along the Alto Paraná litoral and for a few miles inland, and our present knowledge even of that part cannot be very great if the author in a five months collecting trip to those regions in the summer of 1933-34 was able to bring back more than 80 day-flying butterflies new to the country's fauna, and that in one of the worst collecting seasons on record.

We have in this country a great field for collectors, the amount of undescribed material, especially in Orders other than Lepidoptera, is colossal, but they must come prepared to rough it and to be guided by local advice, and above all they must know how to collect, an art of

which so many "collectors" are supremely ignorant!

#### On the date of the Preface to Hübner's "Sammlung europäischer Schmetterlinge."

By FRANCIS J. GRIFFIN, A.L.A. (Registrar, Royal Entomological Society of London.)

As a result of the acquisition by the Royal Entomological Society of London of the surviving MSS of Jacob Hübner, it is hoped to determine, more exactly than has hitherto been possible, the dates of

publication of his works.

A point not without general interest arose during this work, and my assistance was asked. It was the identification of the 'Wintermonat' used by Hübner in dating the Preface to his 'Samulung europäischer Schmetterlinge' and elsewhere. The possibility of its being either December or January indicates the importance of an exact determination, and after somewhat lengthy research which showed that it might, under certain circumstances, have been used for any one of the months from October to January, I wrote to "des Deutschen Worterbuchs der Brüder Grimm" and the "Preussische Akademie der Wissenschaften," who very kindly undertook a long and laborious research into the various German 'dialect-districts' for the use of this name, and gave their permission to publication of the results. As a result they conclude:

"Als Ergebniss lässt sich mit völliger Sicherheit feststellen, das Jacob Hübner mit der Bezeichnung 'Wintermonat' die zu Beginn des 19. Jahrhunderts in Augsburg wohl in der Umgangsprache noch übliche Benennung des November gebraucht hat."

Thus it is clear that if Hübner wrote his Preface only in November, 1806, it could not have appeared until late in that year, and quite possibly not until 1807.

I should like to express my great appreciation of the very real assistance so freely given by the authorities of the German Dictionary.

Note.—The engraved title page to my copy of Hübner's Sammlung (Papilio) is dated 1806, but I have no preface or text.—T.B.-F.

# An Account of my Studies in the Biology of Pieris rapae. III. By ORAZIO QUERCI.

(Continued from p. 87.)

THE SITUATION ON 11TH AUGUST, 1932.

The large number of *Pieris rapae*, which we took at the Park Way after 10th August, show that the heat at the beginning of that month was not destructive. Certainly, the less resistant larvae, those which were caught by the intense heat while moulting, and those which were unable to find a suitable shelter when the temperature increased, were killed, but the most vital caterpillars which, favoured by the dense vegetation, were able to pupate in a short time, must have survived. On 11th August there were at the Park Way:

Fourth Brood.—The last and more or less old adults of this brood. Fifth Brood.—Some adults, many chrysalides formed on August 3rd and later on, many larvae in different stages, and the eggs laid on the last three days.

Sixth Brood.—Many chrysalides, larvae and eggs.

The meadows at the Park Way, in front of the Art Museum, and near the square where there is the monument to General Washington, have probably never been cultivated. There the weeds were always cut and burned by the end of the spring. In the year 1932, the Academy of Natural Sciences of Philadelphia requested the Park Commission to let the weeds remain so that we might carry out our research. On 21st and 22nd July it rained to the amount of 1.60 inch, on 3rd August the rainfall was 0.48 inch, and at the beginning of August the vegetation was prodigious. Neither in Cuba, nor in Morocco, in the wet season, have we seen such a big mass of plants. About 24th August, in spite of the heavy rain of 10th August, most plants died as quickly as they were grown. The Lepidicum virginicum, on which the caterpillars of the "Whites" prefer to feed, remained plentiful and verdant, but its thin stems and leaves cannot offer a shelter against the heat. That country, which had been luxuriant for most of August, turned barren by the end of that month, and this change explains matters, I think, because many larvae resisted the heat from 5th to 10th August, but they were seriously injured by the short and little intense wave of 27th August, as is proved by the rarity of adults 8 to 12 days later, that is from 6th to 10th September. Pieris rapae continued to be scarce until the 17th of the same month because the heat-wave at the beginning of September killed also the young larvae hatched on those sultry days. Perhaps, beside

the heat, the vapour pressure was an important controlling factor: on 5th, 8th and 10th August it was below 500, on the 27th it was 707, and from 31st August to 2nd September it was 757 to 838. I do not think that the control of the abundance was made by parasites, as we took in the country many big larvae and none of them were affected with mites.

P DATE.
MAX. TEMP.
MIN. TEMP.
P. RAPAE TAKEN.

12 82. 70. 130—The Pieris rapae, which are emerging now, all

13 83. 65. 124 belong to the fifth brood.

14 87. 68. 130—On this day also some specimens of the sixth brood should emerge.

15 88. 69. 137—There are thousands of "Whites" on the wing,

16 88. 69. 291 and we catch only those which appear to have some peculiarity.

17 86. 69. 165—The weather is unsettled.

18 78. 71. 55—It is cloudy, and we took the "Whites" which were resting on the stems.

19 81. 68. 298—In spite of the misty sky we make the largest capture.

20 83. 66. 75—Bad weather and poor collecting.

21 88. 65. 134—When the temperature remains for some consecu-

22 88. 65. 220 tive days near the upper fatal limit for P. rapae

23 87. 69. 151 their larvae do not die at once but most of them

24 84. 67. 163 cease to feed and after some days they rot.

25 88. 66. 167—It is interesting to establish the duration of the

26 88. 66. 107 life-cycle of the last specimens of the fifth brood to know when it might end.

27 90. 69. 37—A sultry day. Most larvae die, as I stated above.

28 83. 73. 143—There are in the country many worn specimens.

29 83. 67, 100

30 87. 70. 145—Thousands of specimens are flying, but most are badly worn.

31 95. 73. 60—On this day the emergence of the sixth brood Sep. should begin. In the evening it is very hot, and

1 97. 74. 106 all the larvae of "Whites" must die.

2 93. 76. 146—The heat continues to be intense.

#### OTES ON COLLECTING, etc.

LIST OF SPECIES OF MICRO-LEPIDOPTERA ADDED TO THE BRITISH LIST SINCE THE PUBLICATION OF MEYRICK'S REVISED HANDBOOK.—It may be useful to give a complete list of these additional species:—

Galleriadae.

1. Aphomia gularis, Zeller. Bournville; several records from London.

Pyraustidae.

2. Phlyctaenia fulvalis, Hb. Bournemouth district: Clutterbuck, Entom. LXIII, 85-86 (1930).

Eucosmidae,

3. Eucosma rubescana, Constant. Kent, Essex; Huggins, Entom. LXVII, 169-171, t. 1, ff. 1, 2 (1934).

4. Eucosma brunnichiana, Linn. Sheldon, Entom. LXVIII, 198-

199 (1935), (distinct from solandriana).

5. Bactra scirpicolana, Pierce and Metcalfe. Essex, Devon; Entom. LXVIII. 149 (1935).

6. Enarmonia conicolana, Heylaerts. New Forest; Huggins, Entom. LXIV, 27-29, t. 1 ff., 1, 2 (1931).

Gelechiadae.

7. Phthorimaea seminella, Pierce and Metcalfe. Norfolk [?]; Entom. LXVIII, 97-99 (1935).

Oecophoridae.

8. Depressaria brunneella, Ragonot. New Romney, Kent; Griffith, Entom. LXV, 18-19 (1931).

9. Depressaria astrantiae, Heinemann. Cotswolds; Fletcher, Ent. Rec. XLVII, 57-58 (1935).

Scythridae.

10. Scythris heterodisca, Meyrick. Folkestone; Meyrick, Entom. 149 (1929).

Yponomeutidae.

11. Swammerdamia compunctella, Herrich-Schäffer. Surrey, E. Sussex, Dorset, Rannoch; Metcalfe, Entom. LXVI. 141-142 (1933).

Eupistidae.

12. Eupista vacciniella, Herrich-Schäffer. Buttermere; Meyrick, Entom. LXIII. 38 (1930).

13. Eupista erigerella, Ford. Kent; Ford, Entom. LXVIII. 114

(1935).

14. Eupista laripennella, Zetterstedt. Norfolk, Oxford; Pierce and Metcalfe, Entom. LXVII. 97-99 (1934). (Note: Eupista annulatella, Tengstrom=laripennella, Meyr. nec Zett.)

15. Eupista tamesis, Waters. Oxfordshire; Waters, E.M.M. LXV.

1-3 (1929).

Lithocolletidae.

16. Lithocolletis strigulatella, Zeller. Berkshire; Waters, E.M.M. LXV. 169-170 (1929).

17. Caloptilia pyrenaeella, Chrétien. I. of Wight; Ford, Entom. LXVI. 230 (1933).

Tineidae.

18. Tenaga pomiliella, Clemens. Deal; Daltry, Entom. LXII. 34 (1929), LXIV. 19 (1931).

19. Tinea ruricolella, Stainton. Pierce and Metcalfe, Entom.

LXVII. 217-219 (1934).

20. Tinea personella, Pierce and Metcalfe. Entom. LXVII. 217-219 (1934).

21. Tinea metonella, Pierce and Metcalfe. Liverpool; Entom. LXVII. 266 (1934).

22. Tinea lanella, Pierce and Metcalfe. Liverpool; Entom. LXVII. 267 (1934).

Stigmellidae. Sunk as synonyms by Mey-

23. Stigmella rufiicapitella, Haworth. rick but distinct by genitalia; 24. Stigmella fletcheri, Tutt. see Waters, Microlep. Oxford

District, pp. 61, 62 (1929).

25. Stigmella spinosissimae, Waters. Llandudno; Waters, E.M.M. LXIV. 105-106 (1928).

Stigmella vimineticola, Frey. Sunk under salicis by Meyrick 26. but is distinct fide Waters, Microlep. Oxf. Distr., p. 65 (1929).

27. Stigmella decentella, Herrich-Schäffer. Eastbourne: Adkin. Entom. LXVI, 25-27, t. 1, f. [1] (1933).

Stigmella albifasciella, Heinemann, Oxon, Berks., Hants., 28. Dorset, Surrey, Norfolk; Waters, E.M.M., LXIV, 248-251 (1928).—T. Bainbrigge-Fletcher (R.N., F.Z.S., F.R.E.S.), Rodborough, Stroud.

A TAME PYRAMEIS ATALANTA.—On 21st August I was walking along a narrow lane, or rather passage with a hedge on each side, at Heston, when I observed a beautiful fresh specimen of the Red Admiral flying slowly about. It settled on the hedge, and I presented my hand to it, when it quietly got on to my hand, and I carried it along for a few yards. It floated off, flew down the passage a little way and settled again. I again presented my hand, and it got on as This happened three times, and when I got to the end of the passage, it flew over the hedge and disappeared. It was a fine day but not unduly hot; neither was I heated nor my hands hot. mention this, as that had been suggested to me as an explanation of the butterfly's behaviour. It simply appeared to like being gently carried along. Horace Donisthorpe.

HYDROTAEA IRRITANS, FLN. Q ATTACKED BY CARICEA TIGRINA, GAB. Q. -On 28th August last, the Anthomyid fly Hydrotaea irritans, Fln., was present in great numbers in Windsor Forest, buzzing all around and settling on one in the most annoying manner. When having lunch I noticed one fly attacking another; it rolled it over and thrust the tongue between the head and thorax, eventually killing it. As this seemed a rather curious proceeding to me, I bottled both, the aggressor continuing to suck the other in captivity.

At first they looked alike, with the same hairs, yellowish pubescence, silver face, etc., and the only difference I could detect was that the one (Caricea tigrina, Fab.) had yellowish legs and the other blackish ones.

Though both belong to the Anthomyidae, they are not at all closely I gave them to the British Museum and Mr. Edwards named them for me and said that the Caricea was known to be predacious, but had never been recorded as attacking a fly as large as itself before.

The similarity in the two species may aid the one to get near to its

prey without being noticed — Horace Donisthorpe.

PERONEA SHEPHERDANA, STEPH. AT SOUTHAMPTON,—Nearly full fed larvae of this species were common on Spiraea ulmaria, L. at Woodmill on 24th June, 1935, and on 5th August the imagines were stirred out from clumps of the foodplant in the evening. The insect also occurs abundantly along the old canal between Southampton and Eastleigh, in fact I find it wherever the Spiraea grows in thick clumps among the rank herbage. Wm. Fassnidge (M.A., F.R.E.S.). Southampton.

Pyrausta stachydalis, Zinck, in Hampshire.—This insect has been

common this year for the first time in my experience. I have found it on Southampton Common, at Baddesley in several localities, by the old canal at Shawford, and at the foot of St. Catherine's Hill near Winchester. On 27th June it was freshly emerged and it lasted until mid July. Young larvae were found in the same localities in mid August.—Id.

Myelois cirrigerella, Zinck. Taken near Winchester, with Notes on the Larval Habits. - My first opportunity of searching for this species during the last few years was on 27th July, 1935, at Farley Mount, near Winchester, the locality where I had taken one specimen in 1927. As it happened to be a very windy day I decided to pluck the heads of Knautia arvensis. Coult. in the hope of finding larvae by sheer chance. When later I looked in the tin I found in it to my very great surprise a somewhat rubbed 2 cirrigerella, which I had somehow managed to gather unnoticed with the flowers. I do not however recommend this method of collecting the species. in the evening the wind subsided a little and I was able to search more carefully, when I found that the larvae were not rare at all in one very restricted locality. They were of all sizes, some already nearly full fed, feeding in dirty white silken tubes, on the seeded head of the middle scabious flower nearly always and only very rarely on a side The brownish orange larva can be seen through the tube of silk and readily leaves it when disturbed. Three or four larvae may be found in each head and the spun tubes keep the seeds from falling after they are ripe enough to do so. I made a careful comparison of the larva with the description given by Monsieur Chrétien (Amateur de Papillons, Vol. II., 1924, p. 20) and found the description exact in every detail. From the heads gathered several tiny larvae emerged later, though nothing of them could be seen at the time. up very rapidly and spun spherical cocoons in root fibre. I revisited Farley Mount on 1st August and found many more larvae in a rough field near; and on 7th August I found another locality still more prolific some half mile distant. By this date many of the seedheads that had contained larvae were already empty, but some tenanted heads were still to be found.

Naturally I have searched in other localities in Hants, Dorset and Sussex, but I have met with no success. I have also devoted some time to searching for larvae in the heads of Scabiosa columbaria, L., suggested as a possible foodplant, but could find no traces, even where S. columbaria grows in close proximity to K. arvensis. It has been suggested by Stange (Pyraliden von Friedland) that a succession of dry summers suits this species. However that may be, the insect is clearly not at all rare in the larval stage in this particular locality after two dry, hot seasons. For notes on M. cirrigerella in England and on the continent the reader is referred to the Trans. Hants Ento. Soc., 1928, pp. 34-36.—Id.

ARSILONCHE ALBOVENOSA IN SOUTH DEVON.—I captured a male of this species in good condition sitting on a reed stem on 20th Aug. Mr. P. Milmen of Paignton kindly compared it with a long series of his own. I should be interested to know if it has been taken elsewhere than in the Eastern Counties.—(Capt.) C. Q. Parsons, "Alma Marceau," Seaway Lane, Torquay.

Celerio Galii in the Shetland Islands.—Mr. T. E. D. Poore has verified for the Immigration Committee of the S. E. U. of Sci. Societies the capture of *C. galii* at Unst on 29 vii.35 by Mrs. Ian Sandison. It was visiting honeysuckle as was the specimen recorded last year at the same place.

The presence of our Migrant Species of Lepidoptera recorded from Bayonne, Basses Pyrenees.—Two first appearances for 1935 were Colias croceus on 8th June and Colias hyale on 11th April. The first, and I think the only, Vanessa cardui I have seen this year up to 27th August, was on 5th August—very fresh. On the same day I saw several C. croceus and one v. helice all pretty fresh. As regards your regular migrants, I should say that the following are certainly normal residents in this particular part of the Basses Pyrenees Department of France. Vanessa atalanta, Nymphalis io, Colias croceus (regular spring and summer broods), Macroglossum stellatarum (all the year round), Plusia gamma (very common), and Nomophila noctuella (very common).

V. cardui seems very capricious. Some years it swarms, and in others it is very rare. Definitely not a normal resident I should say.

C. hyale. Very common in other parts of the Basses Pyrenees, but rare here.

Acherontia (Manduca) atropos. I know of only one taken here in

the last ten years.

Herse convolvuli. The commonest "Hawk Moth" in this district, but I have never seen the larva, and cannot say whether it is normally resident or not.—G. T. Adkin, Bayonne, Basses Pyrénées, S. France.

[From the "Migration Records" of the S.E. Union of Scientific

Societies.]

Collecting and Observing in Cornwall.—As Official Recorder for Cornwall, I am glad to have T. G. Edwards's note about *P. c-album* on p. 105. This species seems to have spread west from Devon into Cornwall in 1933 and last year it got as far as Tresillian, beyond which I have no records yet, and the existing records for the county are nearly

all single specimens.

In response to Mr. Edwards's request for information about abnormal pairings I can say that there are many of these scattered through the pages of this magazine, and the Entomologist and Entomologist's Monthly Magazine. If he can refer to Vol. V of the late J. W. Tutt's British Lepidoptera he will find Chapter I (39 pages) devoted to "Hybridisation in Lepidoptera," and including a list of the known hybrids at that time (1906). Tutt also gives a list of recorded crosspairings of non-allied species in nature, some of which are absolutely For instance, Dryas paphia 3 with Zephyrus quercus 2 astounding. (Entom. XXVII. p. 26), Hybernia marginaria & with Nyssia hispidaria 9 (Ent. Rec. IV. p. 156), are remarkable enough, but what is one to think of Hybernia marginaria & with Taeniocampa pulverulenta ? (Entom. XXXIII. p. 224) and, above all Euchloë cardamines 3 with Bapta temerata ? (Entom. XXXI. p. 188)?.—C. Nicholson, Tresillian, Cornwall.

Macro-Lepidoptera in S.W. London.—Major C. Dick's note (XLVII, 25-6) of Lepidoptera observed in Wandsworth since 1925 led me to

compare it with records of a neighbouring Borough (Streatham), in conjunction with the note by Mr. C. Nicholson in regard to Clapton

records (XLVII, 38).

A list was compiled by a small Natural History Society of Streatham from 1903 to 1927, mainly the records of Mr. Roger Paton, M.A., and Mr. Cyril Paton. These records were of the flora and fauna of a district within one mile of Streatham Railway Station and included Streatham and Tooting Commons and a small part of Mitcham Common, an area practically adjoining and just south of the district referred to by Major C. Dick. Up to about 15 years ago there were several rural lanes between Streatham and Mitcham Common, since when they have gradually disappeared with the spread of new houses.

In 1928 Mr. Paton and other members of his family moved to Sutton and while the Society still functions, the area for which records are kept has been altered and considerably enlarged. The Streatham records have been deposited in the Streatham Library where they can

be consulted.

The list appended (of species occurring in most years) adds 74 to Major Dick's list of 67, possibly because the Streatham list takes in an area a little more rural (at the time) than Wandsworth.

Hipocrita jacobaeae is not reported in the Streatham list since 1919. The larvae used to swarm on the railway banks of Tooting Common

many years ago.

There is no record of Ennomos fuscantaria since 1905, though Mr.

Nicholson records it from Clapton, N. London.

Hybernia aurantiaria, noted by Major Dick at Wandsworth, only occurs in the Streatham list for the year 1914 and his records of Acidalia sylvestraria (straminata), Acidalia floslactata (remutaria) and Dipterygia scabriuscula do not occur in the Streatham list.

Eupithecia subnotata and E. oblongata (centaureata), not in the Wandsworth list, but recorded by Mr. Nicholson as taken at Clapton,

are included in the Streatham list.

Eupithecia assimilata recorded from Clapton is not in the Streatham

or Wandsworth lists.

The Streatham Society's list gives 269 species of Macro-Lepidoptera observed between the years 1903 to 1927, 142 of which are recorded as observed in the grounds of Streatham College (now pulled down) at the foot of Streatham Common.

Single records given below are of interest:

Colias hyale (1901), Nymphalis polychloros (1901), Pararge megera (1917), Acherontia atropos (1909), Herse convolvuli (1911), Dipsosphecia (Sesia) formicaeformis (1902), Arctia villica (1922), Diacrisia mendica (1922), Epione repandaria (apiciaria) (1902), Biston (Pachys) strataria (1916), Cosymbia (Ephyra) porata (1912), C. punctaria (1902), Lithina chlorosata (Lozogramma petraria) (1919), Bupalus piniaria (1908), Abraxas sylvata (1905), Lomaspilis marginata (1905), Theria (Hybernia) rupicapraria (1905), Eupithecia innotata (fraxinata) (1918), E. castigata (1920), E. absinthiata (1925), E. nanata (1914), E. tripunctaria (albipunctata) (1927), Xanthorhoë montanata (1919), X. (Coremia) spadicearia (ferrugata) (1921), Lygris testata (1907), Cidaria miata (1914), C. truncata (1920), Notodonta ziczac (1902), Diloba coeruleocephala (1920), Acronicta leporina (1912), Calamia lutosa (1902), Epineuronia popularis (1914),

Charaeas graminis (1919), Luperina cespitis (1913), Araméa ophiogramma (1918), Miana fasciuncula (1920), Petilampa arcuosa (1922), Taeniocampa gracilis (1913), Dyschorista suspecta (1920), Agrotis ypsilon (1911), Scopelosoma satellitia (1908), Xanthia citrago (1910), X. gilvago (1909), X. fulvago (1910), Amathes circellaris (1908), Calymnia diffinis (1922), Aplecta nebulosa (1914), Xylocampa areola (1913), Calocampa exoleta (1920), Cucullia umbratica (1913), Plusia chrysitis (1925), P. pulchrina (1905), Scoliopteryx libatrix (1907), Amphipyra pyramidea (1908), Euclidia glyphica (1905), Heliaca tenebrata (1927), Nola cucullatella (1922).

Macrolepidoptera recorded in Streatham list not included in the Wandsworth list (Ent. Rec. XLVII. 26-7). Species marked \* have been observed in occasional years and all the others practically every year from 1903 to 1927. Pieris napi, \*Euchloë cardamines, \*Gonepteryx rhamni, Polyommatus icarus, \*Zygaena filipendulae, Smerinthus ocellatus, \*Macroylossum stellatarum, Synanthedon (Sesia) myopaeformis, S. tipuliformis, S. vespiformis, Zeuzera pyrina, Cossus ligniperda (cossus), Henialus humuli, \*Cerura bifida, \*Dasychira pudibunda, Gonodontis bidentata, Crocallis elinguaria, Ennomos autumnaria (alniaria), E. quercinaria, Colotois (Himera) pennaria, Hemistola chrysoprasaria \*(Geometra vernaria), Acidalia virgularia, Calothysanis (Timandra) amata, \*Cabera pusaria, \*Itame wauaria, \*Chiasmia clathrata, Epirrhoë alternata (sociata), Erannis (Hybernia) leucophaearia, marginaria, E. defoliaria, Alsophila aescularia, Eupithecia linariata, E. oblongata (centaureata), E. icterata (subfulvata), E. subnotata, Gymnoscelis pumilata, Chloroclystis rectangulata (mostly black form), Thera variata, Cidaria pyraliata, Pelurga comitata, Larentia clavaria \*(Ortholitha cervinata), Lophopteryx camelina, Pheosia tremula, Habrosyne. derasa, Palimpsestis octogesima, Leucania conigera, L. impura, Ochria ochracea, Hydroecia micacea, Axylia putris, Xylophasia lithoxylea, Cerigo matura, Luperina testacea, \*Apamea basilinea, Miana bicoloria, Caradrina morpheus, Triphaena fimbria, T. ianthina, T. comes, Hb. (orbona, F.), Noctua augur, Taeniocampa incerta, T. stabilis, \*Amathes litura, Calymnia trapezina, Cosmia affinis, Dianthoecia capsincola, Hecatera serena, Euplexia lucipara, Mamestra trifolii, M. oleracea, M. pisi, Abrostola triplasia, Amphipyra tragoponis, Naenia typica.

#### **CURRENT NOTES AND SHORT NOTICES.**

The Annual Exhibition and Conversazione of the South London Entomological and Natural History Society takes place on 24th October at their commodious rooms, Hibernia Chambers, London Bridge, S.E. Visitors are welcome to this open meeting, particularly if they bring exhibits.

Herr Dr. Junk, from his new premises in Den Haag (Holland) has recently issued a pamphlet entitled *Dipterologi* which contains a List of the names and addresses of all living Dipterists with the particular section or family of the Order in which they may be more particularly interested. There are also lists with prices of the more or less rare books which Herr Junk has at his disposal just now.

The last meeting of the Entomological Club for the 1934 session was held at Chantry Lodge, Longdown, Guildford, on the 18th May,

1935, Mr. W. J. Kaye in the Chair. Members present in addition to the Chairman: -Sir Edward B. Poulton, F.R.S., Mr. H. Willoughby Ellis, Mr. J. E. Collin, Dr. Harry Eltringham, F.R.S. Visitors present: Mr. F. W. Frohawk, Mr. Russell James, Dr. Karl Jordan, F.R.S., Mr. Frank A. Oldaker, Mr. N. D. Riley, Mr. J. A. Simes, and Mr. W. Rait-Smith. The guests were received by Mr., Mrs. and the Misses Kaye at 12.30 p.m. and luncheon was served at 1 o'clock, after which Mr. J. E. Collin exhibited a series of 10 specimens of a rare British Syrphid (Chilosia chrysocoma, Ng.) from Cothill near Oxford. Previous to the species being found in this locality by Mr. E. Rivenhall Goffe in 1932 only single specimens had been recorded from Selsley and Painswick in Gloucestershire, Tarrington in Herefordshire, and Nethy Bridge (Inverness-shire): The species is far from common at Cothill, the specimens exhibited being the result of three days collecting in 1934 and five days collecting in the present year, on both occasions early in It has a fairly wide range of distribution in Northern and Central Europe but its life-history is unknown. Males and females were exhibited. After luncheon the guests inspected the gardens including the greenhouses recently erected by Mr. Kaye to receive his large collection of orchids. The season was rather too early for the best show but many beautiful orchids were in bloom and were much admired. Chantry Lodge is situated on an eminence overlooking a beautiful valley and on clear days very extensive views over the hills are obtained. During the afternoon the Chairman's collections of British and Foreign Lepidoptera were inspected and amongst the latter the Sphingidae created much interest. After tea a walk along the hillridge, which afforded a fine view of the neighbourhood, was interrupted by rain, and after returning to the Chantry Lodge the members and visitors left about six o'clock after a most entertaining day.—H. WILLOUGHBY ELLIS.

#### SOCIETIES.

The Royal Entomological Society.—At the opening of the autumn session the new regulations for the conduct of the meetings proved to be quite satisfactory. The exhibits were on view in the meeting-room an hour before the commencement. Dr. O. W. Richards dealt with British humble-bees of which, "It appears possible to recognize two types of racial distribution, the "fringing" where races occur discontinuously on islands along the whole south-western rim of the British Isles, and the "insular," where races are developed only in the north." Dr. L. G. Higgins illustrated and discussed the discontinuous distribution of Euphydryas (Melitaea) wolfensbergeri, Frey (not maturna, L.) and of E. desfontainii, Gdt., whose nearest representatives are in the far East, E. intermedia, Mén. and E. orientalis, H.-S. respectively. Other species showing a similar distribution were exhibited, and referred to in the exhibitor's remarks. The Abstract, forwarded to all Fellows previously, was an effective introduction to the proceedings.—Hy.J.T.

#### REVIEWS AND NOTICES OF BOOKS.

PROCEEDINGS AND TRANSACTIONS OF THE SOUTH LONDON ENTOMO-LOGICAL AND NATURAL HISTORY SOCIETY, 1934-35. 8vo. Pp. xx+149. Price 10s. 6d.—The South London Society, which is now composed of 245 members, has issued its Annual rather later than usual and this. also as usual, gives an interesting record of Field and Scientific Meetings during the year, the period covered being from 8th February, 1934, to 24th January, 1935. Practically, therefore, the record refers to the year 1934 and it might be simpler to quote the single year 1934 on the cover and so simplify bibliographic references. It contains the same number of pages as the volume for the preceding year but no The interests of the active members seem to be predominantly lepidopterological since nine of the papers printed here deal with Lepidoptera, three others dealing with Mite Galls, Megaloptera and Trypetidae, whilst the Presidential Address is of a more general nature, and it is interesting to note that five of the papers on Lepidoptera are concerned with the "Micros," which are neglected by most lepidopterists, who seem to be contented with considerably less than half the proverbial loaf. We may draw attention to Mr. Jacob's paper (pp. 99-104) on Aphomia gularis, Zeller 1877, which is not only an interesting recent addition to the British List but seems likely to establish itself and prove a pest in warehouses of dried fruit. In "Suggestions for the Study of the Micro-Lepidoptera," Mr. Hy. J. Turner gives a List of Text-Books in which we note a few minor inaccuracies and the omission of such authors as Haworth (not in English), Stephens, Donovan and Curtis, as well as Kennel's tome on the Palaearctic Tortricina. The parts of Wytsman's Genera Insectorum, dealing with the families not included in Junk's Catalogues (e.g., Gelechiadae, Oecophoridae), might also have been included.

Mr. S. N. A. Jacobs in his paper on "the Micro-Lepidoptera" mentions "Some species newly added to the British List" but only notes four by name as additions since the publication of the Revised Handbook. It appears that twenty-eight species" have been added to our List since the publication of the Revised Handbook in March 1928 and an extension of interest in these smaller moths will doubtless lead to the discovery of still more. It is to be hoped that such papers as those by Messrs. Jacobs and Wakely will arouse some interest, especially on the part of those younger members whom Stainton used to describe

as "incipients."

Dr. Cockayne notes (pp. 119-120) the presence of an anal comb in a Tortricid (?) larva and Mr. E. E. Syms gives some biological notes (pp. 121-124) on species of *Sialis* and *Raphidia*, two groups studied by

few in this country.

Mr. R. Adkin's paper on "Some lost suburban Hunting Grounds" (pp. 125-131) not only recalls memories of many open spaces, now overbuilt or otherwise spoiled, where good collecting was to be done something over forty years ago but is itself a sad reminder of our loss by Mr. Adkin's recent death. In those days the Bishop's Fence was always productive and West Wickham woods and Shirley Heath were favourite collecting-places. It is indeed sad to read of their altered condition.

The South London Society may again be congratulated on an interesting record of useful work during 1934.—T. Bainbrigge Fletcher.

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The South London Entomological and Natural History Society, Hibernia Chambers, London Bridge. Second and Fourth Thursdays in the month, at 7 p.m. Oct. 24th (Exhibition) November 14th.—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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#### Collecting in Dorset (8th-21st July) and Kent (15th-29th Sept.) 1934.

By F. H. LEES.

[Read to the Entomological Section of the Birmingham Nat. Hist. and Philosophical Socy., 18th March, 1935.]

The Isle of Purbeck will ever be associated, primarily, by myself, with that lovely Hawk-moth, *Hyloicus pinastri*, peacefully nestling on the pine trees, staring one in the face and yet by no means obvious

until diligently sought.

Although in the breeding-cages the majority appear to have made a point of emerging in the late afternoon and evening, this did not appear to be the general case in the open. At any rate, by mid-afternoon they were to be found fully developed, well up on the trunks, and later, were so very high up, as a rule, that it was often difficult to get them, if the tree was a tall one.

It was early evening the first time we searched, and my more experienced companions—Professor Whitehouse and Mr. Leslie Burt—found one on a smallish stunted tree, at an angle where the first branch forked from the trunk. Assured by them that "the beasta" was somewhere on the tree, I accepted their challenge to discover it, and I was certainly very much longer spotting it than I felt I ought to have been.

Two of the *pinastri* females we found were rather worn, but caged up with plenty of Pine, they provided me with some 120 eggs. From the resultant pupae, I am hoping to raise another generation and improve my acquaintance with the living image on the footing of host

instead of passing stranger.

On their native heath the larvae were, I understand, very numerous last August, and, from all accounts, 1934 seems to have been quite definitely a pinastri year in Dorset. Whether its establishment may now be regarded as a permanent one, only time can answer. Each season they appear to have been taken over an increasingly large area and there seems no very obvious reason why they should not continue to spread.

The first morning we spent in the Isle of Purbeck rewarded me with my first personal contact with Colias croceus (edusa) for many years. We captured 3 males, all we saw, and curiously enough the species never turned up again during the remainder of our stay, and, (from what we have been told) very few—if any—in August either.

The same morning and throughout the fortnight, Satyrus galathea, Epinephele tithonus and Adopoea acteon were plentiful in all suitable spots; Argynnis aglaia, too, was fairly common on the higher ground.

The Buddleias and Ceanothus attracted A. paphia, an occasional wandering A. adippe and such Vanessa species as were out. One fine hutchinsonii 2 of Polygonia c-album provided us with some 3 dozen eggs from which we reared a nice series of the usual late summer (or should I say autumnal) form. Another diurnal visitor to the garden was Lycaenopsis argiolus, the females being perhaps further allured by the Ivy in the hedge, though the bud clusters were very immature. The Ceanothus was particularly attractive too, to the huge dipterous parasite I've bred all too often from Macrothylacia rubi, and was kept under close observation by our dipterist Mr. Wainwright.

Nearly everyone, I suppose, associates Swanage with long series of "Blues" and especially with Polyommatus coridon. I had been taking a few odd ones flying around prior to 19th July, but on that day it was appointed that my eyes should be opened. I was taken to a wonder-land indeed; reached not without some difficulty, involving gross cruelty to an inoffensive car and scrambling unsuited to our years. Stories of "Blues" in their thousands I had always liberally discounted (mentally), heretofore; but here, in very fact, was ocular demonstration to confound my former scepticism. It was a glorious experience, which I shall never forget. A sweep of the net in any direction could scarcely fail to secure half a dozen assorted "blues," and frequently by displaying a little dexterity each haul was upwards of twenty.

As my delight in such exceptional surroundings became normality, I realized that many other insects were there, too, in good numbers—Ortholitha chenopodiata (limitata), for instance, in great variety, and, of course, O. bipunctaria, nor do I think I've ever seen Satyrus galathea more abundant. Even then it seemed that I was in danger still, of failing to see the wood for the trees, for I found my companion later on, with his usual perspicacity, coolly and exclusively netting rare migrant Pyrales, securing an occasional Acontia luctuosa and other surprises, which my 'blue'-blinded vision had failed even to perceive.

We paid a second visit to this marvellous spot the evening before our return to Birmingham, and, in the interval of waiting for our nocturnal game to arrive, we examined many hundreds of undersides of butterflies ranged in serried ranks on the taller herbage; P. coridon varieties were however very few and far between, bearing out the generally accepted opinion that the majority of varietal forms occur among the late broods. I was happy in securing a very fine semi-obsoleta and when I started setting, I found I'd taken one fowleri as well.

The sugar we had previously put on the posts along the cliff edge and other suitable positions, gave us a busy hour or so, though nothing of very unusual interest turned up. Some of the many seeming Leucania lithargyria gave us food for thought and may well merit further careful examination. Until proved otherwise one of them at any rate has been placed, I believe, among the albipuncta and, similarly, I am querying one of my captures as possibly being Orthosia suspecta (which would be new to the Dorset list) instead of the Rustic I expect it will prove to be. Unfortunately the night became increasingly windy and conditions deteriorated, so we fell back on Light though not very profitably. We captured a good many Comacla mundana flying around the stone walls which had to be climbed on the way back, and, later still, using the car lights on the way home, we ran into a flight of Chiasmia clathrata, securing all we wanted, together with a fine Sphinx ligustri and a few other oddments.

On other previous ocasions we had worked both light and sugar on the low-lying heath and bog-land further inland and found the former the more remunerative, the bag including Coscinia cribrum, Lithosia mesomella and both forms of L. griseola. Prof. Whitehouse picked up a pair of Heliothis dipsacea among the heather and Acidalia emutaria and some very large and fine Pseudoterpna pruinata (cytisaria) were taken in the same region. Pachycnemia hippocastanaria often flew up out of the grass at the side of the road here, though it never came to the sheet if I recollect aright. This species was perhaps more

frequently seen along the sand hills, behind which, there was a wonderfully interesting region that produced, among many other things—Comacla senex, Coenobia rufa, Eustrotia uncula, Epione repandaria

(apiciaria) and Gnophos obscurata.

The Isle of Purbeck might well be regarded as a paradise for the Lithosiinae with the var. unicolor, of Lithosia deplana as its crowning glory. I well remember one spot on the Corfe road where a halt with the car in the early hours of a day whose dawn alone could persuade us that beds had their uses, brought moths galore careering along the road, darting from the hedges and dropping from the trees. I think it was then that not only did deplana join the throng of the ubiquitous Miltochrista miniata, and L. lurideola, but along came Atolmis rubricollis and Oeonistis quadra as well. Among the 'Geos' Semiothisa alternata, Hipparchus papilionaria, Euchloris vernaria and Boarmia lichenaria were perhaps the most noteworthy on that occasion.

In a woodland glade on the hillside not far from the same spot, we took, on another evening, both *Stauropus fagi* and *Arctia villica* among a host of things that came to the car lights towards the end of a strenuous night, during which we had been visited by a thunderstorm

and had had a most disappointing sugaring.

This was the occasion when, noticing a diminution in the moths' interest in our illumination at about the usual zenith hour of 1.30, we suddenly realized that the lights were failing—that the car battery had nearly run down. The question, 'was there enough "juice" to start the car?' received a definitely negative answer, and a search for the removable starting-handle, utterly failed to disclose that useful adjunct! An heroic effort to start the engine by letting the car roll backwards down the hill, landed that faithful ally in the hedge just before our glade had access to the main road. We were sorry to leave a good friend in such circumstances, but we were many miles from home and help, so we bade the car farewell, shouldered our kit, and tramped back -dispirited?-not a bit of it; our nets were flying, our hand lamps flashing as we marched along, and I don't think a single grumble came from either of us, though I would not say that our necessarily tightened belts may not have prompted a subconscious murmur of "What price glory!"-

No account of our Dorset exploits would be complete without some reference to the Professor's splendid arrangement of utilizing his house and the lighting thereof as a super moth-trap. The well-lit porch, dining room and bathroom (in addition to the official trap on the balcony) all feature largely as the precise locality of many captures, and one of the party could always usefully be left to keep house when an all night excursion was on the programme. More frequently, on a return home about 2.30 a.m., it was a case of "All hands on deck," rushing around pill-boxing the cream of the assembled guests placidly awaiting us on the walls and ceilings, before, with the approach of day, they silently stole away. Not only were all the Aventia flexula taken in this way and many of the Professor's best Pyrales, but B. lichenaria and S. alternata and many other quite good things were nearly always in attendance. On a good night, the bathroom was an especial joy to behold, and I well remember the diversion on one of the quiet nights on which there seemed 'nothing doing,' caused by a huge but battered Sphinx ligustri, that strenuously resisted ejectment from under the bath which was required for its legitimate purpose.

Dusking was by no means neglected, though but little time could

be spared for larva searching.

We had one afternoon's beating in the New Forest with very poor results. Earlier this year, we were told, many species—chaonia and dodonea in particular—had been very abundant, but we found very little sign of larvae of any sort, and had to be content with a bag of some three Acronicta leporina, a few Dasychira pudibunda and Drepana lacertinaria and assorted 'Geos.' We saw Limenitis camilla, Polygonia c-album, and a few Fritillaries, and Gad-flies were well up to standard.

(To be concluded.)

# Two Aberrations of Coleoptera new to Science, and one new to Britain.

By HORACE DONISTHORPE, F.Z.S., F.R.E.S., etc. (Department of Entomology, British Museum, Natural History).

1. Coccinella 11-punctata, L., ab. janeae, n.ab.

Formula  $= \frac{1}{2}$ , 1, 2+3, 2+4, 4+5.

This aberration is not in my paper "On the Subspecies and Aberrations of Coccinella 11-punctata, L." [Ent. Rec. 30 121-28 (1918)], nor in any of Dr. Mader's publications. He also informs me that it is unknown to him. I have named it in honour of the late Miss Florence Jane Kirk.

Taken by sweeping in Windsor Forest, 3rd July, 1935. 2. Anthicus bifasciatus, Rossi, ab. dorothyae, n.ab.

Differs from the typical form in that the head, thorax (except a very narrow yellow border at the base), elytra (except the yellowish spots) and femora are quite black. The antennae, palpi, tibiae, and tarsi are brownish yellow instead of yellow, and the spots, especially the ones near the shoulders, are much reduced in size. Named in honour of Miss Dorothy E. Kirk. It will be remembered that I named an aberration of Anthicus antherinus, L., ireneae after Miss Irene Kirk [Ent. Rec. 47 3 (1935)]. Taken in a manure heap at Oxford, 21st July, 1935.

Commander Walker kindly took me to this manure heap to take *Philonthus rectangulus*, Sharp, and we neither of us recognized the insect in the field, though both of us have taken the typical *Anthicus bifasciatus*, Rossi.

3. Phyllobius oblongus, L., ab. floricola, Herbst. Naturg. Käfer 6

**220** (1795).

In this aberration the head, thorax, elytra, and underside are quite black.

Taken by beating elm in Windsor Forest 6th June, 1935.

# An Account of my Studies in the Biology of Pieris rapae. III. By ORAZIO QUERCI.

(Continued from p. 112.)

THE SITUATION ON 2ND SEPTEMBER, 1932.

Now Pieris rapae should be in mixed generation condition because those of the third brood overlapped before with those of the second and after with those of the fourth and fifth broods, and the mixed generation butterflies of the sixth brood flew together with those of the fifth. The situation might be about as follows:—

Fifth Brood.—There are some adults and a few pupae.

Sixth Brood.—Many adults, pupae and eggs.

Seventh Brood.—Besides the earliest adults of this brood there are many chrysalides and eggs.

Eighth Brood.—There are only the eggs laid by the earliest emerged

specimens of the mongrel seventh brood.

P. RAPAE TAKEN.

At home all the larvae of *Pieris* died, but the 93° to 97° heat injured neither the eggs nor the pupae. Even at the Park Way no larva of the "Whites" should have remained alive as the vegetation was poor.

#### THE CLIMATE FROM 3RD TO 25TH SEPTEMBER.

On 3rd September the heat decreased a little and not all the larvae dropped from the stems a short time after they hatched, as had happened on the preceding three days. On 5th and 6th September it rained, the temperature lowered and the caterpillars found their best living condition. On 16th September it rained again. The last control of the abundance, produced by the heat in the year 1932,

occurred on 23rd September when the temperature rose suddenly from 66° in the morning to 88° at eleven o'clock and the vapour pressure, which was 616 at noon, dropped to 200 some hours later. We had many mature larvae which became unable to pupate and collapsed, but the young ones were not injured. When the temperature was below 72° the females of *P. rapae* neither mated (at least in our cages) nor laid eggs.

3 88. 75. 145—Many butterflies emerge. Some of the larvae

4 89. 75. 87 hatched on these days do not die at once. 5 88. 75. 168—The females in our cages lay many eggs.

6 86.65. 20—Fresh specimens are very scarce because of the

7 72. 60. 10 massacre of larvae of 27th August.

8 76. 58. 8—The heat decreases and the eggs hatch after four 9 81. 64. 16 days instead of three. In spite of the fine weather

10 77. 58. 19 P. rapae continue to be scarce.

11 79. 57. 20—The eggs hatch after five days but the larvae are 12 82. 60. 5 very active. From 11th to 15th September we

12 82. 60. 5 very active. From 11th to 15th September we 13 83. 62. 3 took only two P. rapae, which are marked in my

14 80. 63. 12 series with the ordinals Nos. 2221 and 2232, and

15 81. 65. 10 which look to be perfect. All the others were worn.

16 75. 66. 0—To-day it is cloudy and raining.

17 76. 58. 25—Some fresh "Whites" are on the wing.

18 76. 59. 190—The larvae hatched after 2nd September, which 19 77. 56. 205 developed in the most suitable conditions, and

20 85. 62. 209 pupated after the 8th, produce now a large emer-

21 85. 68. 134 gence of mixed generation of the sixth, seventh and

22 79. 64. 115 eighth broods. We take only a few of them.

23 88. 66. 80—This moderate heat-wave kills the larvae which

24 75. 58. 81 had delayed longer to develop.

25 70. 53. 78—To-day the larvae in our cages are less active as the temperature has been almost always 60° to 55°

Note.—The earliest eggs of the eighth brood were laid, probably, on 31st August. They were not injured by the heat and the larvae hatched on 3rd September just when the temperature was a little below the fatal point. Those larvae grew rapidly and some pupae were formed on 9th September. However, being no more hot, the chrysalides (in our cages) delayed at least nine days, instead of seven, to produce the adults. With the support of what happened at home, I believe that the *P. rapae* of the eighth brood emerged on 17th or 18th September, and later on.

(To be concluded.)

#### Nomenclature. - Madrid and Lisbon.

At the Lisbon Congress of Zoology (Sept. 1935) the International Commission of Zoological Nomenclature unanimously agreed to a number of propositions placed before the Commission by the International Committee of Entomological Nomenclature with the approval of the International Congress of Entomology. In many instances the Rules were suspended in order to cut short existing confusion and to preserve the traditional sense of certain names of genera and families. The more important propositions of which the Commission approved were the suppression of the generic names in the so-called Erlangen List of Hymenoptera 1801, and the definite fixation of about 60 generic names of Hymenoptera, Lepidoptera and Orthoptera, among them Argynnis, Euploea, Euthalia, Satyrus, Vanessa, Phaneroptera, Locusta (for "Locusts"), Bracon, Lasius, Ichneumon, Pompilus, Sphex, etc.

The large residue of generic names have now to be submitted to a special Committee of the International Commission of Zoological Nomenclature, to be closely examined for a reasonable basis for their acceptance or rejection. Since the members of this Committee will be nationals of no one country, a long interval must necessarily elapse before any proposed amendments are definitely sanctional for use generally. It is certainly foolish of one country to adopt names not generally accepted and which are actually under determination.

COLLECTING,

#### \_\_\_\_\_

TO OTES ON

A Venturesome Dragonfly.—I was much interested in Mr. Donisthorpe's experience with Pyrameis atalanta, related on p. 114, because a somewhat similar incident happened to me on 29th September last. I was walking on the River Drive near here—a private road from "Percalenick" to the village of St. Clement, which is a public footpath by permission and a favourite walk of Truronians on fine Sunday afternoons. It runs at one part between the river and a large pond, and there can generally be found at that spot a specimen or two of Sympetrum striolatum. I had extended my arm and hand to pick a blackberry from the hedge and a specimen of that Dragonfly alighted on my index finger quite uninvited. It was a male in perfect condition and remained quietly on my finger for quite two minutes, whilst I turned it gently about and noted the very conspicuous red spots on each side of its thorax at the base of the wings. It seemed loth to go, but at last flew off without undue haste. For such a

notoriously skittish insect I thought this exceedingly remarkable and had I been able to catch a small fly I would have offered it!—C. Nicholson, Tresillian, Truro, Cornwall. 24th October, 1935.

MICRO LARVAE IN THE WINTER MONTHS.—Active collecting need not be neglected, for many species can be obtained during the winter by diligent work, of course preceded by consultation of reliable text books for the how and where to look. In sheltered places many leaves still remain or can be found below the tree or bush where they have in early winter not yet decayed. The nut leaves contain the conspicuous mines of Nepticula microtheriella and N. floslactella often in numbers; the mines are easily distinguished by colour, the former light brown and the latter white. Of course the leaves must not be allowed to become either too dry or too wet. Probably a flower pot under partial shade imitating the kind of position when found in nature, where they would have to complete their metamorphosis, would be best. A wild vetch is often noted climbing in hedges; its leaves may contain the larvae of Lithocolletis nigrescentella (bremiella). The leaves of oaks will contain mines of N. quinquella and of young low growing oaks among herbage the leaves will contain larvae of L. lautella. Mining the leaves of honeysuckle one now finds the larvae of L. emberizaepennella. water plantain will be found to contain low down in its stems larvae of Phalonia alismana (udana) indicated by small holes. must be kept out in all weathers until near emerging time. In rough growing thistles one can often meet with the dirty whitish looking cases of Coleophora therinella firmly fixed almost at right angles to the The thistle stems must be cut and taken; it is not advisable to merely pluck the leaves. The larvae of Metzneria carlinella will be found in the seed heads of the carline thistle on chalky slopes, and near by the stems of viper's bugloss will contain larvae of Douglasia ocnerostomella in long galleries. In the stems of the taller more robust thistles in waste places one will possibly find abundance of the larvae of Myelois cribrella, often many in a stem. Species of Elachista may be found mining leaves of grasses during the winter months till March, viz., E. megerlella (adscitella), E. gleichenella, E. albitrontella, E. gangabella, E. cinereopunctella, etc. Puparia of Homoeosoma sinuella may be found in the root-stocks of Plantago lanceolata although they do not change to pupa till May. Larvae of Nephopteryx genistella are to be found in companies on furze bushes. Rootstocks of Artemisia absynthium hold larvae of Euzophera cinerosella (artemisiella) which mine both in roots and stems.

Hyloicus pinastri.—On 8th July, 1935, the writer was fortunate enough to find eleven freshly emerged H. pinastri (somewhere in England!) amongst which was one brown one. This is of a uniform chocolate colour instead of the typical grey. The normal darker marks show through the brown colour as in the type. They were found resting on the trunks of Scotch Pine ( $Pinus\ sylvestris$ ) from four to six feet from the ground, on all sides of the trunks including the windward side, which was, on this particular day, fully exposed to a sharp east wind.

It was found that they resented being confined in the largest box available, becoming very restless and damaging themselves, so most of

them were at once killed. Two pairs, however, were found in copula and from 30 to 50 ova were laid by each female within a few days. It is not known whether the fact that they were disturbed affected the number laid, or their fertility.

The ova commenced hatching out on 16th July somewhat irregularly over a period of ten days, and about half the number were fertile. A few larvae were lost the first few days by getting off their food and

failing to find their way back to it.

Fresh dry Scotch pine shoots were given and at first they fed on the young leaves only. Later on, when about half-grown they fed upon the old leaves only, and at about this time changed their colour from

clear green to brown.

This is an interesting case of colour-protection. While the larvae fed upon the young bright green leaves they were green, but when they went on to the old leaves they lay along the brown shoots and fed upon the old leaves and at the same time changed their colour to brown, which matched perfectly the shoots upon which they rested as they fed.

Similarly, the imagines match almost perfectly the colour of the

pine bark upon which they rest and are very difficult to detect.

On hatching, the larvae were kept close in small tins covered with "petrol-gauze-strainer" lids and given fresh dry young pine leaves. When about an inch long half the number were sleeved outdoors and fed up perfectly well, not one being lost. When nearly fully fed four or five were placed in a large flower pot covered with muslin. The lower half of the pot was filled with baked leaf-mould and pine needles and a supply of leaves kept therein. Much variation was noted in the time of maturity of the larvae, some thriving much quicker than others,

but by the end of August all had safely pupated.

The rest of the larvae were kept all the time indoors, fed regularly with fresh pine shoots, and when nearly fully grown, were divided up into fours or fives and placed in large flower pots as previously described. Not one was lost, but this method is more trouble than sleeving and apparently no more successful. In a month or so, the pupae will be carefully taken out of the leaf mould, kept dry and when about to emerge, be put on to damper mould in a large cage. Also, some will be mildly forced out on damp sand as has been successfully done with Manduca (Acherontia) atropos. Smerinthus occilatus, Mimas tiliae, Amorpha populi and Sphinx ligustri keep quite quiet and content in a fairly large cage and will mate, but pinastri resents confinement of any sort and, although they will mate in a cage about three feet square, cannot be trusted to keep themselves undamaged.

I am indebted to Dr. Lowther of Grange, Lancs, for advice on rearing these insects and have got them to the pupal stage safely, at any rate, and will report again on their emergence.—W. P. Seabrook,

Great Baddow, Chelmsford. 19.ix.35.

MACRO-LEPIDOPTERA IN S.W. London.—The notes on pp. 116-17 are not signed,\* but the writer has apparently misread my remark, p. 38, about *Ennomos fuscantaria*. I have never seen either that species or *E. autumnaria* alive, my series having been acquired by exchange. I have always considered S. London to be a better area for

<sup>\*</sup> By an unfortunate slip the writer's name was omitted from the text. It was put on the cover, however.—Ed.

Lepidoptera than North, and the list on pp. 116-17 goes far to confirm that idea, but I have no doubt that Epping Forest 50 years ago, before it became a public playground, would have been more prolific than the whole of S. London and perhaps it is hardly fair to drag it in. Anyway Clapton is only 4 miles from the city and it produced some fairly decent species at that time.

I got a specimen of Apamea ophiogramma on a fern in the garden in 1889 and another was caught flying in 1890. The larvae no doubt fed on our variegated Ribbon Grass (Phalaris arundinacea), known as "Gardeners' Garters" amongst old-fashioned horticulturalists.

Nola cucullatella larvae occurred commonly on our only apple tree and the larvae of Euplevia lucipara were common on our ferns, on which those of Mamestra oleracea and Spilosoma lubricipeda with an occasional S. menthastri, also occurred. Naenia typica, Apamea basilinea and A. secalis in some variety used to come to my treacle commonly, and Acidalia virgularia was also common and often seen "sembling." Perhaps one of the most interesting and unexpected of the species at Clapton was Earias chlorana, several specimens of which I saw to my intense astonishment flying around the top of a 12 foot hawthorn in the next garden, as if "sembling." There were some willows in another garden not far away, and we had a young osier in ours, but I never saw chlorana on or around our tree. Eupithecia oblongata larvae always fed on our parsley flowers and the moth was often seen on windows, doors, and on the wing, but curiously enough I have not yet seen it here in Cornwall, although we have Achillea eupatorium in the garden, which ought to suit it exactly, as well as ragwort and groundsel (though I am glad to say the latter is quite scarce now, compared with what it was) and I should have expected it to feed on Heracleum sphondylium which is abundant throughout the county.—C. Nicholson,

LEPIDOPTERA OF JUTLAND.—By the kindness of Dr. Hoffmeyer of Aarhus, we are enabled to correct one or two errors in a note on the Lepidoptera of Jutland on p. 92 ante. The ordinary forms of Lasiocampa quercûs are rather common on the dune land area, but the ab. Miana bicoloria is olivaceofasciata is confined to a restricted locality. common too, but only 3 of the ab. latistriata have so far occurred. Mamestra trifolii is very common, it was the ab. lodbjergensis of which only one example had been taken. The List of species noted at the end of the paragraph do not occur in the dune area of the West Brenthis arsilache, Polyommatus optilete, Agrotis subrosea, Anarta cordigera, and Anaitis paludata are confined to the moorland areas and the author suggests that they are relics of a period when the climate was rougher. Agrotis depuncta is confined to woods of mild weather conditions and certainly not on the West Coast. It is suggested it is a relic from the time when the climate was generally milder.

Dr. Hoffmeyer continues "I have spent my summer holiday in the Isle of Alo, in the south of Jutland; and I have taken, in various parts of Schleswig, some interesting species. On the Isle of Romo,—Nola centonalis f. holsatica, Taub., very different from the typical, a very

Tresillian, Truro, Cornwall. 28th October, 1928.

<sup>†</sup> It was in my garden at New Cross.-Hy.J.T.

variable form of which I have taken a series in the island of Bornholm, in the Baltic. On the Isle of Als; Arsilonche albovenosa: a species new to Denmark; Nonagria neurica ab. fusca, Edelsten; N. dissoluta f. arundineta; Abraxas grossulariata ab. dohrni the second Danish specimen and other good things."

Some Parasites etc., in the nests of House Martins (Chelidon urbica, Linn.) in Windsor Forest.—On 4th September Mr. G. B. Thompson and I went to Windsor Forest with the intention of hunting for lice on the Red Deer (Cervus elaphus ssp. scoticus, Linn.) as a certain number of the Deer was to be shot on that day, and the Museum is much in want of the louse  $Trichodectes\ cervi$ , Linn.; such specimens as they have are all 22.

One may mention at once that no lice were found, the deer being remarkably clean, and only a certain number of the tick *Ixodes vicinus*, (*Ixodidae*, Acarina) and the deer fly (*Lipoptena cervi*, L.) (Diptera,

Hippoboscidae) was found.

Whilst waiting for the deer to be brought in we noticed a number of House Martins' nests under the eaves of the building, where the deer are flayed. Many of the nests were occupied by young Martins, but some were empty, and two of these were got down and searched. There was found to be present a number of the bug Occiacus hirundinis, Jenyns (Hemiptera, Cimicidae) and the fly with reduced wings, Stenepteryx hirundinis, Linn. (Diptera, Hippoboscidae). Both these insects are well known parasites in the nests of the House Martin, but they are both new records for Berkshire. A few fleas Ceratophyllus hirundinis, Curt. (Siphonaptera, Ceratophyllidae) were also taken.

A Coleopterous larva Anthrenus sp.? (Coleoptera, Dermestidae), and a spider Lycora amentata, Clerck, complete the collection.—Horace

Donisthorpe.

Scarcity of Colias croceus in South England.—A recent trip (1st-16th Sept.) through the southern counties from Sussex to Devon and Somerset revealed a curious absence of *C. croceus*, only three being seen although every clover and lucerne field passed was inspected. Several perfect and apparently freshly emerged *Pyrameis cardui* were noted, but only one *Macroglossum stellatarum* was seen, which was feeding on tobacco-plant flowers at Beer, Dorset. Many more *C. croceus* were seen in Essex in August flying over lucerne—a somewhat rare visitation in this county.—W. P. Seabrook.

CRIPPLED MOTHS IN 1935.—A large number of crippled moths of many species has been noted this year, presumably owing to the very cold spell in May. Some large Buddleia bushes in the garden attracted many cripples, which were just able to crawl up the stems to the blossoms and doubtless had emerged from the pupal stage nearby. I have not noted this before, although for many years these flowering bushes have been used for attracting moths and butterflies. It would be interesting to know if other observers have noted this phenomenon.

—ID.

CATOCALA NUPTA, L., THIS AUTUMN.—Early one morning in September six C. nupta, were seen on a fence at Cheam, facing South. Several

others have been reported both from Cheam and from Ewell. One flew into a house in Lyndhurst Rd., Camberwell, in early August.—Hy.J.T.

DISTRIBUTION OF POLYGONIA C-ALBUM.—I have been told that it is worth recording that  $P.\ c\text{-}album$  has now arrived in Hertfordshire. I saw three in my garden here at Bishops Stortford, on 23rd Sept. and have seen some each Saturday or Sunday since then when fine. I understand that they have been noticed as far north as Cambridge.—CLIFFORD CRAUFORD.

Colias croceus in the West of Scotland.—I saw C. croceus on the island of Kerrara opposite Oban on 15th Sept. This may be worthy of note as, I believe, this is not what is known as "an edusa year."—ID.

Brief notes from the Midlands (Words. and Glos.).—Gonepteryx rhamni and Aglais urticae both appeared first on 20th March—much earlier than last year; the first Pieris rapae came out on 31st March. On the same day I got amongst other things two nice Taeniocampa miniosa at Bradley Green (Words.) at light. It is not uncommon there. Euchloë cardamines appeared on 21st April, so did Cidaria fluctuata.

On 23rd April I went to Wolford Wood, near Moreton-in-the-Marsh, and found a fine Polyploca ridens; on the 28th I got four more, all perfect and resting on oak trees. Pieris brassicae appeared on the 5th or 6th of May. Leptidea sinapis was observed in its special haunts at Malvern on 26th May and a single Ayrotis cinerea was also taken there

on that day by another collector.

I spent a day in the Cotswolds on 15th June, and saw (Maculinea) Lycaena arion. I believe there is very great danger in taking specimens of this species and the time has now come—has perhaps passed—when people should refrain from catching any specimens from Cotswold localities. I have information about a few collectors, some of whom live in the Midlands, which, if published, would be very detrimental to their characters as sportsmen. I am of the opinion that to publish such information with the collectors' names is the only way to stop overcollecting. For seven years I have been searching for arion and in that period I have taken two only out of those I have seen and I do not propose to keep any more.

About the same time I noticed how very blue all the female Polyommatus icarus were this year. Sugaring in our orchard on 20th June
I took the second Agrotis saucia to be found in this village. From
20th to 27th June sugar was exceedingly good and on the 26th I had
235 moths on the smallest patch! They were mostly Agrotis exclama-

tionis at this time, very varied.

I took the first Sarrothripus revayana seen in this district on 26th August—it must be very rare here because oak trees (and other oakfeeding species) are exceedingly scarce. On the 31st the second larva of Gastropacha quercifolia recorded in this district was found in a breeding cage—carried in from our orchard on hawthorn for M. rubi larvae. It is now hibernating.

Two pupae of Smerinthns ocellatus were brought to me in September from Mickleton—strangely enough that species and S. populi are both

rare here. There have been a few Polygonia c-album about this spring

and autumn—about the same quantities as usual.

The last two weeks of May and the early part of June were very poor indeed, but after that the season was excellent and I have taken nearly a dozen species, which I have not recorded from this village previously, one of which species was Aplecta advena—two specimens at sugar, 23rd July.—P. Siviter Smith. Pebworth, nr. Stratford-on-Avon.

#### **CURRENT NOTES AND SHORT NOTICES.**

In the current number of Eos (Revista Espaniola de Ent.) B. P. Uvarov describes and discusses the collection of Palaearctic Orthoptera made by our colleague Dr. Malcom Burr, that has been presented by him to the Hope Museum, Oxford University. The collection includes many co-types of species described by most of the leading orthopterists of Europe, and good series of many species collected by Dr. Burr him-

self during his various journeys in S. E. Europe.

That veteran student of the purely scientific side of the study of Entomology, M. Arnold Pictet contributes two very interesting articles to the Bull. Soc. Lep. de Genève, Aug. 1935, dealing with the ecology and genecology of Erebia nerine and with the hybrid population of Erebia gorge as observable in the restricted area of the Swiss National Park in the Lower Engadine. The various races and forms are traced by their apparent genetic mendelian relationship.

The Ent. Zeit. for October contains a coloured plate of some very

striking forms of Colias species obtained recently in Armenia.

The Annual Exhibition of the S. London Entomological Society held on 24th Oct. was again a successful gathering. Most of the exhibits this year were of British Lepidoptera, and those present had a real treat.

#### REVIEWS AND NOTICES OF BOOKS.

INSECT WONDERS OF AUSTRALIA. By Keith C. McKeown. oct., 250 pp., 31 illustrations. Messrs. Angus and Robertson Ltd., Sydney, Australia.—This is an excellent little book, containing short and attractive accounts of incidents in the life-histories of insects, which are sure to be met with in the ordinary life of the "man in The titles of the 28 chapters aptly epitomize their the street." contents, such as the "Guests of Ants," "Perfumed Butterflies," "Insect Courtship," "Child Slavery," etc. The writer's aim is to arouse public interest in natural history. The accounts are terse and to the point, sufficiently full of facts but never tedious. The author, a member of the Museum staff, gauged the desires of his numerous correspondents and chose his material to satisfy those who appear to be rapidly becoming "nature minded." Written for an Australian public and with all the information based on native material, it should be extremely interesting to nature lovers and observers in this country to compare the characteristic habits of similar insects in that far country with those of insects which are familiar to us day by day. The book is well produced and should have a continuous sale at 6s.-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. Hy. J. Turner, "Latemar," West Drive, Cheam.

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.

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.

Desiderata.—Urgently wanted for research work at the Royal College of Science,

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Dr. Malcolm Burr, The Hermitage, Dorney, Windsor.

#### MEETINGS OF SOCIETIES.

Entomological Society of London.-41, Queen's Gate, South Kensington, S.W.7.

8 p.m. Nov. 20th. Dec. 4th.

The South London Entomological and Natural History Society, Hibernia Chambers, London Bridge. Second and Fourth Thursdays in the month, at 7 p.m. November 28th. December 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 Section, Birmingham Natural History and Philosophical Society.—Evening Meetings. On the third Monday of each month; 7.45 p.m., at 55, Newhall Street, Birmingham. Visitors welcomed. Our Annual Conversazione is being held on Nov. 22nd at the Biological Building, Birmingham University, and we are arranging special and larger exhibits this year. Those who would like to attend or exhibit please apply to-P. Siviter Smith, Pebworth, Stratford-on-Avon.

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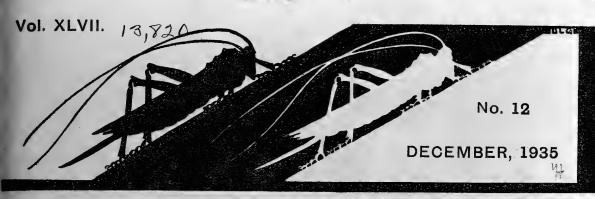
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#### An Account of my Studies in the Biology of Pieris rapae. III.

By ORAZIO QUERCI.

(Continued from p. 126.)

THE SITUATION ON 25TH SEPTEMBER, 1932.

Adults of the sixth, seventh and eighth broods emerge together and the mixed generations of Pieris rapae increase. Eggs are laid.

THE CLIMATE FROM 26TH SEPTEMBER TO 28TH OCTOBER.

On 26th September the climate was lovely; later it rained and on the 30th the temperature decreased. The weather turned fine again on 1st to 3rd October, but on the 4th to 6th it rained and on the 7th it was cold. On 9th and 10th October the thermometer rose, DATE. for some time, up to 74°-76°: however, after that date the climate became unsuitable for the emergence of any kinds of butterflies. <u>ط</u> SEP. 72. 53. 26 22—For the moderate heat only a few emergences. 27 0-It rains. We go to the Park way to get plants for 69. 56. 28 75. 60. our larvae and see no butterflies. 29 70. 52. 5—The eggs hatch after five days, the larvae are but 64. 45. 30 little active and a few of them turn from green to Oct. vellow. 1 75. 52. 8—The weather is lovely but the butterflies are scarce. 2 78. 59. At home many pupae are formed; some big larvae 3 81. 60. collapse. 4 77. 62. 0—The weather is bad. Some larvae pupate. 78. 70. 5 0—Further pupae are formed. 6 74. 49. 0—The eggs hatch after six days. 7 61. 47. 0—The larvae do not feed. The country is muddy, 8 73. 53. after the rains, and we cannot collect. 76. 55. 9 17—We take some recently emerged specimens. 76. 57. 10 2—We see but two fresh P. rapae and some worn ones. 11 66. 47. 8—All the "Whites" are worn. I believe that P. 12 59. 46. rapae ceased emerging on 10th October, 1932. 13 **52.** 43. 0—The big larvae are unable to pupate and some of them die. 14 60. 41. 6—All the butterflies on the wing look old. 15 68. 47. 0—There are no more P. rapae in the country. 16 69. 55. a few Pontia protodice and Colias eurytheme are

17 65. 60. still flying although the sky is cloudy.

18 69. 62. 0—This is the last day of the year 1932 on which we 63. 58. 19. see a few old Pontia and Colias at the Park Way.

20 67. 56. 0—After 10th October the larvae, kept in the open, 21 61. 52. 0 which became mature, were unable to pupate and

22 67. 47. died because the temperature never reached 70°.

60. 53. 0-Many larvae, which we have kept outside the 23 24 58. 52. window, collapse. Those which are not yet full

25 **62.** 53. grown are less injured.

75. 55. 0—This is the last lovely day of the year. 26

27 68. 53. larvae pupate, others rot.

58. 48. 0—The temperature drops. In November of 1932 the 28 maximum never was more than 64°. larvae of P. rapae are still in the country they must die.

Note.—The earliest specimens of the eighth mixed generation brood emerged on 17th or 18th September. Owing to the moderate heat they hatched after four days and, in our cages, the young larvae grew well until the 25th and 27th when the temperature lowered and they rarely fed. From those batches a few pupae were formed on 28th September. Being no more hot we expected that a few adults would have emerged after nine or ten days (rather than seven, as in summer) but on 7th October the thermometer marked about 58° for the whole day and at night it lowered to 47°. All the pupae of P. rapae, formed at home by the end of September and kept in the open air in October, went over the winter. I think that no P. rapae of the ninth brood appeared around Philadelphia in the year 1932.

#### The Sixth International Congress of Entomology.

By MALCOLM BURR, D.Sc., F.R.E.S.

All who were fortunate enough to attend the Sixth International Congress of Entomology, held in Madrid from 6th-14th Sept. agreed, I think, that it was the most brilliant of all. It was certainly a very lusty infant that was born in Brussels in 1910.

Perhaps it was not the most heavily attended. Perhaps it did not excel the previous meetings in the importance of the scientific communications. But as a gathering of specialists, as a function on that social side which is of such importance in our work, it was an

experience very much to be remembered.

Spain is a fascinating country, and the charm and courtesy of our hosts were exerted to the utmost to enable every visitor to take away a wonderful memory, and to see every possible thing, out of all the marvels of the country, in the short time available. In fact, the only criticism that I heard was that the programme was too full. It was overwhelming, and at the end both mind and body were exhausted, not only by the variety and interest of the scientific communications, but also by that unforgetable word "merienda." "Meriendas" at all times and in all places, on the excursions to the Escorial, to the Alpine Biological Station on the Sierra de Guadarrama, to La Granja, Segovia, Aranjuez, and Toledo, in the Playa de Madrid. Then there were the treasures of tapestries, embroideries, pictures, and of all the wonderful works of art of Spain in the Prado, in the grand old Guildhall, the Casa Consistorial, at the reception (including merienda), given by the Alcalde of Madrid, and in the Palacio Nacional, at the great reception given by the President of the Spanish Republic. Señor Alcalà Zamora mingled with the members, many of whom were introduced and enjoyed quite long conversations. The President had opened the Congress, and then given the members the treat of listening to the full beauty of pure Castilian delivered by the greatest orator of Spain.

There must have been a great deal more than 24 hours to the day during the Congress. Those who went on that great excursion up the Picos de Europea arrived in their quarters at four in the morning, and when we were given a Fiesta de Arte español, nobody noticed that it was three in the morning before it was over. So much had we been amused at the broad comedy of Malbrouk, and above all, by the concert of native music and song, presented as an extra by a gifted pair of

volunteers.

The number of subscribers was about 400. Among the thirty odd countries represented we noted Costa Rica, Nicaragua, Venezuela and Hawaii. Great Britain was in good strength. Sir Guy Marshall, Captain Riley and Dr. Jordan represented the Government, and our

leading entomological organisations sent delegates.

It is generally agreed that the study of Entomology is conducive to longevity, and of this we had a notable example in the person of our President, Don Ignacio Bolivar who, in his eighty-sixth year, was not only a venerable and respected but a very active and personally charming chairman. It was a special occasion for the orthopterists, who assembled in force to do honour to our beloved doyen, who had his revenge by giving a luncheon to his colleagues, and many wives, with the usual bounteous hospitality. With Don Ignacio at the head of the long table and Don Candido at the other, an unusual and delightful case of the inheritance of acquired characters, the table was filled by Uvarov, Chopard, Berland, Zacher, Ebner, Capra, Menozzi, Paoli, Willemse, Bodenheimer, Sjöstedt, Morales, Miller, Beier and myself. We missed Dr. Willy Ramme of Berlin, and James A. G. Rehn of Philadelphia.

Another cause of regret was the absence of any representative of the U.S.S.R. Five names were on the list, but none materialized. The absence of Rimsky-Korsakov was particularly regretted, as he is a member of the Executive Committee, and it was noticed that on the occasion of the reception by the Alcalde, the musical programme had been specially arranged to include "Caprichos españoles," so that Michail Nikolaivich might have had the gratification of hearing his

gifted father's composition in a most appropriate setting.

Perhaps I may be allowed a personal note. As I took an active part in launching the Congress in Brussels in 1910, and have not been able to take part in one since Oxford, in 1912, when I was Hon. Secretary, it was quite a peculiar pleasure to be present in Madrid, and see what a splendid child the infant has grown into, and to meet so many old friends, whom I had not seen for twenty years or more, and above all, Don Ignacio himself, whom I had last seen on 8th April, 1904, when my wife and I accompanied him and Don Martinez Escalera on an excursion up the Sierra de Guadarrama, near the Escorial, to look for Mesochelidura bolivari, of which we found a colony. In Madrid, both Don Ignacio and Don Martinez signed the snapshot, thirty-one years after!

#### OTES ON COLLECTING, etc.

Scarcity of Colias croceus in S. England.—My experience here agrees with Mr. Seabrook's. I saw one near Truro on 13th August, one near here on the 21st and one at Wembury, near Plymouth, on 21st September, and one or two odd specimens have been seen in other parts of Cornwall. On the other hand, the Rev. Alfred Thornley tells me that it was common on Lelant sandhills on the 21st August, and I have records of over a hundred seen in the St. Columb district of North Cornwall in the first week of September, and eleven at Porth Beach, St. Anthony in Roseland on the 26th of the same month. These suggest an immigration in August, but I can get no further details.—C. Nicholson, Tresillian, Cornwall.

Some Observations on Immigrant Insects, 1935.—As far as I am concerned personally, the season seems to have been a poor one for immigrant species, although otherwise not bad in spite of the severe late frosts, which, while they must have done much harm to some species, causing them to be scarce this year (e.g., Rumicia (Lycaena) phlaeas, L.), undoubtedly were a benefit in some ways to others, which were exceedingly abundant (e.g., Epinephele (Maniola) jurtina, L.).

Pyrameis (Vanessa) cardui, L. I have not seen one specimen this year. Mr. F. V. Sills tells me that Mr. J. Saunt saw one on 19th August, at Stoke, near Coventry, and that he himself saw three near the

sea edge about three miles east of Swanage on 7th August.

P. (V.) atalanta, L. Very scarce, one only at Saintbury (Glos.) in the spring, and two or three in our orchard this autumn. I saw a sparrow fly at one which settled on the ground and it took a large piece out of each hindwing of the insect, leaving it dazed and stupid; it recovered and flew off.

I think there can be no doubt that this species cannot last through the winter except by a lucky chance. Mr. Mead's explanation given in the *Entomologist* lately is obviously the reason—the insects must have food at least every six weeks. Such occurrences as Capt. Dannreuther reports (*Entom.* Jan. 1935, p. 5) of it occurring in January and up to March are the lucky chances due to a mild winter but even having got through so far they do not last until the summer and it remains unnoticed until the immigrants appear at the end of June.

It is absurd to produce isolated records as evidence that it hibernates; it so very obviously only occasionally does so. Mr. Sills reports that Mr. Waterer saw several at St. David's (Pem.) on 16th August, and that he found it scarce himself, only seeing one near Mickleton (Glos.)

21st July, and three more there on 18th August.

Colias croceus, Fourc. Two only seen this year, both by my mother in our garden at Pebworth, one on 1st July and the other on 5th July. The sex was not determined as they flew away too quickly. I have not seen any elsewhere but Mr. Sills reports two seen on 7th August by Mr. R. E. Warrier at Worth, near Swanage, and three by

Mr. Waterer at St. David's (Pem.) on 16th August.

We did not see any migratory flight such as we saw in August 1933 (8th-14th) when eleven (nine males captured) passed up a railway cutting, flying steadily through a bridge about three feet off the ground against a light N.E. wind; they stopped at a few flowers when they got through the bridge and then almost at once went on up the line. This has been reported by mistake as Gloucester Station instead of Honeybourne (Glos.) in the January Entomologist, 1934.

Capt. T. Dannreuther says that "as other species were doing the same they were not necessarily migrating"—other species were coming through the bridge but they had not the flight of the croceus, neither did they pass on up the line after reaching the flower-covered bank. I have no hesitation in saying it was a definite migration and I think that railways with their sheltered and flowery cuttings and banks must often influence such migratory flights, possibly to as great an extent as any other natural features.

Plusia gamma, L., I have seen only three specimens this year, two at Wye, Kent, on 9th June, and one at sugar, Pebworth, 21st September. Mr. Sills reports several in Mr. Saunt's garden (Stoke, Nr.

Coventry) at Valerian, on 19th August, and one at light in Coventry,

26th August, in perfect condition.

Agrotis saucia, Hb. (margaritosa, Hw.). A perfect specimen came to sugar in our garden, Pebworth, on 20th June.—P. Siviter Smith, Pebworth, Nr. Stratford-on-Avon.

Rhopalocera in Co Tyrone, 1934, with Notes on Variation. (Continued from page 37).—Coenonympha tullia (typhon, Rott.) was observed again on 30th June in small numbers on a high-lying bog (500 feet) near the little town of Pomeroy. The locality here is very different to the Lough Neagh habitat; a deep morass surrounding a small black lough with treacherous floating margins; the butterflies mostly keeping to the swampy ground at the lough edge, where they were almost unapproachable; the forms taken here are close to f. scotica, Stgr.

In the same district *Polyommatus icarus*, race *clara*, Tutt. was locally abundant on 4th July; in several of the  $\mathfrak{P}$ s there is a tendency for some of the orange lunules on the forewings to spread towards the centre of the wings: ab. *rufina*, Obth.; in one well marked  $\mathfrak{P}$  the

orange ray extends to beyond the discoidal spot.

Amongst the numerous Vanessa (Nymphalis) io settled on the scabious on the bogs, several specimens occurred with a distinct black spot on the disc of forewings; (there are two examples of this form from Co. Tyrone in the Hope Museum, Oxford); two others have the margins surrounding the ocelli and the space between the costal maculations, pure white instead of yellowish, ab. pallida, Tutt; these were freshly emerged and not faded examples. A few days later a similar form of Aglais urticae was netted off a thistle; in this area between the costal blotches, the usual yellowish spots on the inner margins of forewings are white.—Thomas Green.

Lady-Bird and Spider.—On 4th October I observed a lady-bird Adalia bipunctata, L., caught in a spider's web outside the front windows of my house at Heston. The spider rushed down and was busily engaged in wrapping the beetle up with silk. When it thought its prey was securely fastend up, it approached it with its jaws. Suddenly, as soon as it had touched the lady-bird it left it and darted back into its retreat. After waiting some time, when the spider did not return, I rescued the lady-bird from the web and cleaned it with a wet paint-brush. The beetle walked away unhurt! It is well known that the Coccinellidae are distasteful to insectivora, but this was a beautiful example, in nature, when even a spider would not eat, or perhaps one should say suck one of them.—Horace Donisthorpe.

Moths at Rest on Houses.—Since my note on the above subject (Ent. Rec., May, 1935, p. 66) and Mr. Nicholson's observations, I have kept a sharp look-out for any peculiarities in the resting-positions of the three species I mentioned. We moved in the Spring into a different house in the same village; it is built of grey stone and seemed to offer even better "parking" areas than did our old house, but in spite of most careful searching all through the summer I have been quite unable to find a single moth of any sort at rest on it anywhere! I am not able to explain it at all. Catocala nupta, Polia chi and Metachrostis (Bryophila) perla have all been common.—P. Siviter Smith.

#### **EURRENT NOTES AND SHORT NOTICES.**

The Report of the Eton College Nat. Hist. Soc. 1934-35 .- This Society has now completed its seventh year, and with well over two hundred members and associates and occasionally a hundred or more at the lectures inaugurated by it, is evidently doing thoroughly good pioneer work. The entomological matter in the Report includes a Supplementary List (with short notes) of Hymenoptera met with around Eton. Twenty-nine species are new records bringing the total so far observed up to eighty seven. The recorder asks for further material which must exist in such an area of varied ground. A short article deals with the two areas Swinley Woods and Trensham as centres of Lepidopterous observations and gives leading suggestions to those who may be induced to collect in those neighbourhoods. Brigadier-General B. H. Cooke continues his summary of Further Species of Lepidoptera observed and fresh localities for species previously reported. seems to be little or no recording in entomology by collegians during the past season although much has been done in other branches of natural history. The Museum has had considerable attention, the establishment of a bird sanctuary has been a piece of real hard manual work, while the botanists have made some valuable additions to the flora and the bird studies are decidedly good.—Hy.J.T.

Two meetings of the Entomological Club were held at Oxford. On 20th July, Sir Edward B. Poulton F.R.S. in the Chair, and on 21st July, 1935, Dr. Harry Eltringham, F.R.S. in the Chair. Members present in addition to the Chairman: -Mr. Horace Donisthorpe, Mr. H. Willoughby Ellis, Mr. Jas. E. Collin, Mr. W. J. Kaye. Visitors present:-Mr. H. E. Andrewes, Dr. Malcolm Burr, Prof. G. D. Hale Carpenter, Dr. B. M. Hobby, Dr. Karl Jordan, Mr. E. Bolton King, Sir Guy A. K. Marshall, Capt. N. D. Riley, Dr. Hugh Scott, Mr. W. H. T. Tams, Mr. Colbran J. Wainwright, Comm. Jas. J. Walker, Dr. C. A. Wiggins. On Saturday afternoon, 20th July, the members and visitors were received by Sir Edward and Lady Poulton and Dr. Harry Eltringham, in the Hope Department, and tea and light refreshments were dispensed by Lady Poulton and friends, and the Hope collections were available for inspection. Accommodation was provided for members and visitors at Jesus College. In the evening dinner was served at Jesus College, Sir Edward B. Poulton, F.R.S. in the Chair, and a very entertaining evening was spent. Sunday morning was left open for individual pursuits and some of the party took advantage of collecting in the district. After Luncheon at Jesus College, the whole company assembled in the Hope Department grounds for an excursion in motor cars to Bagley Wood where the beetle recently introduced to the British lists—Philonthus rectangulus—was found in some numbers and a nice series was obtained. In the evening dinner was again served at Jesus College, Dr. Harry Elringham, F.R.S. in the Chair, and another interesting and enjoyable evening was spent. At the conclusion of this pleasant and successful meeting the company dispersed on Monday morning.—H.W.-E.

We suggest that all those entomologists interested in the variation and aberration of our native butterflies should consult the articles running through the current numbers of the admirable little Belgian

magazine Lambillionea by Herr B.-J. Lempke. In the October number Aphantopus hyperantus, L. and its forms are dealt with. There are 3 synonyms of the nominative form, 25 named aberrations, and 5 named races, all of which are discussed and the original descriptions given. Consultation of such comprehensive articles will prevent the duplication of names which we all deplore so much.

In the Bull. Ins. Roy. d'Hist. Nat. Sophia, Dr. Buresch continues his study of the Horizontal Distribution of the Lepidoptera in Bulgaria,

dealing this time with the Noctuiformes.

Recent numbers of the *Ent. Rund*. have dealt with the local forms of Lepidoptera obtained in Lapland and several descriptions of hitherto unrecorded forms are given in the September and October issues.

We have to thank Herr M. Draudt for several personal separates on

Heterocera of Asia Minor.

Part 2 of Vol. II of the Trans. Socy. for Brit. Entomology has recently appeared and contains the usual amount of good, interesting and useful matter contributed by the members of this rapidly growing and successful organization. Dr. G. D. Hale Carpenter's "Courtship and Allied Problems in Insects," an excellent paper full of research and thought. Mr. G. A. Walton's "Field Experiments on the Flight of Notonecta maculata (Hemip.)," with a diagrammatic plate. Messrs. C. B. Williams and F. J. Killington on their Experiences with a Light with regard to Neuroptera. Dr. K. G. Blair's Discourse on "Wegener's Theory." Mr. E. E. Syms on the "Biology of Microdon eggeri (Dip.)." Dr. Hobby continues his Bibliography of Papers issued by local societies. The Journal is issued at the same time and contains the smaller items communicated to the Society, of which Mr. Goff's paper on the Tabanidae (Dip.) of the New Forest is a very interesting and useful series of notes.

Personal separates have been received recently: from Dr. H. Zerny, "Neu Heteroceren aus dem Grossen Atlas in Morokko," with 3 plates of new species and forms, published in the Zeit. Oestr. Entom.-Ver. Wien. From Herr Sigd. Kundsen, Denmark, "Cidaria truncata and C. citrata (immanata)," by K. Groth, published in Flora and Fauna, Aarhus, Denmark, with a coloured plate of 30 figures. From Herr Warnecke, Kiel, on three forms of the Genus Caradrina, f. grisea, f. albina and f. cinerascens, with figures of their genitalia and a map of their isolated distribution, published in the Int. Ent. Zeits.

Herr Dr. Wm. Junk has recently issued another of his excellent Bibliographical Catalogues. This time the Coleoptera, Pt.2. are dealt with, in over 160 pages, over 3200 works and separates are listed, forming a valuable work of reference with the current prices of each item, to many of which very interesting bibliographical and historical information is added. The publication can be obtained from the author

publisher from the Hague, Scheveningsche Weg. 74.

We have received the first two parts of the Annales Entomologici Fennici, the journal of the recently formed Entomological Society of Finland. Much of the matter is in English, and of articles in Finnish a resumé in some well-known European language will always be added. A strong point to be kept in view is the bibliography of Finnish entomological literature. The get up is very good and the illustrations adequate and clear.

#### REVIEWS AND NOTICES OF BOOKS.

"A CONTRIBUTION TO A BIBLIOGRAPHY OF THE DESCRIBED IMMATURE STAGES OF NORTH AMERICAN COLEOPTERA." By J. S. Wade, Cereal and Forage Insect Investigations, Bureau of Entomology and Plant Quarantine, United States Department of Agriculture, Washington. D.C. pp. 114. September (1935).

This work renders available to Coleopterists the references, which have been accumulated by the compiler consisting of citations to technical descriptions, from a series of publications between given periods of time, of the egg, larva and pupa of the Coleoptera of America north of

Mexico.

Each reference includes the name of the genus; name of the species, when known; name of the author of the original description of the adult insect; notation of descriptions where the egg, larva, or pupa are cited, and illustrations are given; biological data are indicated by the word "biology"; names of authors of additional descriptions, and periodicals, etc., in which the descriptions appear, with volume, page and date. All the references are arranged alphabetically first the genera, and then the species under each genus. In all cases of doubtful synonymy Ling's "Catalogue of the Coleoptera of America north of Mexico" is followed.

The compiler points out that this is a preliminary contribution and that gaps in continuity, etc., must occur. He, however, intends to continue to augment this bibliography as opportunity serves.

At the beginning of the work a list of host plants and an index to the same were added, but too many difficulties arose for this to be

continued.

No work like this has been attempted since Beutenmuller's "Bibliographic Catalogue of Described Transformations of North American Coleoptera" [Journal New York Microscopical Society 7]

(1891)].

The author acknowledges his indebtedness to various people, etc., including our old friend Dr. A. G. Böving whose works on and drawings of Coleopterous larvae are so well known. This publication is of the greatest value to all who study the earlier stages of Coleoptera, whereever they may be.—H.D.

"Вівсіодгарніа Сосеортеноводіса."—W. Junk. Den Haag (Holland) pp. XV+174 (1935). Frontispiece. Photograph of Herr Sigm. Schenkling.

Preface and Introduction by W. Junk, 15 pp., Index, 12 pp.

The body of the work consists of Herr Junk's latest Catalogue of 182 pp.; including lists of Periodicals, Papers on Coleoptera, Coleopterous larvae, Harmful Coleoptera; with a Supplement on all Orders of Insects.

The whole forms a valuable Volume of Reference.—H.D.

Corrections.—On page 124 the last letter of the names ab. dorothyae and ab. janeae are in the wrong case.

On p. 126 line 30 read "sanctioned" and not "sanctional."
On p. 126 line 38 read "Pencalenick" and not "Percalenick."

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15.i.35.

Add on p. (50) to the List of forms of A. ligustri, ab. obscura, V.Mell.

Add on p. (51) six lines from the bottom the description of the above form.

ab. obscura, V. Mell. Lamb. XXVIII. 117 (1928).

ORIG. DESCRIP.—"Forewings, prothorax and abdomen black with the markings greenish as in the type." Malmedy.

Add on p. (63) to the List of forms of A. tridens after the last line, ab. soltowensis, Schltz.

Add on p. (64) after the last line, the description of the above

form.

ab. soltowensis, Schltz. Int. Ent. Zt. XXIV. 185 (1930).

ORIG. DESCRIP.—" The forewings reddish grey in the typical form. In this present form the colour is dark brown-grey suffused. The usual "psi" mark and basal streak are sharp and stand out distinctly. But the hindwings are somewhat more darkened than in the type." Soltau.

FOOTNOTE on p. (87) for p. (63), Seitz Supp. III. p. 11, has nigro-maculata, Gelin, in error for nigromarginata.

Add to the List of Forms of A. euphorbiae on p. (71) ab. debilis, Demais, ab. acerbata, Schawer. and ab. farinosa, Bytin. Salz.

Add to p. (74) after line 3 from the bottom, the descriptions of ab.

debilis from top of p. (87) and of the above two forms.

r. acerbata, Schawerda, Zeit. ent. Oestr. Ent. Ver. XVI. 29 (1931).

Orig. Descrip.—" Paler grey and thus the markings are not obscure as in *euphrasiae*, Brahm. The black markings are very sharp and both the transverse lines in the central area are emphasized. Also the underside of the forewings are light grey usually with an indistinct whitish outer transverse line. The contrasted markings are very sharp." Corsica.

ab. farinosa, Bytins. S. Int. Ent. Zt. XXVIII. 100 (1934).

ORIG. Descrip.—"This form is distinguished from both the forms appenina and acerbata by its general dark colour and more distinct marking, but has the basal colour more strongly reduced in the discal and outer areas than in these. Of the doubled inner and outer cross lines only the inner and outer half of each is present: the central shading is quite absent. The orbicular and reniform stigmata are surrounded by a fine black line." Sardinia.

Add to p. (77) line 6 from the bottom to Fig.—l.c. "fig. 10 very obscure."

Add to p. (75) after the List of forms of A. rumicis, 9 lines from the bottom, ab. polonica, Pruff. and ab. bercei, Sand.

Add to p. (78) after line 5 from the top, these two descriptions on p. (87).

Add to the List of Forms of A. albovenosa on p. (79) ab. tanaica, Alph. and ab. nocmelaina, Traub. and also ssp. cretacea, Wagn. and ab. selenis, Schltz.

Add to p. (81) after line 7, the descriptions of the first two from p. (87) and then the two following descriptions.

ssp. cretacea, Wagn. Mitt. Münch. XIX. 68 (1929).

Orig. Descrip,—" Chalky white, powdered with fine dark atoms, and with sharp black marginal dots. The longitudinal streaks show particularly sharp on the pale ground. The hindwings and the undersides are pure white without yellowish colour-tone." Anatolia.

ab. selenis, Schltz. Int. Ent. Zt. XXIV. 169 (1931).

ORIG. DESCRIP.—" Specimens with very strongly developed discal moon-shaped spots on the underside of all four wings." Neustadt.

Add to the List of Forms of C. duplaris on p. (83), r. malaise, Nordstr.

Add the following description to p. (84) after line 9 from the bottom.

race malaise, Nordstr. Ark. Zool. 20A (No. 12) p. 5 (1929).

Orig. Descrip.—"The forewings are uniformly grey, with no appreciable markings, the basal area quite as dark as the central area; the outer and inner central lines indistinct, not more than a slightly lighter shade is apparent; the waved line narrow, indistinct; the two spots united into a streak. This streak never stands in the broad outer middle line, but goes straight to the edge of the dark central area, which last is in no way lighter in the middle, hence a distinct, darker line is absent from its outer portion, in which a light waved line comes into view, the cell spot is not indicated. The 3 genital apparatus shows a perfect agreement with that of the Swedish 3 duplaris." Sweden.

On p. (91) for "Tangiers" read "Tangier."

To the List of forms of L. vitellina on p. (94) add r. decolorata, Dnhl., ab. saturatior, Dnhl., and ab. grisescens, Dnhl.

Add the descriptions of the above forms after line 16 on p. (94).

r. decolorata, Dnhl. Mit. Münch. XIX. 113 (1929).

ORIG. DESCRIP.—"A race flying about the high lakes of the Abruzzi, somewhat similar to an extreme form of pallida, Warr.-S. Very small, no example more than 22 mm., while the southern vitellina measures about 39-42 mm. in expense. The typical form is only 27 mm. While in pallida the transverse lines are distinctly marked, mostly quite fine, but sharply cut, but beyond the cell spot the dark cloud of the reniform shows: the small decolorata is quite without marking; the tone in it is shining straw-yellow, in one it is almost whitish, even turning to yellowish white."

r. saturatior, Dnhl. Mit. Münch. XIX. 113 (1929).

Orig. Descrip.—"Completely red, more or less strongly marked; hindwing darker, iridescent, the veins strongly coloured. Mostly large individuals." In the South of Campagna Romana.

ab. grisescens, Dnhl. l.c.

Orig. Descrip.—"Appears to be a mountain form. The yellow tone was replaced by grey or grey-yellow. It is a very rare form." S. Tyrol and Sabine Mts.

To the List of Forms of *L. pallens* on p. (118) add ab. *minor*, Lamb. and ab. *nana*, Dufr. and on p. (120) after line 29 add the two following descriptions.

ab. minor, Dufr. Lamb. XXXII. 81 (1932).

Oric. Descrip.—" Very small examples having at most an expanse of 28mm.; like the type in coloration."

ab. nana, Dufr. Lamb. XXXII. 81 (1932).

Orig. Descrip.—"Like ab. minor, but colour identical with ab. suffusa, Steph."

Add to the List of Forms of L. putrescens on p. (109) after line 2, ab. pallescens, Dnhl.

Add the following description of the above to p. (110) after line

21.

ab. expallescens, Dnhl. Mit. Münch. XIX. 112 (1929).

Orig. Descrip.—" White-grey instead of bright yellow-brown ground-colour. Marking very fine; the dark traces beyond the cell and on the outer margin are not present. Hindwings white, the marginal dots only recognised with difficulty." Occurs with the species in mid-Italy, in the plain as well as in the mountains.

My colleague Mr. T. Bainbrigge Fletcher kindly points out that on p. (116) in the List of Forms of L. impura the ab. arcuata, Steph. has been wrongly inserted and also the Orig. Descrip. of the same on the same page. These must be deleted as the name is properly included on p. (117) under the List of Forms of S. pallens. Ab. arcuata, Steph. was dealt with by Tutt, B. Noct. I. 40. Reference to Wood's figure 364 will plainly show that the illustration is a pallens form and not one of impura. That reference too must be deleted from the account of impura.

At the end of the List of Forms of S. maritima on p. (142) the ssp. grisea, Wagn. should be added, and at the bottom of p. (144) the following description is to be added.

ssp. grisea, Wagnr. Mitt. Münch. XIX. 78 (1929).

Orig. Descrip.—" The specimens are wholly distinctly paler (purer grey)." Anatolia.

To the List of Forms of N. geminipuncta on p. (150) add ab. jaeschkei, Warn. and the original descrip. below is to be added after line 21 on the same page.

ab. jaeschkei, Warn. Int. ent. Zt. XXXIII. 7 (1929).

Fig.—l.c. fig.

Oric. Descrip.—"On the forewings the transverse doubled lines which bound the central area from the marginal and basal areas, are strikingly dark." Nieder Elb area.

Add to the List of Forms of N. sparganii on p. (154) after line 25, ab. nigrescens, Warnk., and the following description after line 36 on p. (155).

ab. nigrescens, Warnk. Verh. Ver. nat. Heimalf. Hamburg. XXIII.

20 (1931-2).

Orig. Descrip.—" An almost wholly black ?. The forewings show two somewhat paler longitudinal wisps, of which the upper one runs to the proximity of the reniform, while the lower one goes off to the angle of the wing. In the centre of the hindwing similarly there lies a paler longitudinal streak. The anal angle also has paler scaling." Germany.

Add to the List of Forms of N. typhae on p. (157) ab. punctata, Lamb., and ab. obsoleta, Dufrn., and the following two descriptions after line 3 on p. (159).

ab. punctata, Dufr., Lamb. XXXII. 83 (1932).

ORIG. DESCRIP.—"On the forewings the spots before the submarginal lines are large, much extended and very black."

ab. obsoleta, Dufr. Lamb. XXXII. 83 (1932).

Oric. Descrip.—"On the forewings the black spots before the submarginal line are completely obliterated, or reduced to a few black atoms." Belgium.

On p. (167) Wood's fig. should be "fig. 264" and not "364." On p. (172) on line 11 "Iris XIII." should read "Iris XII."

On p. (168) to the List of Forms of H. nictitans (oculea) add f. aurigera, Heydem., and to p. (175) after line 12 add the following description.

f. aurigera, Heydem. Ent. Zt. XLV. 303 (1932).

Orig. Descrip.—"The forewings in the whole central area and also at the base, shining golden yellow toned, enclosing the three particularly clear and large stigmata. These are surrounded with very fine pale violet brown. Of the same colour are all the lines, the thinned out middle shading, and the marginal area. The apex shows a golden yellow spot, before which lies a sharply margined darker violet-brown costal flush. Head, breast and thorax golden yellow, a little, especially on the neck, violet brown-tone. Abdomen light rosy brown, on the back with golden hairs. Hindwing bright grey yellow, greyer on the outside, a light yellowish defined central line, thence the border area bright grey powdered. Fringes yellowish rose. The underside equally very light, clear light yellow, finely reddish powdered, without any grey tinting, crossed by red-brown veins and with light red-brown postmedian across all the wings."

To the List of forms of X. conspicillaris on p. (187) add ssp. anatolica, Hering, and on p. (189) after line 2 add the following description.

ssp. anatolica, Hering, Int. Ent. Zt. XXVI. 412 (1933).

Orig. Descrip.—"Recognised by the less contrasted colour. The ground is almost pure grey, without the brownish tone of the typical form but not so black-brown as in the usually met-with form from Ankara. The somewhat brownish tone is found mostly in the paler costal area of the apex. It is distinguished from the almost unicolorous European specimens quite easily by the purer grey colouring and the more distinct marking. The thorax has dark grey hair. On the underside the forewings and the costal part of the bindwings are much

stronger grey than in German specimens. The male has much less contrast of colour than the female." Ankara.

On p. (192) to the List of Forms of X. monoglypha add ab. albida, Osth., ssp. syriaca, Osth., ssp. abruzzorum, Dnhl., and ssp. moroccana, Zerny, and add the following four descriptions after line 4 on p. (195).

ab. albida, Osth. Mitt. Münch. Ent. Gesell. XXIII. 71 (1933).

Orig. Descrip.—"These are in appearance compared with other specimens strikingly pale, the whole of the forewings whitish grey with obscurely developed dark markings, appearing as an extremely developed var. corsa, Trt." Syria.

ssp. syriaca, Osth. Mitt. Münch. Ent. Ges. XXIII. 70 (1933).

ORIG. DESCRIP .- "The form is so constantly distinctive in its characters that it seems correct to designate it with a subspecific name. Generally somewhat smaller than our Central European specimens. Forewings unicolorous brownish-red, suggesting our var. intacta, Peters., but noticeably more uniform in tone than it and with deeper reddish tone. The markings sharp and distinct, but more slightly developed than in our examples, wanting the special character of the pale cloud at the inner angle. The 2 in part somewhat darker, with more blackish ground tint." Syria.

ssp. abruzzorum, Dnhl. Ent. Zeit. XLVI. 259 (1933).

ORIGINAL DESCRIP.—"While in the Campagna Romana and the surrounding mountains there flies a bright brown coloured insect, which stands near the typical form and in fact shows much similarity with the sardoa, Trti., there exists in the Abruzzi a race, very pale tending towards white grey, in which the elements of the marking stand out clearly. The outer light transverse band lay quite broad well depicted in white: similarly the stigmata are filled in with white.

"Hindwings much lighter than that of the typical form, with a broad dull black-brown margin, near the inner half the fine line through the central area was often clearly visible. The discoidal spot

distinct." Mt. Grande, Velinos and Majella.

ssp. moroccana, Zerny. Zt. Oestr. Ver. Wien. XIX. 46 (1934).

Fig.—l.c. plt. VII. f. 30, 31.

Orig. Descrip.—" Distinguished from all other known forms of monoglypha in both sexes by the hindwings being conspicuously pale yellowish white, with a much greater contrast in the clearly defined marginal band. It is very near ssp. sicula, with which it agrees in its small and elongated orbicular and the absence of a darkening on the inner marginal part of the forewings behind the black longitudinal streak in the fold. It wholly wants the characteristic yellowish appearance distal to the reniform near the apex. The ground colour of the forewing is brownish violet-grey of variable intensity. markings are distinct, particularly the orbicular, well emphasised in black and the claviform extending both sides of the elbowed line. underside is distinctly wine-reddish especially on the costal and apical parts of the forewings and on the costal part of the hindwings." Tachdirt, Morocco.

On page (200) line 3 from the bottom add to the List of Forms of X. rurea, ab. corsa, Schawrd.

On page (203) before line 8 from the bottom add the following

description.

ab. corsa, Schawrd. Zt. Oestr. Ent. Ver. 43 (1928).

ORIG. DESCRIP.—" Dark-sand to steel-grey coloured forewings with dark grey-brown markings on the basal portion of the inner margin and in the proximity of the stigmata on the costal margin. The outer margin is darkened as in the typical form, but sprinkled dark black brown. The stigmata are clear grey. The hindwings sand-grey, and darkened towards the margin." Corsica.

To the List of Forms of D. scabriuscula on page (209) add subspecies and reji, Kard.

And on page (210) after line 15 add the following description.

ssp. andreji, Kard. Ent. Mitt. Berlin, XVII. 419 (1928).

Fig. - l.c. plt. 9, f. 5.

Oric. Descrip.—"They agree in size with European examples, but are distinguished from them by the dark anal area and the much darkened inner margin of the forewing; they are similarly coloured to the caliginosa of Thibet or China." Vladivostock.

To the List of Forms of A. basilinea on p. (211) add ssp. alacra, Dnhl.

And on p. (213) after line 11 add the following description.

ssp. alacra, Dnbl. Ent. Zeit. XLVI. 259 (1933).

ORIG. DESCRIP.—"Only odd specimens of this species were obtained by me in Central Italy. The few good specimens obtained by me point to a form almost indistinguishable from the typical form. Ground colour much paler, with many milk-white areas, very fine and distinct marking, the very narrowed middle band light red brown, the strongly developed spots on the costa somewhat darker. The toothed line before the marginal area turns out strongly in the middle and before the costa. Thus the insect becomes much more variable and fresher than Central European specimens." Albanian Mts.

Correction.—On p. (223) at the end of the List of Forms of A. didyma is the name albo-excessa. This name should be deleted and its place taken by struvei-excessa as on p. (228) following.

On p. (223) at the end of the List of Forms of A. didyma add ab. xanthostigma, Schawrd.

And on p. (228) above the line 7 from the bottom add the following description.

ab. xanthostigma, Schawerda, Zt. Ostr. Ent. Ver. XVIII. 30 (1932).

ORIG. DESCRIP.—" With yellow stigmata."

On p. (236) to the List of Forms of M. latruncula add form and ssp. grisescens, Heyd. and f. victruncula, Heyd.

And on p. (237) add the following two descriptions after line 32.

f. victruncula, Heydm. Ent. Zt. XLVI. 80 (1932).

ORIG. DESCRIP.—"This form occurs in the melanic forms. They have a deep black angulated band, which, running out from the costa

between the two stigmata, reaches the inner margin and forming an interesting convergence toward the well known but rare bicolora form." Only found in ab. aethiops and ab. unicolor.

f. and ssp. grisescens, Heyd. Ent. Zt. XLVI. 80 (1932).

ORIG. DESCRIP.—"The ground colour of these specimens was almost the same as that of the Central Italian form, a unicolorous brown grey; the basal and central area somewhat darker, suffused brownish; the latter with a deep black transverse line. The stigmata pale grey yellow, internally brownish grey as the marginal area. They were especially light beyond the inner margin near to the whitish interior of the post-median band.

The scarcely lighter submarginal in front continued brownish to the costa and in the disc, thence to the border shaded indistinctly

dark grey."

On p. (243) to the List of Forms of M. furuncula (bicoloria) add f. pseudonychina, Heydm.

Add on p. (246) above line 8 from the bottom the following descrip-

tion.

f. pseudonychina, Heydeman. Int. ent. Zt. XXVII. 331 (1933).

Fig.--l.c. plt. I. f. 18.

ORIG. DESCRIP.—"Whitish ochre-yellow and unicolorous grey-yellowish specimens. These are often confused with literosa ab. onychina, H.-S. South figures an almost similarly coloured & (plt. 181. f. 15). This form on account of its great similarity with our sandcoloured literosa var. may be called pseudonychina." Schleswig-Holstein.

On p. (264) to the List of Forms of M. furva add ab. leucorena, Trti.

And on p. (265) after line 18 add the following description.

ab. leucorena, Trti. Nat. Sci. XXIII. 304 (1916). [Reprint p. 102.] Orig. Descrip.—This form with white reniform has been pointed out by authors since the time of Treitschke. It is the var. A of Guenée. Warren in Seitz copies Hampson in saying that the reniform is white in the female but reddish in the male. Turati was the first to name it. It occurs generally with the main form.

To the List of Forms of M. persicariae on p. (273) add ab. ochrorenis, Kard.

And five lines below that add the following description. ab. ochrorenis, Kard. Ent. Mitt. Berlin. XVII. 419 (1928).

Fig.—l.c. plt. 9, f. 2.

ORIG. DESCRIP.—" Has a golden yellow reniform stigma. It has a few dark scales, and is surrounded by a thin pale yellow line." Narva, Ussuri.

On p. (278) under the heading ab. difflua add the following Original Description which was omitted there.

ab. difflua, Hb. Zutr. 9. (1823).

Fig.—l.c. 821-2.

Orig. Descrip.—"Notably like caecimacula (Hb. Noct. 137) in size and

appearance, but distinguished by its deeper greenish-grey coloration. Between the usual central markings, lies a brownish shading across the width of the forewing, and the outermost of the waved lines is inwards zigzaged with black." Labrador.

At the end of the List of Forms of maillardi = exulis, on p. (276) add ab. variegata, Wehrli, and ab. obscura, Wehrli.

And on p. (280) after line 16 add the following descriptions.

These two descriptions are the abbreviated ones quoted from the Supp. to Seitz just issued.

ab. variegata, Wehrli. (Draudt in Supp. to Seitz. III. p. 161).

Fig.—l.c. plt. 19k (not yet published).

Descrip.—"Brightly marked specimens, costa and veins dusted with grey white, transverse and subterminal lines pale yellow with black edges. There is a yellow streak through the reniform to outer transverse stripe." Zermatt.

ab. obscura, Wehrli. (l.c. p. 162).

Descrip.—" Completely grey black specimens without any brownish hue and scarcely visible paler transverse lines."

To the List of Forms of dumerilii on p. (309) add the following names spp. hirsuta, Wgnr., and r. aegualis, Schaw.

The abbreviated descriptions are to be found in the Supp. to Seitz.

p. 168, vol. III.

To the List of Forms of nickerlii (=incerta=gueneei) on p. (316) add the following names from the just issued parts of the Supp. to Seitz Vol. III. p. 167. ab. unimaculata, Silbernagel; pseudotestacea, Silbernagel; r. tardenota, Joan.; ab. radians, Joan.; ab. nigronotata, Joan; and r. pieretti, Obth.

And above line 3 from the bottom of p. (318) add the abbreviated

descriptions of the above six forms, taken from Seitz Supp.

ab. unimaculata, Silbernagel.

Descrip.—" Has no orbicular stigma."

ab. pseudotestacea, Silbernagel.

Fig.—Seitz Supp. Vol. III. plt. 20f.

Descrip.—"Pale grey brown specimens of the dark form from Prague, that thus closely resembles testacea."

r. tardenota, Joan. l.c.

Fig.—l.c. plt. 20g.

Descrip.—"The form from around Paris that is inclined to earthy grey, thus approaching the Spanish specimens. They are clearly marked, but very variable."

ab. radians, Joan. l.c.

Descrip.—" Veins of subterminal area prominently dusted with whitish."

15.iv.35.

ab. nigronotata, Joan. l.c.

Descrip.—"Both transverse lines conjoined on submedian by a black longitudinal bar."

This would seem to be the same as ab. iota, Turn.

r. pieretti, Obthr. l.c.

Fig.—l.c. 20g.

Descrip.—" Very similar to the *graslini* from Spain and N. Africa, but much smaller and more poorly marked specimens from the Eastern Pyrenees."

To the List of Forms of Luperina cespitis on p. (311) add "ssp. carbonosa, Trti. and on p. (312) after line 23 add the description of this form as follows.

ssp. carbonosa, Trti. Nat. Sicil. (1919) ssp. p. 102.

Fig.—l.c. plt. IV. f. 22.

ORIG. DESCRIP.—" In this new alpine subspecies collected in numerous examples at light in September about 1400 m. in altitude at Macugnaga at the foot of Monte Rosa, the colour of the forewings is of an obscure brown almost black, with transverse lines which show on it like velvet. A single and extremely fine, lutescent line borders the waved line and circumscribes the reniform and orbicular stigmata. The hindwings in both sexes are also very obscure, becoming black towards the distal margin."

To the List of Forms of Caradrina morpheus on p. (333) add the following names from the recently issued parts of Seitz Supp. vol. III. p. 180. ab. fusca, Costni., ab. ochracea, Lenz. and ab. punctosa, Krul. and on the same page after line 25 add the abbreviated descriptions from Seitz., Supp. l.c. (I have not been able to obtain the Orig. Descriptions in time for publication here.—Hy.J.T.)

ab. fusca, Costni. Seitz. Supp. III. 180.

Descrip.—" Is small, of wide wing contour and very dark black brown ground colour."

ab. ochracea, Lenz., Seitz. l.c.

Descrip.—"Is a very pale buff with diffuse markings." In Schm. Südbayerns, Supp. to Vol. XVII p. 306. Osthelder quotes the name as ochrea, Lenz. and describes it, "Clear yellow-brown with very washed out marking." On plt. XV. fig. 19 is a b. and w. figure which certainly does not agree with this latter part of the description for the marking is quite distinct but as in Seitz, "diffuse."

ab. punctosa, Krul. Seitz. l.c.

Descrip.—" A very small form, perhaps of a 2nd generation, with punctiform orbicular stigma."

To the List of Forms of *C. ambigua*, on p. (338) add *ab. confluens*, Vorbrt. from the *Supp.* to Seitz, *l.c.* p. 176, and the abbreviated description before line 5 from the bottom of the same page.

ab. confluens, Vorbrt. Seitz, l.c. p. 176.

Descrip.—"Shows the two cell stigmata confluent, forming a longish irregular bar."

To the List of Forms of C. blanda (taraxaci) on p. (340) add from

Seitz Supp. l.c. p. 175, ab. arcuata, Vorbrdt. and on p. (341) after line 24 add the abbreviated description

ab. arcnata, Vorbrdt. Seitz l.c. p. 175. Descrip.—" Has a distinct arched row of black dots in the centre of hindwings." Switzerland.

To the List of Forms of C. clavipalpis on p. (343) add the following names from Seitz Supp. l.c. p. 178, ab. thunbergi, Nordstr., subsp. mauretanica, Drdt. and ab. minor, Roths. and add the abbreviated description after line 21 on p. (347).

ab. thunbergi, Nordstr. Seitz. Supp. l.c. 178.

"As the name given to this form by Tutt, superstes, Steph. cannot be utilised owing to there being a species superstes, Tr." Nordstr. has named it thunbergi.

Fig.—Seitz, Supp. III. plt. 21e.

ssp. mauretanica, Drdt. Seitz l.c. p. 178.

Fig.—Seitz l.c. plt. 21e.

Orig. Descrip. "Gracefully built, always very pale brownish yellow specimens from North Africa, which form a genuine race and subspecies there; they are constant and can always be differentiated."

ab. minor, Rothsch. Seitz l.c.

Descrip.—" Especially small specimens of the ssp. mauretanica."

To the List of Forms of Acronicta psi on p. (65) add ab. psideleta, and on p. (66) after line 3 add the description

ab. psideleta, ab. nov. (1935).

ORIG. DESCRIPTION.—" With the complete absence of the psi mark. A small specimen with very indistinct markings." Taken at Coventry in 1922. In the collection of J. W. Saunt.

Herr B. J. Lempke (Amsterdam) has kindly sent us the following description :-

To the List of Forms of A. leporina on p. (52) add ab. flavescens, Lempke, and on page (57) add the following description, after line 15.

ab. flavescens, Lempke, Ent. Bericht. IX. p. 128 (1925). ORIG. DESCRIP.—" All the wings pale yellow." Holland.

Note 1.—Since the paragraph on andalusica (barrettii) on p. (309) was written, through the kind intervention of M. Derenne of Lambillionea, Brussels, who obtained the loan of an example of the Pyrenean form of andalusica from the collection of M. Rondou of Gêdre, Hautes Pyrénées, I have been able to show this form to those who have intimate knowledge of our British barrettii. All who have seen it express without any doubt that they are forms of the same species. The Pyrenean example is a large robust insect, agreeing well with Rambur's figure but possibly, as pointed out to me by Mr. Edelsten, it may be distinguished by a strongly emphasized light coloured blotch at the anal angle of the forewing, not present in so developed a state in other forms. If this is general in the specimens from the Pyrenees there may be justification for Wagner's name as race or subspecies gedrensis.

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### Supplement

TO

# TUTT'S BRITISH NOCTUAE

AND

## THEIR VARIETIES

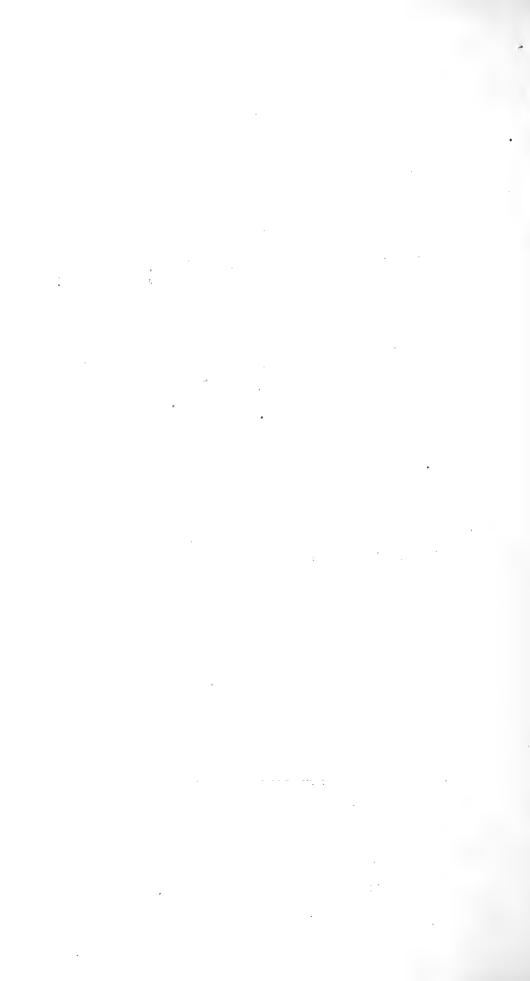
BY

Hy J. TURNER, F.R.E.S., F.R.H.S.

(Acting Editor of the Entomologist's Record & Jr. of Variation.

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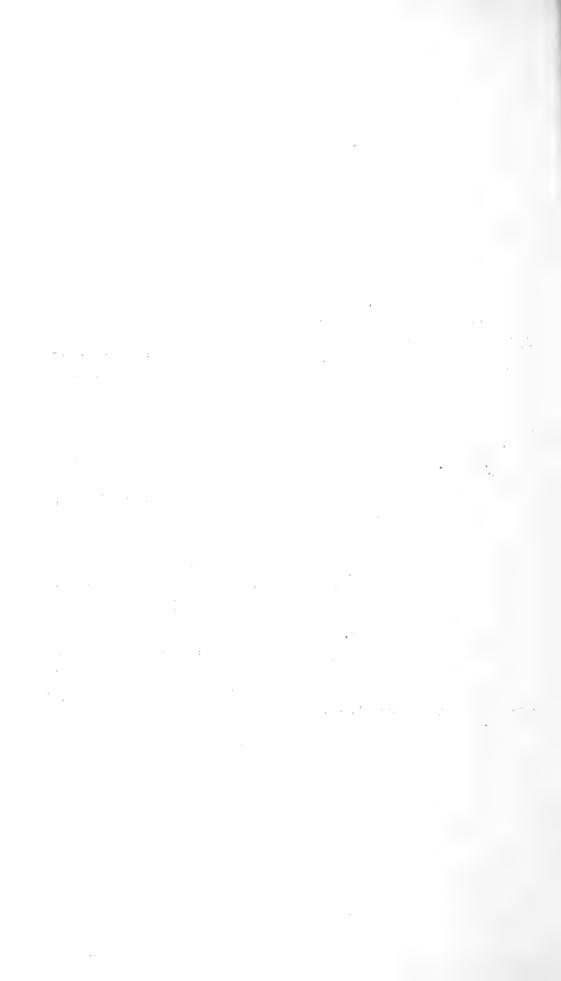
#### PREFACE.

Immediately upon the publication of the first volume of the late J. W. Tutt's British Noctuae and their Varieties in 1891, the registration of the non-typical forms of the Lepidoptera went forward so rapidly that at the present time there is scarcely a single species which is without a series of named forms, subspecies, races, seasonal forms, aberrations, resultants of experiments, etc.

The task of research has been an arduous one, and quite impossible without ready access to a good library.

The absence of helpers and of those who at present take interest in the Noctuae is, to say the least, by no means encouraging. General requests for help have produced little result, but to special repuests there have always been ready and kindly response.

My thanks are particularly due to Mr. Wightman for his practical aid and knowledge of the variation of numerous species, also to Doctor E. A. Cockayne for careful and critical reading of the proofs. To my kind correspondent Herr Lempke of Amsterdam, I am endebted for help and criticism, to Mons. Derenne of Brussels for help on one or two occasions and to Herr Heydemann and Herr Draudt for ready replies to my queries.—Hv.J.T.



#### "The British Noctuae and their Varieties." (J. W. Tutt.)

#### Supplementary Notes. II.

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

Class:—NOCTUAE, Linn.

II. Sub-Class: --Genuinae, Gn.

4. Family: -Noctuidae, Gn.

Rusina, Steph. (1829) most authors [Stygiostola, Hamp. (1908), Warr.-Seitz.: Rhusina? Bdv. (18?) Splr.] tenebrosa, Hb. (1802) = umbratica, Göze (1781).

Spuler gives Rhusina, B. (emend.) but I have been unable to trace

it.

Tutt selected the figures of Hübner, Samml. Noct. fig. 158 (1802) 3 and fig. 503 (1808-18) 2 as the originals and described the figures. Br. Noct. II. 2 (1891).

The Orig. Descrip. has since been ascertained to be that in Goeze'

Beiträge, III. 3 (1781) p. 67.

The description to which Goeze gave the name umbratica was that

of De Geer, Abhand. zur. Ins. II(1), 338. plt. 2. figs. 5, 9 (1751).

"Phalene à antennes barbues, à trompe, à corselet huppé, à ailes rabatues, égales d'un brun obscur noirâtre, avec des points d'un gris clair le long du bord exterieur."

Hence the prior name is umbratica, Göze, and has been adopted by

Seitz, etc.

Werneberg overlooked the fact that Göze had named De Geer's

insect and with others identified it as tenebrosa, Hb.

Ernst. and Engr. Pap. d'Eur. VI. p. 167 (1790) were also unaware of the name umbratica, and with reserve called the species ferruginea after Esper.

De Villers also described it independently in 1789, as

tristis, de Vill. Entomologia, II. 261 (1789).

Orig. Descrip.—"Cristata, alis deflexis cinereis, fusco subundatis margineque exteriori punctata, subtus pallidis, fascia fusca." "Alae cinereae, nitentes, strigis undulatis, paucis undatis. Margo exterior nigro punctatus. Subtus pallidae, fascia nigra." Sweden.

Tutt, Brit. Noct. II. 2 (1891): Barrett, Lep. Br. Is. V. 238, plt. 216 (1899): Stdgr. Cat. IIIed. 199 (1901): Splr. Schm. Eur. I. 236, plt. 44, 23 (1906): South, M. Br. Is. I. 322, plt. 153 (1907): Hamp. Lep. Phal. VII. 44, fig. (1908): Warr.-Stz. P. Noct. III. 160, plt. 38f. (1911): Culot, N. et G. I.(2), 59, plt. 49, 1 (1909-13).

Ernst and Engr. l.c. give in figs. 387 the 3 and 2 of the ferruginous form, quite recognisable.

On account of the much pectinated antennae the early authors

included it with the Bombycids.

Treit. Schm. V. I, 180 (1825) has cited Hübner's nigricans, fig. 538,

to this species, obviously in error.

Hübner's figure l.c. 158 is of a rich brown colour, with very dark or black lines and shades, a 3; and his fig. 503 also a rich brown with well contrasted blackish lines and shades, a 2. Both appear to me to represent the ferruginea form of Esp. and not the umbratica, Göze, more so than the darker figures of Ernst. and Engrm. In fact Hübner's figures are more variegated than Esper's.

Duponchel, *Hist. Nat.* VI. plt. 72 (1824) gives two very good figures of the non ferruginous form, more black-brown with the usual specific shades, costal spots, reniform and subterminal transverse line quite trace-

able, and with the hindwings very uniformly dark.

Freyer, Neu. Beitr. I. 74, says Esper's figures "leave much to be desired as usual." His figure of a 3 on plt. 40 is a very good dark blackish (not rich brown) brown form, with the light marking rather

too emphasized for any British examples.

Barrett, Lep. Brit. Is. V. plt. 216, f. 1, is bad. The text says, "smoky brown, with nervures slightly darker." The figure shows the reverse and the veins are widely lighter with the ground colour dark. Fig. 1b is a variety with very dark f.w. having an irregular patch on the l. f.w. and most of the inner margin from the base lighter and on h.w. streaks of lighter colour.

Wood, Ind. Ent. fig. 125, gives a picture of Stephens' ferruginea. It is certainly not the ferruginea of Esper, although Stephens, Itl. II. 112, claims that it is. Or it is an extremely bad figure. There is nothing dark about it, the forewing being divided into four transverse irregularly margined bands alternately deeper and lighter ferruginous in colour. The only character of tenebrosa is the pectinated antenna.

Meyr. Hand. 1ed. 113, Iled. 65, places it next to L. exigua.

Spir. Schm. Eur. 235 (1906) says that Rusina was Bdv. and was spelled Khusina by him. On plate 44 he gives a good black-brown figure showing the black central cloud well and also the costal white spots very clearly.

Hamp. Lep. Phal. VII. 207 (1908), gives a good b. and w. figure.

Warren in Seitz, Noct. III. plt. 38, gives 6 figs. of this species in which the differences are shown to be very slight, between umbratica (tenebrosa) typical, phaeus grayer, and obscura unicolorous forms; the ferruginea form shows partial fulvous suffusion. He treats obsoletissima, Haw. as the same as phaeus, Haw.

Of the Variation Barrett says:—"But little variable, except that, in the hill districts, such as Dartmoor and the hills of Wales and Scotland, the colour is darker, even black brown, yet with the faint markings blacker and decidedly more distinct; or on the other hand the markings obscured by smoky-black colouring and almost imperceptible. The only really striking variation that I know of is of a very pale drab." This last is probably the form bellieri figured by Culot.

Most of our British examples seem to be of the form named obscura,

Tutt, without paler markings and very dark.

The Forms and Names to be considered are:—

umbratica, Goeze (1781) Beitr. III. 3. 67.

ab. ferruginea, Esp. (1782) (1785) Schm. Abbild. III. 246. plt. 47. 5-6. tristis, de Vill. (1789) Entom. II. 261.

tenebrosa, Hb. (1808-18) Saml. Noct. 158: 503.

ab. phaeus, Haw. (1803) Lep. Brit. 133. ab. obsoletissima, Haw. (1806-10) l.c. 207.

(ab.) ferruginea, Steph. (1829) nec Esp. Ill. II. 112.

ab. obscura, Tutt (1891) Brit. Noct. II. 2.

- ab. longistriata, Warn? (Strnd.) Naturges., LXXXI. A. 11. p. 151 (1915).
  - ab. albistriga, Warn? (Strnd.) l.c.

ab. olivata, Warn? (Strnd.) l.c. ab. interstrigata, Warn? (Strnd.) l.c.

ab. bellieri, Cul. (Obthr.) (1909-13) N. et. G. I(2). 59. plt. 49. 1.

ab. kala, Strnd. (1915) Naturges, LXXXI. A. 11. p. 151.

ab. maja, Strnd. (1915) l.c. ab. nupa, Strnd. (1915) l.c. ab. dura, Strnd. (1915) l.c.

Tutt dealt with (1) the rich brown, dark banded tenebrosa, Hb.; (2) the grey form phaeus, Haw.; (3) the ferruginous form ferruginea, Esp.; and (4) the form obscura, Tutt, "deep unicolorous brown."

form obsoletissima, Haw. Lep. Brit. 207 (1806-10).

Orig. Descrip.—"Alis fuscis tinctura grisei, strigis duabus certo situ in medio saturatioribus obsoletissimis." "Obscurissima omnium, at nihilo minus valde distincta. Alae primores anticè, et ad marginem posticum, paululum pallidiores sunt; costa pallide punctata; strigae in medio at distantes. Posticae pallide fuscae."

Tutt mentions this as the female form. It is placed by Haworth in the Noctuae whereas phaeus is placed with the Bombycid section.

Thus Haw, did not connect them.

terruginea, Steph. Ill. 112 (1829).

ORIG. DESCRIP.—"Head and thorax rusty-griseous: anterior wings the same, with two obscure dusky spots at the base; a slightly denticulated transverse striga near the anterior stigma, and another much bent towards the costa behind the posterior one, with a broader one between the stigmata, which are very obscure, and a similar but considerably undulated one near the hinder margin, bordered exteriorly with greyish; the costa at the origin of the first, third and fourth striga is pale griseous ash, and between the latter bears three distinct pale spots; the posterior wings fuscescent, with an interrupted dusky streak on the hinder margin."

Stephens identifies his species with the species ferruginea of Esper, but it is not dark ferruginous brown as that form of Esper. The

same species but a different form.

Of these three names tenebrosa, Hb., phaeus, Haw. and ferruginea, Esp. discussed by Tutt, the last ferruginea was the prior so far as the then identification went and should have been recognised by him (Tutt) as the priority name. But our present acceptance of the name umbratica, Göze as the prior relegates Stephens ferruginea to the status of a synonym and the name ferruginea, Esper as the name of a form only.

ab. bellieri, Culot. (Obthr.) N. et G. I(2) p. 59 (1909-13).

Fig.—l.c. plt. 49.

Orig. Descrip.—" A very pale form." No trace of black or ferru-

ginous in the very fine figure.

Dr. E. A. Cockayne has an example taken in Woolmer Forest in 1914, which may come under this wide description, but is considerably paler. In colour it is nearest to "Ridgeway's pinkish buff." "The costa is slightly darker showing the white marks. Hindwings paler still. There are markings on this very pale buff ground."

The ab. obscura, Tutt from Rannoch in the Dobrée coll. all have

the costal spots except one. (Cat. p. 42).

In Strand's article, Archiv. Natury. LXXXI. A. 11, p. 150, etc. (1915) the author calls attention to several forms which I have been unable to trace and to which forms I have never seen an approach either in specimen or figure.

ab. interstrigata, with the ground colour much paler.

ab. longistriata, in which there is the obsolescent white, waved streak of ab. kala along the median fold, and before it a black longitudinal band parallel with it, and the streak itself broken up into spots.

ab. albistriya, in which the white is absent on the terminal portion

of the forewing.

ab. dura, Strand, Naturgesch, LXXXI. A. 11, p. 151 (1915).

ORIG. DESCRIP.—"Forewing with a wide obsolescent dark band from the middle of the wing in and below the cell to the margin below the apex of the wing."

ab. kala, Strand. Naturges., l.c.

Orig. Descrip.—"Forewing with an obsolescent, curved white streak along the submedian fold."

ab. maja, Strand, l.c.

Orig. Desrip.—" Forewing with longish white spots in the submedian fold, before the antemedial line in the submedian internervular area."

ab. rufa, Straud, l.c.

ORIG. DESCRIP.—" The ground colour on the forewing is pale olive and not overspread with blackish as is the case in ab. olivata, Warnk.

#### THE GENUS AGROTIS.

Tutt remarked (Brit. Noct. II. 3) on the difficulty of the differentiation of the species in the huge genus Agrotis as then (1891) constituted,\* and called attention to the great variability of many of the species in themselves. He also noted the attempt of Guenée to establish thirteen groups in the then known world Agrotids (1852). Subsequently

<sup>\*</sup> Staudinger in his Cat. Pal. Lep. IIIed. (1901) placed 304 species (pal.) in his genus Agrotis. Hampson in Lep. Phalaenae recognises 155 world species in his much restricted genus Agrotis.

Hampson in 1903 (Lep. Phal.) divided the species into Euwoa, Feltia, Agrotis (sens. strict.), Epipsilia, Lycophotia, and a number of small genera, followed soon after by Warren in Seitz Pal. Noct. III. who combined Feltia with Euwoa and described the genus Rhyacia dropping the genus name Agrotis altogether, and absorbing the Epipsilia and Lycophotia of Hampson into it. Thus the classification remained until the appearance of the Supp. to Seitz' work, when Corti, who had specialized in the study of the Agrotidae for many years re-diagnosed the genera Euwoa, Agrotis, and Rhyacia (including Epipsilia, etc.) although he is not fully satisfied that his arrangement is the most satisfactory. Unfortunately his decease has closed his illuminating study.

Tut.			Hampson	N		WARR.	WARR. SEITZ	သိ	2	ZI
AGROTIS.	Eux.	AG.	Lx.	FELT. EPIP.	EPIP.	Eux.	Вну.	Eux.	AG.	Вну.
saucia, Hb. (margaritosa, Haw.)			×				×		×	
ypsilon, Rott. (suffusa, Schiff.)		×					×	×		
segetum, Schiff. (segetis, Hb.)	×					×		×		
trux, Hb. (luntgera, Steph.)	×					×		×		
vestigialis, Rott	×						×	×		
acquilina, Schiff						×		×		
obelisca, Hb	×					×		×		
nigricans, L	×					×		×		
cursoria, Hufn	×					×		×		
tritici, L	×					×		×		
agathina, Dup		×					×			× :
subrosea, Steph		×					×		:	×
corticea, Hb	×					X			×	
exclamationis, L				×		×			×	
ripae, HbG			×				×		×	
radius, Haw. (puta, Hb.)	×					×			× :	
cinerea, Hb		×				×			×	
candalarum, Stgr. (ashworthii, Dbldy.)					×		×			×
lucernea, L					×		×			×
simulans, Hufn.					×		×			×
obscura, Brahm. (ravida, Hb.)		×					×			×
hyperborea, Zett. (alpicola, Zett.)					×		×			×

Each of these authors gave different values to their idea of the comprehensiveness of the genera, and therefore included many other species. Especially so was this with Hampson, who placed most incongruous species in each of his genera; for instance glareosa, comes, pronuba, etc., xanthographa, augur, and others in Agrotis.

Corti, a Swiss Doctor, was a real student and ever ready to advance. Appended is a tabular form showing where our British Agrotis

species fall in these three modern attempts of re-classification.

Agrotis, Ochs. (1816-25), most authors [Rhyacia, Hb. (1822) Warr.-Stz.: Lycophotia, Hb. (1822), Hamps.: Peridroma, Hb. (1822) South] saucia, Hb. (1802-8).

Tutt, Brit. Noct. II. 4 (1891): Barr. Lep. Br. I., III. 372 (1896): Stdgr. Cat. IIIed. 152 (1901): Hamps. Lep. Phal. IV. 536 (1901): Splr. Schm. Eur. I. 163 (1905): South, M.B.I. I. 212 (1907): Warr.-Stz. Pal. Noct. III. 53 (1909): Culot, N. et G. I. (1), 88 (1909-13).

Ernst and Engr. Pap. d'Eur. VII, figs. 452 and 453, figure insects which much resemble our species, especially fig. 453b. Werne. Beitr. II. says that 453 a-b are saucia; also that Bork. polygona = saucia; but the polygona of Fb., De Vill. and Göze is another species which appears first in Schiff. Verz.

Bork, in turn refers to Fab. Mant., to De Vill. Ent. Linn. and to Göze Ent. Beitr.

Hubner's fig. 378 named saucia in my copy is a very bad figure of that species. It is too large. The ground colour of the forewing is deep vinous red up to the submarginal line with the inner marginal area below the stigmata of a dark leaden colour sharply cut off before the submarginal, outside of which last the colour is dark grey with the slightest tinge of vinous red. The submarginal is irregularly waved or toothed, of a dirty white and narrow. The orbicular is indistinguishable, the reniform is very plainly marked in the dirty grey with dark and light interior resembling an earmark. Tutt's figure was apparently very different to that in my copy of Hübner which the previous owner had marked as "bad."

Hübner's fig. 564 aequa is at once recognised as a variegated form, pale reddish brown with costal area, wide submarginal band, and wide

transverse lines paler with only a trace of reddish tinge.

Hübner-Geyer's figs. 811, 812 are excellent representations of the dark reddish brown form, the first with markings very clear, the other with a sparsity of markings and deeper in shade; both have the pale costa.

Haw. Lep. Brit., 218 (1810), himself suspects that his majuscula is only a dark form of the aequa he has just described. ("affinis fere in omnibus").

Treit. Schm. Eur. V. (1) 149 etc. (1825) says that aequa has great similarity with saucia, but quite unlike suffusa. He referred it to the polygona of Bork. and also to a figure in the Pap. d'Europe.

Steph. Illus. II. 115 (1829), speaks of a variety "Anterior wings pitchy black or deep fuscous; the posterior smoky-white, tinged with

violet, with the nervures and hinder margin as in the main form, but

nearly black."

Dup. Hist. Nat. V. plt. LXIX. (1824) gives figures of aequa and saucia, both extremely dark, hardly to be called red. The hindwings of both are dark fuscus almost black towards the hindmargin. I have never seen any specimens so dark. The descriptions (pp. 258 and 260) do not warrant this depth of colour.

Wood, Ind. Ent. fig. 128 (1834), gives a figure he calls aequa, a reddish form with two pale streaks from the base to about the middle The costal area is not paler as in the typical form of Hub. 564, and the red is much more than a trace. As Tutt says almost every author describes this form differently. He himself says "red, with pale costa," and thus differs from Hubner's figure.

Frr. New. Beitr. plt. 525, is by no means a good figure.

is quite wrong.

Frr. l.c. Vol. II. plt. 112, figures a very grey form as aequa without the pale costa and not red, and on p. 28 he says it is very closely related to saucia (1836).

Gn. Noct. V. does not recognise the polygona of Bork., etc., as a

saucia form.

Newman, Brit. M. p. 319 (1870) gives three figures which show the indefiniteness of the marking, but with rather too much contrast between the lighter and darker areas.

South, M.B.I. I. plt. 104, gives figs. of saucia and margaritosa of an indescribable brown coloration, not red, but quite recognisable in

shape, marking, contrasts of shade, and hindwings.

Seitz. Pal. Noct. III. plt. II hi. has 4 poor figures as to ground colour, and with hindwings quite wrong in colour and appearance. Neither the red nor the grey variable areas are shown, even ochreacosta is with only the very slightest shade of ochreous on the forewings; in fact one familiar with saucia would not recognize it at first.

In Lep. Br. Is. III. plt. 138, Barrett's fig. 1a is dark umbreous with abundant darker markings, with the lower half of the basal area marked

with a group of slate-coloured dots.

Of the Variation Barrett says.—"Always and everywhere variable in the degree of red brown, umbreous or smoky-brown dusting or clouding below the subcostal nervure; or the whole surface is of one of these shades. But in some individuals the dark clouding is absent, the forewings being of the pale brown ground colour, with all the markings more distinct, though the stripe along the costal region is usually paler. In other cases this stripe, with a large portion of the forewings, is of a smooth red-brown or purple-red colouring; while in another series of forms the costa is broadly shaded with smoky black, softening off to umbreous in the middle area, and with the orbicular and reniform stigma deeper black. These variations seem to occur equally in both sexes, and are accompanied by every possible phase of intermediate colouring. Aberrations seem to be rare.'

He describes a form "Small, pale drab, with the margins dark."

The Forms and Names to be considered are:saucia, Hb. Saml. Noct. 378 (1802-8).

f. margaritosa, Haw. Lep. Br. 218 (1806-8).

f. majuscula, Haw. l.c.

f. aequa, Hb. l.c. 564 (1808-18), 811-12 (1834).

f. orophila, Gey. Zut. Eur. Schm. V. 7, plt. 809-10 (1841).

inermis, Harris, Rep. Ins. Mass. 323 (1841).

stictica, Blanch. (Gay), In. Chile, VII. 73, plt. 6, 8 (1854).

infuscata, Blanch. (Gay), l.c. 74.

differens, Walk. Lep. Het. X. 337 (1856).

impacta, Walk. l.c. 338.

intecta, Walk. l.c. 338.

ambrosiodes (Moritz) Walk. l.c. XI. 738 (1857).

angulifera, Wilgrn. Wien. ent. Mon. IV. 69 (1860).

ortonii, Pack. Ist Rep. Peab. Acad. Sc. 63 (1869).

unica, Smith. Revis. Agrot. 70 (1890).

ab. nigrocosta, Tutt, B. Noct. II. 5 (1891).

ab. ochrea-costa, Tutt, l.c. 5 (1891).

ab. rufa, Tutt, l.c.

ab. brunnea, Tutt, l.c.

ab. philippsi, Casp. Jhrb. Nass. LII. 187-201, plt. 4, f. 10-12 (1899). Soc. Ent. XIV. 89 (1899).

ab. fusco-brunnea, Hamp. (Strnd.), Lep. Phal. IV. 537 (1903). [Arch. Natg. LXXXI. 146, abt. A, Heft. 12 (1915)].

ab. cyrnea, Splr. Iris, XXI. 287, plt. IV. 3 (1908).

ab. nigrocosta, Gelin. Cat. Lep. l'Ouest Fr. 97 (1912).

ab. decolor, Rbl. Rov. Lap. XXIII. 108 (1916).

ab. tenebricorsa, Schaw. Zt. oestr. Ver. XIV. 57 (1929).

Tutt dealt with the following forms (1) Grey clouded with ashy=
margaritosa, Haw. (2) Fuscous grey, with black costa=nigrocosta.
(3) Blackish-grey, with ochreous costa=ochrea-costa. (4) Blackishgrey with vinous red costa=saucia (typical form). (5) Unicolorous
red=rufa. (6) Red, with pale costa=aequa, Hb. (7) Bright brownish-

ochreous = brunnea. (8) Unicolorous black = majuscula, Haw.

He then dealt with the American forms stictica, Blanch., differens, Walk., impacta, Walk., intecta, Walk., ambrosioides, Walk, turris, Grote. and texana, Grote., giving but little beyond the orig. descrip. But on p. 172 of Vol. II Tutt deletes the turris, Grote., on Smith's assertion that it is a true species. In Vol. IV. 113, Tutt deletes texana on Grote's assertion that is "a perfectly good species" and notes that Cockerell says "unica is almost the same as brunnea."

Warr. (Šeitz.) places aequa as a syn. of saucia, III. 53.

f. orophila, Geyer, Zut. Eur. Schm. V. 7 (1841).

Fig.—l.c. f. 809-10.

The fig. does not suggest saucia to me. The colour, marking and general appearance is rather a suggestion of augur. The description

on p. 7 does not help. It is compared with sordida by Hb.

Orig. Descrip.—"Longer narrower f.w., colour is a smutty brown, in which the usual markings are defined by fine black edging. The brownish grey colour of the hindwings extends to the base as a dirty white. The underside is devoid of all marking."

sordida is f. 154 of Samml.

15.ix.35.

f. inermis, Harris, Rep. Ins. Mass. 323 (1841).

ORIG. DESCRIP.—" Destitute of the lance shaped spot on the forewings. The f.w. are light brown, shaded in the middle and towards the h. marg. with dusky brown; they are crossed by four, more or less distinct wavy bands, each formed of two blackish lines: the kidney-spot is dusky; and there are several blackish spots on the outer thick edge of the wing (? costa) H.w. are pearly white in the middle, shaded behind, and veined with dusky brown."

"Resembles telifera in form."

ssp. stictica, Blanch., Gay's Chile. VII. 73 (1854).

Fig.—l.c. plt. 6, f. 8.

Oric. Descrip.—" Pallide luteo-cinerascens; alis anticis concoloribus nitidis, atomis obscurioribus adspersis, maculis ordinariis vix distinctis; posticis albidis, apice cinerascentibus." Chili.

ab. infuscata, Blanch., Gay's Chile. VII. 74 (1854).

Orig. Descrip.—" Fusco cinerea, alis anticis concoloribus, obscure variegatis, maculis ordinariis vix distinctis; punctoque albido; posticis pallide cinereis." Chili.

ssp. angulifera, Wilgrn. Wien. ent. Mon. IV. 69 (1860).

Oric. Descrip.—"Alis anticis supra griseo-fuscis, lineis ordinariis obsoletissimis in lineolis costalibus nigricantibus incipientibus, lineis 3 subapicalibus ad costam flavescentibus, maculis 2 ordinariis cellulae tenuissime nigro-cinctis maculaque claviformi angulum nigrum tenuissimum formante; posticis infuscatis, disco albido." ? Buenos Ayres. A. ravida, subaffinis.

ssp. ortonii, Pack. Ist. Rep. Peabody Ac. Sci. 63 (1869).

ORIG. DESCRIP.—"Brown ash-colour, with a very slight reddish hue. On the costa are four blackish patches, enclosing a paler spot concolorous with the rest of the wing. The two basal spots are the beginning of two lines, which cross the wing, of which the basal is near the base of the wing, and is very zigzag and the outer is zigzag, the bends having acute-angles. The round inner discal spot is large and conspicuous, and below is a longitudinal oblong spot connected with the second transverse line. The reniform spot is large and well marked. There is a square dusky spot on the costa near the apex, and a few dusky spots near the outer edge, with the usual marginal row of minute black intervenular lunules. The head and thorax are concolorous with the forewings. Hindwings white, dusky on the outer edge. Beneath the wings are pale, whitish, ashen on the costal and outer edges, the forewings being whitish on the central portion."

"It resembles in its form A. suffusa though smaller and with simpler

markings on the forewings."

ab. unica, Smith, Revis. Genûs Agrotis, 70 (1890).

Orig. Descrip.—" Very distinctly marked specimen without any confusing shades."

ab. philippsi, Caspar II., Jahr. Nass. LII. 187-201 (1899). Fig.—l.c. plt. IV. figs. 14-15.

ORIG. DESCRIP.—"Ground colour: f.w. dark grey to blackish, a few specimens paler grey, marking in the paler forms very sharply defined (in typical saucia there are but few markings noticeable, the orbicular and reniform stigmata are certainly difficult to discern). The costal margin is dark (not cherry-red) almost quite black. The wide dark margin stands out sharply from the rest of the coloration. The elbowed line usually with a very well-marked W, the band generally very broad and clear. At the outer margin between the fringes and the waved line the border is filled in with black."

"This form varies much in definition, depth and development of

markings."

Fig. 14 is comparable to a dark segetum. Fig. 15 is a paler form of this variation."

ab. philippsi, Casp. II., Soc. Ent. XIV. 89 (1899).

ORIG. DESCRIP.—" This form shows no red nor yellow generally, and is more or less grey or blackish, almost as wanting in marking as is A. segetum. The chief characteristic is that the costal area is neither reddish nor yellowish suffused, but is black or blackish." W. CASPAR II. (Cf. Jahr. Nass. LII. 187.)

ab. fuscobrunnea (Strand), Hamp. Cat. Lep. Ph. IV. 537 (1903), and

Strand, Arch. Naturg. LXXXI. 146, Abt. A. Heft 12 (1915).

ORIG. DESCRIP.—" Head, thorax and forewing dark brown, the last with the costal area, orbicular and subterminal area, and an apical patch grey."

race cyrnea, Spir. Iris, XXI. 287 (1908).

Fig.--l.c. plt. IV. 3.

Orig. Descrip.—"It is distinguished not by gray but by distinctly brownish coloration, by the emphasized marking of the forewings and also by the grey suffused, dark veined hindwings. The forewings show grey suffusion in the basal area, the discal marks are grey and differ from the ground colour distinctly, the central lines, which in the type form are obsolescent, are fine but distinct, interrupted in places, black, toothed, lined with grey in most specimens on the outside." Vizzavona.

ab. nigrocosta, Gelin. Cat. Lep. L'Ouest France. 97 (1912).

Orig. Desrip.—" Sometimes the costal part instead of being light varies in an inverse way, and becomes of an intense black."

Probably referable to philippsi, Casp. (E.A.C.)

ab. decolor, Rbl. Rov. Lap. XXIII. 108 (1916).

Orig. Descrip.—" Has markingless reddish-grey forewings and brown grey-veined hind wings." Hungary,  $\delta$ .

race tenebricorsa, Schawd. Zt. Oestr. Ent. Ver. XIV. 57 (1929).

ORIG. DESCRIP.—" The ground colour of the Corsican saucia is dark black brown. Only the costa is a little reddish. The hindwings are strikingly deeper black than in the typical form, and even up to the base. Thorax and the rest of the body are blackish. The underside is dark." A mountain form of the Corsican Highland.

Agrotis, Ochs. (1816-25), most authors. [Rhyacia, Hb. (1822), Warr.-Stz.: Peridroma, Hb. (1822) Butler in error] ypsilon, Hufn. (1766) = [suffusa, Schiff. (1775)].

Note.—Hufn. wrote ipsilon. But every author since has used y.

Tutt took the ypsilon, Rott. (1776) as the type, although he must have seen the references of Bork. Natury. IV. 550 (1792), where the species is redescribed under the name suffusa, which name is referred back to Schiff. Verz. (1775). Further, Bork. says it is the ypsilon of Rott. and of Hufn. Berlin Mag. III. 416 (1766), which last is thus the Original Description. The name should be ypsilon, Hufn. and not Rott. Of which the following is the

Orig. Descrip.—" Pale brown, with a reniform spot and a dark brown widish "ypsilon" mark or double toothed fork on each

forewing."

Tutt, Brit. Noct. II. 7 (1892): Barr. Lep. Br. Is. III. 233, plt. 124, f. 2 (1896): Stdgr. Cat. IIIed. 151 (1901): Hamp. Lep. Ph. IV. 368, fig. (1903): Splr. Schm. Eur. I. 162, plt. 35, f. 13 (1905); South, M.B.I. I. 209, plt. 104, f. 7, 8 (1907): Warr.-Stz. Pal. Noct. III. 37, plt. 8e (1909): Culot, N. et. G. I.(1), 84, plt. 13, f. 17-18 (1909-13).

Esper. Abbild. III. 320. plt. LXIII. 6-7 (1782) described and figured this species as a Bombycid under the name spinula. His figures ?

and 3 are fairly recognizable.

Ernst. and Engr. Pap. d'Eur. VII. p. 62, says it was figured as spinula by Esp. but that it appears to be the aquitina of Schiff. Verz. Their figures are very fair. 452 a 3 b ? It cannot be aquilina as the larva of that species is said to feed on Galium verum. See Verz. Supp. 313.

Don. N. H. Brit. Ins. plt. 345 has two good figures; 2 a dark female, 3 a very small variegated male. Haworth says that Donovan's figures are almost always small. Donovan uses the name spinula, of

Esp.

Hübner's fig. 134 suffusa is good but unusually large.

Haw. Lep. Brit. 217 (1809) describes spinifera and suffusa undecided as to whether two separate species or forms of one, or that the latter is the female of the former, and refers them to Donovan's

figure 2 and 3 on plate 345 of his N. H. Brit. Ins. (1862).

Steph. 111. plt. 22, f. 2, annexa, is a rather remarkable one with a fuscous cloud along the inner margin of the forewing from the base to the anal angle, while another similar cloud is on the near apical part of the costa. It is probably (according to some authors) not the annexa of Tr. but a purely American species.

Godt. Hist. Nat. V. plt. 69. f. 1-2 (1829), gives 2 excellent figures,

a light 3 and a dark 2, outer marginal area broadly paler.

Treit. Schm. V.(1), 152 (1825), treats suffusa as a Bombycid, but his references give Hufn. as the authority of ypsilon, and Schiff. as that of suffusa, and described annexa as a species very closely related to suffusa but smaller.

West. and Humph. (1842) figure poorly coloured ypsilon and

annexa, but the characteristic markings are correct.

Freyer's fig. Neu. Beitr. plt. 329 is unrecognisable.

Newman, Brit. M., p. 318 (1869), has three good b. and w. figures, of different forms all more or less dark.

Barrett, l.c. plt. 124, gives 3 figures: 1 and 1a, 3 and  $\mathfrak{P}$ ; 1b, a light female, lighter than the male, but having unusually dark hindwings.

Butler, Trans. Ent. S. (1889) 380, erroneously places saucia, Hb. as a synonym of ypsilon, Rott, and uses the genus Peridroma, Hb. with ypsilon, as type. But saucia is the type of Peridroma. (See Hb. Verz.)

South, M.Br.I. I. plt. 104, gives two well marked figures but much

too brown.

Spuler, Schm. Eur. I. plt. 35, 13, has a good figure of a dark suffused 3.

Warr.-Seitz. Pal. Noct. III. treats suffusa, Schiff., spinula, Esp., and spiniferus, Haw. as synonyms. He refers ypsilon to Rott. Ab. annexa and ab. pallida are the only forms recognized.

The figure in Seitz plt. 8c, is a good one of a typical 3.

Culot, N. et G. I (1), gives 2 excellent figs. on plt. 43. f. 17 a fine variegated  $\beta$ , f. 18 a dark suffused  $\mathfrak{P}$ .

Meyrick, Hand. 93, calls it suffusa, Hb.; in his Revis. Hand. he calls it ypsilon, Rott.

Of the Variation Barrett says—" Very constant in colour and markings, but in the female the dark colouring of the middle of the forewings is in some cases extended to the base, so that two-thirds of the length of the wing is black-brown. On the other hand, the male is occasionally of a pale brownish-drab, with only the costal region and the stigmata dark. Specimens from Ireland appear to show a tendency to pale variation."

He describes a form, "Less than one half the ordinary size and

very pale in colour."

Forms of this species or very closely related species occur all over the American continent.

The Forms and names to be discussed are: ipsilon, Hufn. (1766) Berl. Mag. III. 416. suffusa, Schiff. (1775) Verz. 80. ypsilon, Rott. (1776) Naturf. IX. 141. f idonea, Cr. (1782) Pap. Ex. III. 150. plt. 275. f. spinula, Esp. (1782) Abbild. III. 320. plt. 32. f. 6-7. f. subterranea, Fb. (1794) Ent. Sys. emend., III (2) 70. 3 spiniferus, Haw. (1806-10), Lep. Brit. 217. f. annexa, Tr. (1825) Schm. V.(1), 152. f. annexa, Steph. (1829) Ill. II. 117. f. telifera, Harris, Rep. Ins. Mass. 323 (1841). f. robusta, Blanch (1852) Gay's Chile. 75, plt. 6, f. 9 (S. Amer.). f. bipars, Walk. (1856) Walk. Lep. Het. X. 334 (S. Amer.). f. frivola, Wllgrn. (1860) Wien. ent. Mon. IV. 169 (S. Amer.). f. pepoli, Bert. (1874) Bert. Bull. ent. It. VI. 39, 146, plt. 3. ab. pallida, Tutt (1892) Brit. Noct. II. 9. ssp. aureolum, Schaus (1898) Jr. N. York Ent. Soc. 107 (S. Amer.). ab. fusca, Dnhl. (1925-6) Ent. Zt. XXXIX. 135.

ab. obscura, Lenz. (1927) Schm. Sudbay. II.(2), 252.

Tutt dealt with (1) the typical form dark reddish brown shaded with black brown; Rott. (2) the annexa, Stephs., pale brown hind portion of f.w. dark; (3) the idonea, Cr. of America; (4) pallida, from Western Isles of Scotland; (5) the spiniferus, Haw. and refers to several American forms.

These South American forms are not discussed here. I am not aware that any comparison of the genitalia has been systematically

carried out.

N. suffusa, Schiff. Verz. 80 (1775).

ORIG. DESCRIP.—" Noctuae Rusticae. Larvae Terricolae. With a black collar. The sow thistle earth larva. Foodplant Sonchus arvensis." Illig. Neu. Ausg. Verz. (1801) accepts suffusa as the name.

spinula, Esp. Abbild. Bomby. III. 320 (1782).

Fig.—l.c. plt. LXIII. 6-7.

Oric. Descrip.—" Alis superioribus griseo-fuscis, stigmate reniformi inserta parti anteriori macula triangulari seu spiniformi." "The 3 antenna is feathered but this thins out gradually towards the apex. Those of the female are feathered throughout. The ground colour (?) of the more than usually long wings, is a very dark reddish brown with blackish shading. On the margin are 2 very abruptly shortened lines. The reniform stigma has in front of it a black apex considerably extended. The hindwings are white without a discal spot and are only shaded at the margin."

ssp. or f. subterranea, Fab. Ent. Sys. emend. III. (2), 70 (1794).

Oric. Descrip.—" Alis incumbentibus fuscis: costa baseos margineque postico cinereis. Caput et thorax fusca crista arcu duplici, atro. Abdomen cinereum. Alae fuscae ad basin late pallida margo posticus itidem pallidus, interdum litura fusca. Posticae albidae." America meridionalis.

This is placed by Fabricius adjoining suffusa, and no doubt represents an American form of ipsilon.

spiniferus, Haw. Lep. Brit. 217 (1806-10).

Orig. Descrip.—Refers to Donovan's figure 3 on plt. 345 as "agrees with this, except in wanting the essential spine shaped mark in the sinus of the reniform stigma." "Foemina mari simillima, vel paululum saturatior, antennis setaceis." The figure omits the spina character.

annexa, Tr. Schm. V(1). 154 (1825).

Treit. compares this small form with his own description of suffusa and in almost every detail the characters are the same, only differing in a degree. The insect is smaller than average suffusa. He suspects it is an American insect which got into Ochsenheimer's collection from Herr Radac's collection. Some authors (e.g. Guenée) consider the annexa of Stephens to be a different form. Both were of small size. Stephens' insect came definitely from the British Isles whereas the example of Treitschke was probably American.

f. telifera, Harris. Rep. Ins. Mass. 323 (1841).
ORIG. DESCRIP.—"F.w. are light brown shaded with dark brown

along the outer thick edge, and in the middle also in the Q; these wings are divided into three nearly equal parts by two transverse bands, each composed of two wavy dark brown lines; in the middle space are situated the two ordinary spots, together with a third oval spot, which touches the anterior band; these spots are encircled by dark brown, and the kidney-spot bears a dark brown lance-shaped mark on its hinder part: the hindmost third of the wing is crossed by a broad pale band, and is ornamented by a narrow, wavy or festooned line, and the several small blackish spots near the margin. The h.w. are pearly white, semitransparent, shaded behind, and veined with dusky brown."

"It closely resembles Agrotis suffusa."

ssp. pepoli, Bert. Bull. ent. Soc. It. VI. 39. 146 (1874)

Fig.—l.c. plt. 3.

Description of the Figure.—Narrow forewings. Fig. b. and w. Well marked submarginal streaks black. The arrowhead in the sinus of reniform very clear. Reniform and orbicular united by dark streaks. Stigmata outlined in black and darkish edging. Claviform present but confused in the transverse double line interior to the stigmata. Upper part of this line confused. The elbowed line very straight in direction, double crenulate, upper portion confused or absent. Costa and base darker in shade. Dark shade below reniform to inner margin. Extreme outer margin of f.w. black narrow band, attenuated at both ends. Apex, a blotch, the lightest part of wing.

f. fusca, Dannhl. Ent. Zeit. XXXIX. 135 (1925).

Orig. Descrip.—"I found extreme specimens in which the darkening covered the whole basal area so that only a broad pale-brown outer margin was left." Terlan, Klausen, S. Tyrol.

ab. obscura, Lenz. Ost. Schm. Sudbay. II(2). 259 (1927).

Orig. Descrip.—" Much darkened grey-black."

The South American robusta, Blanch., bipars, Walk. and aureolum, Schaus, are also ascribed to this species.

Agrotis, Ochs. (1816-25), nearly every author. [Euxoa, Hb. (1822), Warr., Meyr. (Rev. Hand.)] segetum, Schiff. (1775) = segetis, Hb. (1802).

Several modern authors have ignored the above reference to Schiff. Verz. (1775), although it is supported by a figure on Plate I., and also by the references in Bork., Fb., Treit., etc., and have adopted segetis, Hb. or segetum, Hb. as the name.

Those who in recent times have taken Hübner's figures (1802) as the type, on referring to the plate (there is no description) found 2 figures, 146 called *segetis* and 147 called *segetum*, and hence have used *segetis*, Hb. as the prior name. But this, as shown above, is in error as the prior name is that of the *Verz*. of Schiff. (1775).

Tutt, Brit. Noct. II. 9 (1892): Barrett, Lep. Br. Is. III. 291, plt. 125 (1896): Stgr. Cat. IIIed. 151 (1901): Hamp. Lep. Phal. IV. 167, t. 59 (1903): Splr. Schm. Eur. I. 162, plt. 35 (1905): South, Moths

Brit. Is. I. 201, plt. 104 (1907): Warr.-Stz. Pal. Noct. III. 25, plt. 5, d, e (1909): Culot, N. et G. I(1), 85, plt. 14, 1-3 (1909-13): Corti.-Stz. Supp. Pal. Noct. III. 43 (1932).

The b. and w. figures on the only 2 plates of Schiff. Verz. are quite recognizable.

seyetis, Fab. Spec. Insect. II. 223 (1781).

ORIG. DESCRIF.—"Noctua cristata, alis incumbentibus ferrugineis, strigis undatis obscurioribus, posticis albidis." "Phalaena segetum spirilinguis cristata, alis incumbentibus, superioribus fuscis, stigmatibus ordinariis lineisque transversis undulatis obscurioribus, inferioribus lacteo-griseis."

Fab. gives the Verz. reference but alters the name to segetis.

Tutt quotes segetis to Hb. whereas it should be segetis, Fb. = segetum,

Verz. (teste Fb.)

Bork. Natury. gives clavis, Hufn. Berl. May. III. 426 (1766) as this species. If so clavis is prior, but Rott. Naturf. VIII. 109, redescribes clavis as quite different from segetum, and recent authors have considered the probability that it is exclamation or vestigialis.

Criticism of the figures of such a variable species is of little use.

Esper, Abbild. III. 323, plt. 64, f. 3-4 (1782), treated a form of it as a Bombycid, because of its pectinated antennae, under the name caliginosa, and the generally darker form under the name fuscosa. The figures are recognizable but very poor. Treit. and H.-S. both consider both these figures segetum forms, but Wern. Beitr. II. 31 considers f. 3 as nigricans on account of the short antennae and the reddish brown of the f.w., the slightly feathered basal portion of the antennae, etc., etc., all characters of the latter species.

Hüb.'s figs. 145-146 do not show the characteristic hindwings, the pearly gloss is absent. 711 fervida is a bad fig. and the white of the

hindwing is leaden.

Wern. Beitr. II. 117, considers fig. 448, Vol. VII. Ernst. and Engr. Pap. d'Eur. to be a segetum. To me it is more like a testacea form.

Treit. treated this species as an Agrotis and not a Bombycid.

Hampson, Lep. Phal. IV. 167, says nothing of the extreme variability of this species, only recognizing the form pallida, Stgr., and places sicula, Bdv., dimidia, Zell., sicania, Gn., marginalis, Walk., obliviosa, Walk., aversa, Walk., correcta, Walk., denticulosa, Wllgrn., conspurcata, Walk., repulsa, Walk., certificata, Walk., ingrata, Walk., pallida, Stdgr., fucosa, Btlr., and lassa, Swinh., as synonyms. He takes Schiff, Verz. as the Orig. Descrip.

Barrett, l.c. on plt. 125 gives 7 figures: general coloration too brown not sufficient grey mixture. 1b  $\mathcal{J}$ , 3 transverse lines; basal terminates before the inner margin; the anteorbicular considerably doubled and very irregular; the next line of much emphasized lunules between the veins, concave on outer side; somewhat lighter ground. 1c  $\mathcal{J}$ , darker, very dark marginal band inside which is a submarginal line of lunules, the line usually near the reniform is absent, the inner line is regularly doubled, the basal one doubled with lower half wanting. 1d  $\mathcal{I}$ , much paler, all three lines doubled and more uniform. 1e  $\mathcal{I}$ , as the last but spaces between the double lines white or nearly white. 1f  $\mathcal{I}$ , irregularly suffused, with very fine transverse single lines, the

basal absent and a white elongate cloud towards centre of basal area.

Claviform plainly marked in all figures.

Warr.-Stz. l'al. Noct. III. 25, plt. 5d, e (1909), gives 6 figures, generally good, segetum 3 2, two pallida, subatratus, and segetis, Hb. He treats praecox, Hb. (nec L.), fervida, Hb., sicula, Bdv., dimidia, Zell., sicania, Gn., ingrata, Btlr., certificata, Walk., and fucosa, Butlr., as pure synonyms. Besides recording the Amur pallida, Stdgr., he treats the remaining 12 forms as aberrations.

Culot, N. et G. plt. 14, gives three very excellent figures. No. 1 is

a very fine 2 ab. nigricornis.

In the Supp. to Seitz (1932), p. 43, Corti uses the name segetis, Hb. as the orig. name; adds marginalis, Wlkr., obliviosa, Walk., aversa, Walk., conecta (misspelled for correcta), Wlkr., denticulosa, Wllgrn., conspurcata, Wlkr., repulsa, Wlkr., certificata, Wlkr., and lassa, Swinh., as additional synonyms. He points out that pallida is no doubt a subsp. in Central Asia, and pallida-obsoleta a southern race from Bolzano (Botzen).

Of the form named glaucina, Kozh., Corti says it is nothing more than a pale grey coloured segetis (segetum). May be termed a race

perhaps. From Minussinsk, Siberia.

Of the Variation Barrett says.—"In the male the ground colour occasionally varies to pale drab or even to whitish grey and in this and the paler brown forms, the markings are in some instances very sharp and distinct or so as to give the impression of another, more beautifully marked, species, the second line resembling a graceful necklace of fine markings, and the whole appearance being so elegant that some difficulty is found in recognizing the usually homely dingy insect. In other cases the male varies to dull dark brown, with a darker central shade, and obscure markings as in the female. In that sex the variation is equally great, from pale grey much dusted with darker, and having a conspicuous pale yellow or whitish subterminal line, through various shades of obscure brown, to smoky black, but in neither sex do the hindwings vary much. Casual aberrations are almost endless."

He enumerates

"A spotless pale brown male."

"A coal black female."

"A female of grey colour, with the two transverse lines distinctly double, and black, but enclosing white lines."

"Another of an extremely pale slate grey, devoid of markings."

"A 3 of one half the usual dimensions."

"A 2 of a smooth pale slate colour, with a singular soft bloom."

"Others of a peculiar grey-brown, much dusted with darker grey, having the transverse lines very distinct, and in one place much further apart than in the other."

"A 3 most exquisitely shaded with grey, the lines black edged

with white, and the orbicular stigma white ringed."

"Another, brown with the orbicular stigma greatly elongated, and united by a narrow neck to the reniform stigma."

"Another, of a very pale brown, has a black central shade."

"A greyish-white 3, shaded with dark grey at the apex and around the reniform stigma."

15.xi.35.

"Some pale brown males with remarkably rich markings and dark

hind-marginal clouding."

"One of a smooth clear pale brown, with the first and second lines elaborated into series of long distinct loops, or scallops with long points and the reniform stigma very well marked."

"A female of a peculiar purple grey colour, all the nervures and

the dorsal margin striped longitudinally with dark grey."

The Forms and Names to be considered are:—
segetum, Schiff. (1775) Verz. 81. plt. 1a. 3. plt. 1b. 3. Warr.-Stz. l.c.
plt. 5d.

segetis, Fb. (1781) Spec. Ins. II. 223.

caliginosa, Esp. (1786) Abbild. III. 323. plt. 64. f. 3 (Bombyeid). fuscosa, Esp. (1786) Abbild. III. 324. plt. 64. f. 4 (Bombyeid).

nigricornis, de Vill. (1789) Linn. Ent. II. 175.

segetis, Hb. (1802) Samml. 145. Warr.-Stz. Pal. Noct. III. plt. 5d. segetum, Hb. (1802) Samml. 146.

f. praecox, Hb. (1802) Samml. 359.

f. catenatus, Haw. (1803) Lep. Brit. 114.

f. pectinatus, Haw. l.c. 115.

f. monileus, Haw. l.c. 115.

f. spinulus, Haw. l.c. 115.

f. connexus, Haw. l.c. 116.

f. corticcus, Haw. l.c. 116 (presumably corticeus).

f. venosus, Haw. l.c. 116.

f. subatratus, Haw. l.c. 116.

f. nigricornutus, Haw. l.c. 117.

f. sordida, Haw. (1809) l.c. 222.

f. fervida, Hb.-Gy. (1826-8) Samml. 711.

ssp. sicula, Bdv. (1840) Ind. Meth. 109.

dimidia, Zell. (1847) Ísis, 439.

sicania, Gn. (1852) Hist. Nat. Noct. V(1), 275.

obliviosa, Walk. (1856) Lep. Cat. X. 340.

dividens, Walk. (1856) l.c. 342.

aversa, Walk. (1856) l.c. 345.

correcta, Walk. (1856) l.c. 345.

marginalis, Walk. (1856) l.c. 349.

ssp. denticulosa, Wilgrn. (1860) Wien. ent. Mon. IV. 168.

conspurcata, Walk. (1865) Lep. Het. XXXII. 696-7.

repulsa, Walk. (1865) l.c. certificata, Walk. (1865) l.c.

ssp. ingrata, Btlr. (1878) Ann. M.N.H. (5)I. 162.

ssp. pallida, Stdgr. (1881) Stett. e. Zeity. XLII. 423. Warr.-Stz. Pal. Noct. III. plt. 5de.

ssp. fucosa, Btlr. (1881) Tr. Ent. Soc. 179.

ssp. lassa, Swinhoe (1886) P.Z.S. 444.

ab. anthracitica, Alph. (1908) Hor. Ross. XXXVIII. 590.

ab. unicolor, Pill. (1909) Rovart. Lap. XVI. 185.

ab. nocturna, Stauder (1915) Int. Ent. Zts. IX. 16.

ab. virilis, Stauder (1915) l.c.

ssp. albiptera, Trti. (1921) Att. Soc. It. Sci. Nat. LX. 225. [Lep. Ciren.]

ab. minorata, Trti. (1924) l.c. LXIII. 61.

ab. pseudocos, Trti. (1924) l.c.

r. pallida-obsoleta, Dnhl. (1925-6) Ent. Zeit. XXXIX. 135.

ab. glaucina, Kozh. (19 ) : Corti-Stz. Supp. Noct. III. 44 plt. 5f. (1932).

Tutt dealt with (1) catenatus, Haw. whitish-grey with distinct markings; (2) segetis, Hb. whitish-grey with distinct markings and reddish-brown costa; (3) monileus, Haw., whitish-grey, indistinct markings, suffused lines, irrorated and clouded with black; (4) segetum, Schiff. clear reddish-brown, clear and distinct markings; (5) reddish-brown, more or less indistinct markings, clouded black, sordida, Haw.; (6) Pale grey, reddish tinge, distinct markings, fuscosa, Esp.; (7) subatratus, Haw. black, a row of pale dots parallel to the hindmargin; (8) nigricornis, Vill. = nigricornutus, Haw., unicolorous black; (9) caliginosa, dark, red brown with outer margin blackish.

He also deals with five sub-varieties of the catenatus form. (1) pectinatus, Haw., with smaller claviform, a double angulated line beyond the reniform; (2) spinulus, Haw., with reniform not touching the elbowed line, and exterior striga becomes a row of pale dots; (3) connexus, Haw., with reniform and orbicular joined by a double line; (4) corticeus, Haw. (corticeus?), with denticulate orbicular and strigae partly obliterated; (5) venosus, Haw., with the veins broadly fuscous.

He then dealt with (1) dividens, Walker, a dwarf, pale & from Natal; (2) aversa, Walk., from the Punjaub; (3) marginalis, Walk., from S. Africa; (4) obliviosa, Walk., from the Cape; (5) correctu, Walk, from N. India; (6) ingrata, Btlr., from Yokohama; and (7) pallida, Stdgr., from Central Asia.

f. praecox, Hb. Saml. Noct. 359 (nec. L.) (1802-8). Fig.—l.c. 359.

Orig. Descrip.—Made from the figure. F.-w. Slate ground colour, dark brown marginal area including submarginal light transverse line; elbowed line of black dots on costal portion of basal area, reniform white with black dots and pale brown surround; orbicular brown dull; several iuconspicuous clouds of varied sizes. H.-w., dirty white with very definite dark brown margin, commencing at anal angle and gradually widening until along the costa it is somewhat wide, the same shade as the hindmargin of f.-w. Thorax and spot at apex of f.-w. of the slate ground colour. Most authors have called this a form of segetum. (H.J.T.)

f. fervida, Hb.-Gy. Saml. Noct. 711 (1826-8). Fig.—l.c. 711.

Orig. Descrip.—Made from the figure. This figure is usually considered a segetum form. In my copy, otherwise in exceptionally good condition, this figure has so altered that colour is unreliable. Markings are as in normal segetum but all of somewhat aberrant shape, e.g., claviform Y shaped, reniform << shaped interior marking, etc. Hübner died in 1826 and Geyer continued the work. Possibly this figure is one of the latter's early figures and the "white" colour used particularly for the hind-wings was not good, and thus now appears a leaden smudge. (H.J.T.)

ssp. sicula, Bdv. Ind. Meth. IIed. 109 (1840).

Orig. Descrip.—"Intermediate between A. cos and A. segetum: forewings somewhat less ashy-fuscous, transverse lines, toothed, more obscure; usual stigmata ashy-white; orbicular weak, oblong, placed

longitudinally; hindwings white." Sicily, Naples.

Gn., Hist. Nat. Noct. V(1). 275 (1852), redescribed this form more fully under the name sicania. He stresses the obscure, geminated transverse lines, the claviform as being much elongated, the presence of a slight reddish suffusion, etc.

ssp. dimidia, Zell. Isis, 439 (1847).

Orig. Descrip.—" Is distinguished from segetum by its antennae and shortness of the forewings. In segetum the two rows of teeth extend along the shaft to about half the length of the antennae, and each carries from 44 to 60 teeth. In dimidia they extend to half the antenna-length; they stand further apart (are easier to count); each row has from 34-36 teeth; the shaft is brownish and darker than in segetum. The forewings in segetum are narrow and long; in dimidia they are narrower and shorter, but not so wide as in trux." The rest of the long description is that of an undoubted form of the very variable segetum.

ssp. denticulosa, Wllgrn. Wien. Ent. Mon. IV. 168 (1860).

Orig. Descrip.—" Alis anticis supra griseo-ferrugineis, ad basin et marginem anteriorem fuscis, lineis ordinaribus 2; extrabasali duplicata indistincta, sed intermedia undata, valde denticulata ex arcubus nigris composita; macula claviformi ordinaria fundo concolor, fusco-limbata; macula rotunda minuta, nigra maculaque reniformi nigro-fusca magna et normali; posticis albis et subhyalinis " 3" Caffraria.

A. segetum affinis, sed minor.

ssp. conspurcata, Walk. Lep. Het. XXXII. 696-7, Ceylon. repulsa, Walk. l.c. Coimbatore. certificata, Walk. l.c. China.

These three exotic forms are practical identical with European forms already considered is the opinion of modern authors, so that it seems unnecessary to reproduce the long descriptions of Walker. Tutt dealt with five of the forms described as species by Walker.

ssp. pallida, Stgr. Stett. e. Ztg. 423 (1881).

Fig. —Warr.-Stz. l.c. plt. 5de.

Orig. Descrip.—Tutt dealt with this in Brit. Noct. IV. 113. Hampson, Lep. Phal. IV. 167, describes it as "Ground colour greywhite; the markings of forewing indistinct."—C. Asia; Amur.

ssp. fucosa, Btlr. Trans. E.S. 179 (1881).

Orig. Descrip.—" Nearly allied to A. segetum; primaries with the same colour and pattern, except that they are slightly shot with lilacine, and that the outer or discal dentate-sinuate line is extremely indistinct; size, form and coloration of secondaries as in A. saucia." Tokei, Japan.

ssp. lassa, Swinh. P.Z.S. (1886) p. 444.
Orig. Descrip.—"Antennae, head, thorax, and forewings dark

brownish fawn colour. Forewing of 3 very narrow. Forewing of both sexes with some brown marks like strigulae, here and there; in the 3 the usual stigmata are not visible; in the 2 the orbicular is represented by a black ring, and the claviform and reniform are both visible but obscure and black; the latter is like a small smudged figure of 8. Hindwings white semi-hyaline, with the costa and outer border tinged with fawn colour. Abdomen grey, with the segments marked out with some white hairs." Allied to repulsa. Mhow, India.

ab. anthracitica, Alph. (1908), Hor. Ross. XXXVIII. 590.

Orig. Descrip.—"Alis anticis omnino atris unicoloribus, linea limbali lutescente excepta."

ab. unicolor, Pill. Rovart. Lep. XVI. 185 (1909).

Orig. Descrip.—" A typo differt alis unicoloribus, haud picturatis." Hungary.

ab. virilis, Stauder. Int. Ent. Zts. IX. 16 (1915).

Oric. Descrip.—23-25 mm. "Colour upper and underside bright ochre-yellow as in normal orientaria of without the slightest trace of whitish, so that one thinks he has a typical of before him, if it were not for the 2 abdomen and antennae." Terlan, S. Tyrol.

ab. nocturna, Stauder. Int. Ent. Zts. IX. 16 (1915).

Orig. Descrip.—"H.-w. upper-side unicolorous brown black without yellowish tinge. F.-w. upperside only in the disc with no appreciable brownish-yellow powdering, but unicolorous dark brown-black, fringes chequered white, abdomen and antennae black, the former somewhat slightly yellowish tinged. Underside paler than the upper side with very slight paler powdering." Terlan, S. Tyrol.

ab. albiptera, Trti. "Lep. di Cirenaica," Att. Soc. It. Sci. Nat. LX. 225 (1921).

Fig. - l.c. fig 6, a dark suffused form, a good figure in b. and w.

ORIG. DESCRIP.—"There was a single 3 taken at Derna of a very pure silky white; while in the other forms hitherto known the hindwings have the veins neatly marked out in brown and the marginal line marked in black and frequently also preceded by a slightly obscure shade particularly towards the anterior angle, and along the anterior margin, this one has the ground of the wings uninterrupted, including all the fringes of a very pure white."

ssp. minorata, Trti. Att. It. Soc. Sci. Nat. LXIII. 61 (1924) ["Lep. Cirenaica."]

Figs.—l.c. plt. III. 1-2, excellent figures in colour.

ORIG. DESCRIP.—Description of fig. 1. Grey with blackish markings. Small in size. Very pure white hindwings, 3. Fig. 2. Very black grey with markings all present but much overpowered by the the dark ground colour. H.-w.. a shade less pure white. Thorax as dark as the wings. Taken at light at Berca, Cyrenaica. [Hot-weather form?—T.B.-F.]

ab. pseudocos, Trti. Att. It. Soc. Sci. Nat. [Lep. Cirenaica], l.c. Fig.—l.c. plt. III. 3, excellent fig. in colour

15.xii.35.

Orig. Descrip.—From the figure. Grey ground, somewhat darker than minorata with marking much diminished. Very slightly less white than minorata. Small; wings tend to be broader. From Cyrenaica.

ab. pallida-obsoleta, Dnhl. Ent. Zt. XXXIX. 135 (1925-6).

Orig. Descrip.—"The ground colour is smooth grey-yellow, with the orbicular and reniform stigmata wanting, the marginal spots strongly emphasized, often becoming an irregular broad submarginal band." Terlan, Bozen, Central Italy.

ab. glaucina, Kozh.

cf. Corti.-Seitz. Supp. Pal. Noct. III. 41. plt. 5f. 1932.

"From a  $\mathfrak{P}$  from Siberia (Minussinsk). Is said to resemble *robusta*, **Ev.** From two  $\mathfrak{P}$  received from the Petrograd Museum. However, this is nothing else than a *segetis* with pale grey-coloured forewings, such as occur among  $\mathfrak{P}$  from Asia Minor and occasionally in Europe."

Agrotis, Ochs.-Treit. (1816-25), most authors [Euxoa, Hb. (1822) Hamp., Warr.-Stz., Corti.] lunigera, Stephs. (1829) = trux, Hb. (1826).

Tutt accepted the opinion of the time that lunigera, Steph. was a good species and thus did not consider trux, Hb., although he quotes the opinion of Guenée, who said (Noct. I.(V) 280), "It is closely allied to trux, and although it appears to have a very different shape, I should not like to affirm that it will not be recognized at some future time, as simply a northern form of this species." In his Cat. IIed. (1871) Staudinger had noted of Stephens lunigera, "prace. sp. Darwiniana" suggesting it was a form of trux. In his Ied. of his Cat. (1861) he had treated it as a separate species.

The Original of trux is the figure of Hüb.-Gey. Samml. Noct. 723

3 and 724 \( (1826).

The figure 723 of the 3 can be thus described:—General coloration of forewings ochreous grey suffused with rufous to fuscous brown, strongly irrorated, striated and largely suffused with fuscous brown. Markings indistinct and almost hidden in the ground colour: all incomplete and undeveloped. Reniform outlined with lighter, filled in with darker shade and standing on a dark clouding. Orbicular with partial surround of light with ditto dark outside ring, imperfect basad. Claviform almost untraceable. Lines double, indistinct, incomplete, lighter between the doubled lines; fringes pale fuscous with black points. (Described from the figure.) The hindwings an impure white. I have not met with a British specimen of the same general depth of colour and appearance.

The figure of the Q is darker (724) even blacker brown in places. But the outstanding marking is the very large conspicuous light area upon which the dark reniform is placed, itself surrounded by a lighter but yet dark-margined ring. The other markings are more diffuse than in the Z figure. The hindwings are of a similar dirty white to

those of the 3 but the outer margin has a very dark grey wide band with dirty white fringes and the inner margin also suffused with the same cloudy colour comparable with the abdomen. Of this form I

have not met with a British example.

Warren (Seitz.) describes it thus. "Forewing ochreous grey, dappled and striated, and often especially in females, suffused with dark fuscous; claviform stigma black-edged; reniform large filled in with black; orbicular small, round with a pale ring; fringe rufous; hindwings dull whitish, with fuscous terminal suffusion, broader in ?; or with a curved row of dark dashes on veins and no suffusion."

Stephens, Ill. II. p. 114, says that, "I have seen but three specimens of this very distinct and prettily variegated insect"; "they were taken in June, 1826, near Cork, in Ireland." Tutt remarks on the description and figure of Stephens, "It is rarely one sees such a

mottled form." Brit. Noct. II. 15.

Tutt, Brit. Noct. II. 14 (1892): Barrett, Lep. Brit. Is., III. 313. plt. 128 (1896): Stdgr. Cat. 151 (1901): Hamp. Lep. Phal. IV. 245 (1903): Splr. Schm. Eur. I. 162. plt. 35 (1905): South. Moth Br. Is. I. 205. plt. 105 (1907): Warr.-Stz. Pal. Noct. III. 30. plt. 6ef. (1909): Culot. N. et G. I(1). 86. plt. 14. 5-11 (1909-13): Corti (Draudt)-Stz. Pal. Noct. Supp. III. 51. plt. 6cd. (1933).

It is remarkable that the figures given by different authors purporting to be typical of trux are, perhaps, the most divergent of those of any species. Hübner-Geyer himself gives two other figures, 768 and 769, which are utterly unrecognizable in colour, shape and marking as being representatives of trux. Were it not for the name on the plate there would be not the slightest suggestion of their being that species.

Spuler, Schm. Eur. I. says of the variation that the forewing colour varies from yellow-grey and brown-grey to red-brown and brown-green. The critical markings are wanting or only represented by dark contour; the hindwing darker towards the margin in the male, paler, whitish, in the female darker. The markings very variable, sometimes the least traces are wanting. (Continental form.)

H.-S., Sys. Bearb. figs. 17, 18, has 2 excellent figures of trux forms, not at all like the figs. of Hb., but I have specimens which agree with

them.

Tutt gives Stephens' original description and adds a detailed summary of the variation in this British race of which many hundreds passed before him. The following are further notes on this form.

In the 3 lunigera, the usual variegated form has 3 very prominent stigmata. These stigmata with the prediscal and postdiscal lines form an extraordinary resemblance to a human profile. The claviform is the mouth widely open, the white orbicular the eye, the reniform a dark mass of hair on the back of the head, the chin and throat are well portrayed by the large angle in the praediscal transverse line, and the nape of the neck is well shown by the curve in the postdiscal transverse line. The profile is more or less indistinct in the females, where the dark coloration subdues the markings. In trux a similar profile occurs in all the light and variegated males, but the features are not so pronounced; the orbicular is black, the claviform is not emphasized in black. There are many specimens of continental trux, probably a large proportion of both sexes, in which this profile cannot be traced.

The variegated males of the *lunigera*-like trux have the profile as in British *lunigera*.

Stephens' figure of the lunigera type, an Irish example, is a very inferior, hard and lifeless one. The above mentioned profile is seen on the right side only, but not emphasized by a black claviform as in all S. of England lunigera. The left side is a jumble of markings with misshapen and misplaced stigmata, and transverse lines; and the colouring green, red brown with black lines and dark scratches, etc. There is no yellow in the coloration, on thorax, at base of wing, on transverse waved strigae, between stigmata, towards inner margin, as stated in the description. Had it not been for the profile on the R. forewing I should have doubted the figure as representing the insect we now know as lunigera or trux.

I have not seen any examples which correspond with either the figure or the description of Stephens.

Barrett describes the Variation in this species as "not great; in the male it consists in greater or less clouding of smoky-grey on the forewings; in the female mainly in the distinctness of the stigmata, or their suffusion with black colouring—which occasionally even obliterates the white orbicular, leaving the forewings wholly smoky-black. In this sex the hindwings are rather uncertain, being in some examples pure white."

He describes "A curious aberration of the pale brown of exclama-

tionis with all the markings sharply defined."

On plt. 128 Barrett gives 4 figs. 1a. a normal 3 of the British form. 1b. a very dark 2. 1c. a 3 with more dark clouding than

normally. 1d. a gynandromorph.

Barrett's description of lunigera, Lep. B. Isles, III. 313, is a very good one of the ordinary  $\mathcal{J}$  and  $\mathcal{L}$ . He has ignored the description of Stephens in which 'yellow' figures so repeatedly. In his figures of lunigera the  $\mathcal{J}$ s show the submarginal area dark suffused. They shew the profile well. In his remarks on the variation Barrett calls attention (1) to the "greater or less clouding of smoky grey on the forewings" of the male. This would be Tutt's suffusa  $\mathcal{J}$ . (2) to "the suffusion with black colouring" of the female. This would be Tutt's suffusa  $\mathcal{L}$ . (3) to "the suffusion with black colouring—which occasionally even obliterates the white orbicular, leaving the forewings wholly smoky black." This is the rare form Tutt's nigra.

Every example of lunigera I have seen has the three stigmata,

particularly the claviform, very distinct indeed.

Only one of the five dozen specimens of continental trux, which through the kindness of Mr. Wm. Fassnidge lie before me, has a facies comparable to British lunigera; it would be an easy matter to separate the British from the continental were they mixed and unlabelled. It is interesting to find a species evidently splitting into two, probably owing to geographical isolation, aided by variant circumstances of climate, etc. Fig. 525 of H.-S. Sys. Bearb. and 770 of Hb. Samm. Noct. are continental lunigera-like insects.

The following is a list of the forms to be dealt with. trux, Hüb. Samml. Noct. figs. 723, 724 (1826). Central Europe. race? lenticulosa, Dup. Hist. Nat. VI. 18. plt. 72. figs. 5-6 (1826). France.

race lunigera, Steph. Ill. II. 113. plt. 20 (1829). Ireland.

ab. terranea, Frr. Neu. Beitr. I. 63. plt. 34. Zut. 178 (1833).

ab. pallida, Tutt Brit. Noct. II. 16 (1892). (5 abs. of race lunigera.)

ab. virgata, Tutt l.c. ab. rufescens, Tutt l.c.

ab. suffusa. Tutt l.c.: Splr. Schm. Eur. I. plt. 35. fig. 14d.

ab. nigra, Tutt l.c.

ab. olivina, (Hb. 768, 769): (var. A. Gn. Noet. V. 279. 1852): Stdgr. Cat. ed. 3. p. 152 (1901).

ab. amasina, Stdgr. l.c.

race alpina, Splr. Schm. Eur. I. 162. plt. 35. f.14a-d (1905).

f. pseudolunigera, Trti. Att. Soc. It. Sci. Nat. LXIII. 71. plt. III. 12-13 (1924).

f. conclamationis, Trti. l.c. fig. 10.

ab. rubofusca, Schaw. Zeit. Oestr. Ver. Wien. XVI. 35 (1931).

ssp. subalba, (Corti.) Draudt.-Seitz. Pal. Noct. Supp. III. 51. plt.

6cd. (1933).

Tutt. dealt with (1) the typical lunigera form, both sexes of which are well figured by South; (2) the pale whitish grey pallida; (3) the virgata with a dark transverse shade across the reniform; (4) the blackish grey suffusa; (5) the unicolorous blackish nigra; (6) rufescens with reddish shade.

Due to the kindness of Mr. W. Fassnidge, I had the pleasure of minutely examining a long fine series taken on the continent and made the following summary.—

The series before me has been identified as containing specimens

(1) Like fig. 723  $\mathcal{J}$  of Hübner's trux, the typical  $\mathcal{J}$  form of the species.

(2) Like fig. 724 2 of Hübner's trux, the typical 2 form of the

species.

(3) Other forms which may be grouped around these as included in the typical form.

(4) Like fig. 768 of Hübner, named trux, but subsequently named

olivina, &, Stdgr.

(5) Like fig. 769 2 of Hübner, named trux, but subsequently named olivina 2, Stdgr.

(6) Other forms which may be grouped around these as included

in this form.

(7) Like plt. 34 of Freyer, Neu. Beitr. named terranea.

(8) Other reddish forms of numerous shades, which group around this form.

(9) Several forms which seem to agree in baving a dark medial

shade, named amasina, Stdgr.

A proportion of the series are *lunigera*-like in having all three stigmata well expressed, particularly the claviform.

Some are typical lunigera-like.
 Some are olivina, lunigera-like.

(3) Some are terranea, lunigera-like.

race ? lenticulosa, Dup. Hist. Nat. VI. 18.

Figs.—l.c. plt. 72, figs. 5-6: Calb. Iris. I. 229, plt. XII. f. 10.

ORIG. DESCRIP.—"The male has the upper side of a pale grey dotted with brick-red, with the two ordinary spots very much

## Notes on the early stages of some Syrian Lepidoptera. (Plate III.)

With the description of a new Ichneumon, by Claude Morley, F.R.E.S., F.Z.S., F.G.S.

## By E. P. WILTSHIRE.

I hope soon, with Mr. R. E. Ellison's co-operation, to publish a list of species, with notes on season and distribution, observed during my stay of two years, and his of longer, in the Lebanon. The preparation of that list has proved a longer labour than that of these notes, which were originally intended as an appendix to it. They consist of observations of the life-histories of certain species, whose identity is not in dispute, but whose early stages seemed to me to be unrecorded previously. I am indebted to Mr. Claude Morley for the identification of the ichneumons referred to hereinafter.

Zygaena cuvieri, Bsd. ssp. libani, Brgff.

Plate III, fig. 1. The larva, fullgrown at the Bsherre Cedars in May, is pale yellow, tinged with green. The subdorsal line is represented by a large black oval dot on the front of each somite, and a small one next to it, on the rear of every preceding somite. The spiracles and feet are black; the head, black, with white cheekpoints; the short bristly hairs, white. Feeds at night on Ferulago frigida. Pupa in a creamy white spindle-shaped cocoon, low down. Imago comes to light freely; end June, July.

Paidia murina, Hb. ssp. albescens, Stgr.

Plate III, fig. 2. The larva, fullgrown in early May, is dull black, paler grey below the spiracles. Hairs long and black. Head and first two somites, small; on 3rd, four conspicuous white spots. On 11th, two conspicuous white blotches. On the intervening somites, two less conspicuous white dots per somite, set in the band of hair-bearing warts. Head, legs and claspers, dull pale brown, the head marked with darker on top. Hides by day in terrace wall crevices or underside of rocks.

Euprepia oertzeni, Led.

Plate III, Fig. 5. Imago, at light, late Sept. (hills) and October (coast). Ova laid on 18th October, hatched 2nd November. Young larvae were black on back and white striped low down on sides. Later, warts appeared brownish, head, black and glossy. The mature larva is black, with pale brown bands of bristle-bearing warts, creamy white subdorsal lines, not showing on the first four somites, a broad whitish zigzag line along the black spiracles, and often a paler dorsal area. The head is black, marked with red, the feet reddish. It feeds on grass and low plants at night from January to March on the coast.

Lasiocampa terreni, H.-Schäff.

Plate III, Fig. 3, 4. Distinguished by a cloven black velvet collar on the first and last somites. The pale hairs, becoming redbrown on the first three and last two somites stand up in a ridge along the back, often dividing into tufts, between which are patches of the black ground colour. Spiracles, strikingly white; white oblique dashes on the spiracular area. Above the spiracles, an interrupted white line on a velvety black ground. Hairs other than the pale dorsal ridge hairs are golden brown. Coils up promptly when frightened. Feeds on grass but often suns itself on thorn bushes. Extremely difficult to breed, in fact I have never managed to bring it through: my identification of this is circumstantial only. I saw a skin of this larva in Cremona's Ksara collection labelled davidis; but an imago was there also wrongly so labelled. Differs from eversmanni in absence of crimson hairs on thoracic segments.

Anytus leuconota, H.-S. 1849 (= Anytus trisignata, Menet. 1848). Plate III, Fig. 6. Fullgrown on the coast towards the end of March (though, of course, later in the hills) the larva feeds at night on Plantain, Polygonum, Calycotome, Ephedra, Lonicera, Sonchus, wild cucumber, rosemary, and many other low plants and shrubs. It is either green or pale brown when mature. A series of greyish Ms along the back is usually visible, though some green forms are very faintly marked. The usual dots are half white, half grey; the spiracles, white, black-rimmed, are placed on a broad, slightly paler stripe that separates the darker dorsal from the paler ventral area. Imago emerges in November or December on the coast, or, at Bsherre, at end of October.

Amathes kindermanni, F.v.R., ssp. pauli, Stgr.

Plate III, Fig. 7, 8. Imago to sugar in the second half of December and early January at 800-2000 feet. Eggs laid 19.xii.34 hatched 14.i.35; they were covered with loose hairs and laid in a continuous line in a crevice, and pale honeycoloured with a faint apical dot. The young larvae at first were greenish grey with yellowish heads. They fed up on low plants and grass, but when bigger, showed preference for flowerheads of Compositae. Linear markings appeared with the 2nd instar and the white sublateral stripe with the third. The fourth instar is green with a fine yellowish dorsal line edged with darker green; dorsal dots, yellow; somital joints, yellowish on back; subdorsals, faint yellowish green faintly edged with darker green. The pure white spiracular stripe is bordered above with darker green. Feet, green; pro-thoracic plate behind yellowish green; head, whitish in front.

The fullgrown larva is green or pinkish brown, with the broad white or cream spiracular stripe very sharp. In the brown form, the underside remains green. The head is ochreous grey, or, in the brown form, orange netted with brown. On somites 2-9 the white stripe is marked above with a large black dot behind every spiracle; the spiracles are yellowish-orange (or darker in the brown forms), black-rimmed, and not outstanding. The dorsal and subdorsal lines are double, wavy, and powdery grey; the usual dots are white with a minute black centre. The final claspers and anal somite are marked

with orange in the brown form. Fullgrown, March.

Amathes mansueta, H.-Schäff.

Plate III. Figs. 9, 10. Ova, solitary, white, turning pale pink-grey Those laid 7th December hatched 27th-28th December. larva feeds on low plants and looks bristly from the outset. 2nd moult the dorsals and subdorsals appear clearly, forming three similar fine white lines. The spiracular stripe is broader, pale white or creamish, undulates slightly. Colour, pale or dark green; setae, pale, almost white. Head, pale yellowbrown. In 4th instar (Figure 10) the larva adopted general colour-scheme of imago, pale greyish olive green, with blackish and white mottling and lines, and orange suffusion in between the 4th, 5th, 6th, and 7th somites. white hairs or setae, longer than usual; tubercles, larger, and placed in centre of rings or large circular dots, of which the subdorsal, that is, those just on the upper edge of the pale, darker-edged subdorsal lines, are most striking, being large and white, or, later in the instar, pale yellow, and partly rimmed (i.e., on the upper and front edges) with black. Dorsal line, double and darker grey. On somites 2 and 3, a black spot on each side of each somite; on a level with these, on the remaining somites, a black circumflex mark capping the whiteringed tubercle on the side of each somite. Slightly below these are the black spiracles, placed on a pale undulating stripe. Head, greyfreckled; behind it a plate on which the subdorsals are usually very plainly drawn in white. Claspers, edged with orange. The whole larva tends to become more orange-suffused towards the end of the 4th The last instar (Fig. 9) is similar except in ground colour, which is darker, almost blackish grey. On the thoracic somites an orange line, also present but less in evidence in the 4th instar, runs along the now yellowish-white black-rimmed spiracles; this line is narrower and brighter than the broad undulating spiracular stripe running the entire length of the larva. Feeds up quickly, being fullgrown 7th to 15th Feb.

Polyphaenis propinqua, Stgr.

Plate III, Fig. 11. Larva found feeding in numbers at night on honeysuckle in February on the coast. Pupation, end of Feb.; first emergence, 17th April. Imago noted in hills in early July. Larva is brown with a deep brown-black interrupted dorsal line, forming a chain of spearheads each connected by a finer, fainter, dark-edged, pale line to its successor. On the dark plate behind the head the dorsal line is fine and whitish. On the sides, a pale dot on each somite; on the hinder somites these dots tend to be crowned with a vague upward oblique dark bar, pointing back. Below this row of dots the ground colour, pale red brown, is darkened by a thick grey powdering in which the spiracles stand out white. Head brown, marked with black. The profile of the 12th and 13th somites is not rounded but in steps. Cocoon, silky woven between leaves or in litter.

Scioptila eriopoda, H.S.

Plate III, Fig. 12. Larva feeds at night on Rubia olivieri, Ephedra campyloda, honeysuckle and rosemary, being full-grown on the coast in March. It is then dark greyish or brown, with a white frosted diamond pattern on the back, each diamond, especially the hindermost, having the outer angles dark-outlined; or this pattern might be described as

a series of whitish or paler arrowheads each with two black dots inset, from somites 4 to 10. Head, brownish, marked with black; dorsal line, whitish; spiracular line, zigzag, interrupted and darker, and marked with a large white dot on the 4th and 5th somites. Similar but smaller dots, lower down, on the front of the 2nd and 3rd somites. Usual dots, black and white. Spiracles, small and white.

Pupa in a papery cocoon amid leaves and litter, glossy, dark redbrown. Pupation, end of March on coast. Imago flies in early

September in the hills, later on the coast.

Ova, some laid loose, some in small batches, flattened above and below, of an ivory colour at first, with a vaguely more dusky brownish apical dot and incomplete ring; after a few days turn greyer, and ring and dot become clearer. Laid 12th, 13th Sept., hatched 23rd Sept. Young larvae, greyish pink, transparent-looking, with pale brown glossy head. 4th instar like last but reddish-brown. This coloration sometimes persists to 5th instar.

Clitye sanota, Stgr.

When mature, the larva is usually dull red-brown, sometimes blackish-brown, and prettily mottled. Three white dots per somite on each side stand in a broad, freckly-grey, subdorsal stripe; the dorsal line is fine. A fairly broad freckly-orange stripe runs below the black spiracles. On the 4th somite is a larger orange dot on each side just under the subdorsal line. When younger, the larva is often green with the subdorsal lines showing clearly yellowish or whitish, and 4th and 5th somites each showing two white dots on the back. The 11th and 12th somites are slightly marked with black, the former being slightly prominent.

It feeds at night on tamarisk, though the younger larva may be freely beaten by day from the branches. Pupae may be found under the bark during the winter months, the imago first appearing at the end of March. The pupa is fairly stout, with white spiracles and a bluish bloom. [Some produced the ichneumon Aglaojoppa rex, nov. spec.] The imago continues to fly till July, having two or perhaps

three broods.

## AGLAOJOPPA rex, sp. nov.

[A rich-red species with the head, antennae, pro- and meso-thoraces, black bearing pale flavidous markings. Head not buccate, black with the eye-margins, except narrowly at both cheeks and ocelli, pale; labrum prominent; mandibles flavous with apices piceous and bidentate, upper tooth slightly the longer; clypeus flavous and apically truncate, its centre rufescent and apically produced; face deplanate, deeply punctate, centrally ferrugineous and hardly discreted from clypeus. Antennae rather shorter than wings, black with only base of scape flavous beneath; flagellum setaceous and not serrate. Thorax black, with notauli distinct; pronotum linearly, lines before radices, two on mesonotal disc and two before scutellum, flavous; metathorax totally richred; areola finely striate, subrectangular and distinctly broader than long; juxtacoxal and pleural areas not carinately discreted; spiracles Scutellum deplanate, nitidulous, sparsely punctate and black with whole sides, apex and a transverse line beyond apex, pale flavous. Abdomen stout and totally rich-red, its segments neither strongly

discreted nor laterally produced; basal segment bicarinate and discally, like base of second, coarsely striate; valvulae darker. Legs somewhat slender and not elongate, rich-red with merely the front coxae apically flavous beneath and hind tarsi infuscate; claws simple and nearly straight. Wings not unusually ample (Morley, Revis. Ichn., IV., 1915, p. 112), hyaline with nervures black, costa and stigma rufescent; tegulae flavous; areolet large, pentagonal and broad above; nervellus continuous and intercepted below centre. Length 12mm. 3 only.

The type alone was bred from a pupa of *Clitye sancta*, Stgr., the capital extremity of which was bitten quite round, at Beirut in Syria on 14th February, 1933, by Mr. E. P. Wiltshire.—CLAUDE MORLEY,

F.R.E.S., F.Z.S., F.G.S.; 26th March, 1935.]

Eutelia adulatrix, Hbn.

Plate III, Fig. 13. Larva is green, occasionally pale blue, and tapers at rear. The dorsal line is represented by whitish dots and circles of dots. The subdorsals, which join on the anal somite, are bright yellow; so is the spiracular line. Spiracles ochreous, dark-rimmed. One or two larvae were bright vermilion instead of green. Pupal period, indefinite: larvae that pupated about mid-May produced imagines 23rd July, 2nd Sept., and 12th Oct. Foodplant, Terebinth.

Hadjina viscosa, Frr.

Plate III, Fig. 14. Larva feeds by night on *Inula viscosa* on coast, in several broods from October to March. Young larvae may occasionally be found on plant by day too. In its typical position it arches the mid-fore somites, tapering, or rather shelving, to the head, of which two antennae are prominent. It is green or purplish-brown: the green form always turns brown about a day before burying and stops feeding with this change of colour. Dorsal line, pale, darkedged; subdorsals, pale. On each somite, a darker V mark, pointing forward. Dots half white, half dark. Spiracles, dark-rimmed, set in a pale stripe. Above each spiracle, a white dot like those on the back. These dots are nowhere so conspicuous as on the swollen third somite. The 10th is transversely crested and marked with three yellowish white marks. In the green form, "pale" signifies yellow. The somital joints are yellow in the green form.

Pupa, redbrown, glossy, small, fragile; in a stiff oval earthen cocoon close to the surface. Emergences of imago: 28th Oct., 2nd, 3rd, 4th, Nov., 18th March, 1st May. Pupal period is never long.

Imago seldom in evidence; once taken on the wing at dusk on

23rd Oct

The ichneumon Paniscus testaceus, Gr. was bred from H. viscosa pupae.

Crymodes bischoffii, H.-S.

Plate III, Fig. 15, shows dorsal pattern. Ova; white at first, later greyish with slightly purplish ring and dot. Laid 30.ix.33, hatched 6.x.33. Some larvae, brought down to Beirut (coastlevel), were full-fed by November; others were then only half-grown. They fed on Sonchus, Taraxacum, and other Compositae.

Larva is grey, tinged greenish by its food, with fine blackish mottling. Head and prolegs, pale brownish grey. In the 3rd instar the sublateral line is marked with black on the rearmost three or four somites.

In the 5th instar, the first five somites are distinguished by a large black blot on each, placed along the subdorsal lines, which however are nowhere clearly defined. The rest of the black markings are finely-pencilled, though sometimes there is a dark blodge above the analorifice, and leave a paler dorsal chain-like area, whose centre, the dorsal line, which appears clear and white only on the front of each somite, bears a vague suffused V or Y mark, in the last instar almost an X-mark, in darker mottling on each somite. In the 4th instar this chain of Y-marks is perhaps the clearest character of the larva, but sometimes, especially before the final stage, all markings are faint. The immature larva often tends to be of a bluish-green, though this hue is not due to pigmentation in the skin. In all stages, below the black spiracles, is a paler area, freer of black or grey mottling.

Imago in September, to sugar, at about 4000 feet.

Anaitis mundata, Stdgr.

Plate III, Fig. 16. The larva feeds on Hypericum serpyllifolium and is fullgrown in April; it is green, with a crimson-lake spiracular line, white-edged above. A few days before burying it turns greyish, but this white-edging remains white. Dorsal and subdorsal lines are very faint, the former bluish-grey, the latter paler. There are also 3 pale ventral lines. The imago sits after dark on grasses and shrubs in places where its foodplant abounds in September. It also comes to light occasionally, but is not an active flier. Ova are oblong-oval, laid flat, pale yellowish. Those laid on 23.ix.33 hatched about 1.xi.33. The pupa is glossy redbrown, the point of the wingcases being free from the body, and tapered.

Cidaria cupreata, H.-S. = basochesiata, Dup.

Plate III, Fig. 17. There seems no longer any doubt that the original basochesiata is a local form of the species cupreata common in Cyprus and the Lebanon during the winter months. Larvae found on Rubia olivieri were fullgrown in March and agreed with Millière's description of basochesiata larvae.

The oval period is ten days. Imago flies on coast, October to

March.

The larva exudes from its mouth a deep blue ink when alarmed or hurt; its blood and excreta are of the same deep indigo hue. This was observed, though to a less degree, in a salicata larva found on the same foodplant. I am told by Dr. E. A. Cockayne that all Galium-feeding Geometer larvae show this peculiarity.

Cidaria adlata, Stgr.

Plate III, Fig. 18. The larva feeds at night on Poterium spinosum ("billân") in January and February, and is stoutish, not unlike other Entephria, varying from brown to pale greenish grey, with a series of diamonds on the back, edged in front with purplish; in the brown form these diamonds are whitish. Subdorsal lines, pale, very faint, darkeredged. In some brown forms there are other purplish marks edged above with whitish. Often the lateral area is distinctly paler. Ventral line, fine, dark, widely interrupted.

The image sits on its foodplant at night in November and December on the coast, and inland too; it also comes to light sometimes. The foodplant is the commonest thorn in the country and almost ubiquitous

Ptychopoda affinitata, B. Haas.

Ova, whitish bone-coloured, laid in clusters, 7.v.33, hatched 15.v.33. The larvae feed up slowly, much slower than camparia. They eat almost any low plant, e.g., Compositae, Umbelliferae, Atriplex, Plantago, Polygonum, etc. The larva is fairly stout for its length, roughened, olive grey or greenish, suffused with black except on the last three or four somites. A paler, ridged line runs along the sides; darker, spear-headmarks along the back, each having a whitish tip, clearest on somites 7, 8, and 9. Dorsal line, fine, whitish, dark-edged, narrowing to form a black shaft for the last spear-head along the back of the paler rear somites. Underside, vaguely lined with pale and dark wavy lines. Head small.

The imago flies in early May in Beirut. Imagines of the 2nd

brood emerged 31st July, 6th, 7th August, etc.

Oulobophora externata, H.S.

Plate III, Fig. 19. Larva feeds on Terebinth in April and early May, and is dark green, darker between the somites,  $\frac{2}{3}$  inch long, with a yellow-green spiracular stripe. Dorsal and subdorsal lines, almost invisible. On the anal somite, two small points, brownish below.

The image emerges in the early morning in March, and is not uncommon on the wing or at light at night; may sometimes be put up

by day.

Dasycorsa modesta, Stgr.

Plate III, Fig. 20. Larva is green, with a broad whitish spiracular stripe and a finer dark green dorsal line and yellowish subdorsal line; occasionally it is rich brown, with a bright creamy white spiracular stripe and a dark grey dorsal line. In the green form the segmental-joints are usually yellowish, and the slightly flattened head is green, marked on the cheeks with a whitish bar, which is a continuation of the spiracular stripe. The spiracles, just above the stripe, are black; and the stripe itself is bordered below, at a late stage of growth, with violet shades.

The larva is a great wanderer and may often be found at night on the wrong foodplant. It feeds, on the coast, on low trefoils and plants of the pea-family, especially the genus *Lotus*; in the hills it is common in broom bushes by day. It is not so much in evidence by day on the coast. In the hills I have even beaten it by day from oak, of course not as a foodplant. The plate shows a brown form.

The ova are laid in a neat-rowed batch; they stand on end, are slightly pear-shaped, point downwards, glossy, and bright green, turning gunmetal-colour later. The oval period varies: one batch laid 26.iii.33 hatched after ten or eleven days; another, laid 3.iii.34,

hatched 20.iii.34.

The larva is full grown in April or May; the image flies on the coast in February and March. The male, larger and redder than the female, flies to light vigorously and is also sometimes attracted to

flowers such as rosemary. The female, and the male less often, may be found sitting after nightfall on blades of grass, stems of flowers or shrubs, generally fairly near the ground.

Gnophos poggearia, Led.

Plate III, Fig. 21. One larva beaten in May from Rhamnus punctatus at Afka proved to be this species, producing an imago on 2nd June. It was grey-brown with lateral spines, two white dots per somite on back of somites 4 to 11; subdorsal warts or spines on somites 4, 5 and 6. The head was notched, marked with white subdorsally, and black.

Pupal period, short. Pupa, very glossy, dark brown. Imago also noted in July and May.

Itame berytaria, Stgr.

Plate III, Figs. 22, 23. The ova are laid flat, long-oval, bright green at first, then greyer. [Ova laid 14,xii.33 hatched 3.i.34.] The young larva is quite smooth, walks with great rapidity, seems at first dark

brown, paler sublaterally, but soon turns green,

When fullgrown the general appearance is still smooth, though under a lens a few hairs are shown; can it then be congeneric with wanaria? It is dull grey-green, or grey-brown. In the green form a paler line runs just below the white but faint spiracles; immediately below this line, and slightly behind each spiracle, is a series of short horizontal black streaks, each surmounting a purplish shade. The underside is slightly yellow-tinged. The dorsal line is fairly broad, composed of dark grey mottling and edged with paler. Subdorsal lines, and parallel, similar lines running one on each side just above the spiracles, are faint, yellowish, and darker-edged.

In the grey-brown form (Fig. 23), these lines are much more distinct than in the green form (Fig. 22), and the feet are not tinged with purple, as they often are in the green form. In the third instar, the dorsal area appears as a broad pale stripe, contrasting with a darker lateral area, but centred with the darker dorsal line. The larva feeds up quickly in January and February on the coast on Calycotome villosa ("thorny broom"), and is most easily found by night. It rests by day extended on the twigs and is then hard to see. It is much subject to an ichneumon, Cymodusa antennator, Hlg. The imago is out from November to early January on the coast. In captivity one emerged on 23rd Oct., the next on 14th Dec. The ichneumon produces imagines in February and March.

expected in the region we are dealing with; it belongs to the nomino-

typical form of daplidice.

Synchloë callidice, Esp., must be included here, because Favre has reported its having been found during several consecutive years on the dyke bordering the Rhone, near the Branson bridge, in the Martigny region. The race is, presumably, the usual nominotypical one, for no local variations are known in the Alps, in general.

Pieris napi, L. race praenapaeae, Vrty., and race subnapaeae, Vrty., with I gen. napi, L.:—At Bex the first generation\* emerged all through June; a few laggard individuals were quite fresh even at the beginning of July, whilst old ones of this I. generation were occasionally met with till the end of this month. This generation is noteworthy in that it does not belong, in most individuals, to the widespread septentrionalis, Vrty., of Central Europe, including the south of England, whence I have described it; it comes much closer to the nominotypical napi of Linnaeus, which is racial in Central Scandinavia and which is mixed with septentrionalis in my series from Scania, but which I have never seen, even as an individual variation, from Central Europe: its features are the broad and very deep black basal suffusion on the upperside of the male, the neuration of the forewing markedly bordered with a grey suffusion on the underside and the very broad and blackish-olive "veins" of the hindwing; the Bex race only differs from nominotypical napi by the lesser development of the black apical crescent, which in the North, renders the latter often very similar to a

small bryoniae.

The II gen. began to emerge on the 10th of July and became more and more abundant everywhere till late in August. Here two distinct races are detectable: the one of the damp meadows and the outskirts of the woods in the neighbourhood of Bex is larger, has prominent black markings, of a deep black tinge and has the greenish grey "veins" of the underside well pronounced up to the exterior margin of the hindwing; in half the individuals they are sharp in outline and of a dark grey; in the other half they are less distinct and greener in tinge; these forms exist in both sexes, but the first is more accentuated in the male and the second in the female. Two females of Bex stand out amongst the rest by their entirely different facies, giving one the impression they belong to the I gen. by the features of the upperside, but not at all by the underside, where the green "veins" are thin, light and effaced outwardly; on the upperside, instead of the large, sharp and deep black spotting of the other females, they have the neuration nearly entirely bordered by a grey suffusion, the discal spots small and grey and the apical crescent split into nervural streaks. These exceptions, might be due to a strain of the bryoniae and arctica exerge, considering that in the neighbouring Anzasca Valley I have discovered, at as low an altitude as Vanzone, 700m., the existence of highly characterized bryoniae in all three of the generations of napi, which are produced there (II gen. bryonapaeae, Vrty. and III gen. metabryoniae, Vrty., described in the Entom. Rec., 1926, p. 173). difference between the Anzasca and the Rhone races is most remarkable: as stated in the Entom, Record, the true nari belong, in the former, to leovigilda, Frhst. and are found mixed with a considerable

<sup>\*</sup> Never in my experience has the I gen been over before this.- G.W.

number of the aforesaid bryoniae forms. The race of Bex, is, on the contrary, nothing but the usual northern praenapaeae, Vrty., as far as its summer generation is concerned, the second underside form, described above, evidently pointing to subnapaeae, Vrty., but those specimens are quite unlike it in size and by the upperside markings.

On the hot and dry slopes of La Bâtiaz, at Martigny, there exists a distinctly different race and, notably, a fully characterized subnapaeae, Vrty., by its smaller size than the preceding, by the smallness and paleness of the spots on the upperside and by the strong reduction, in extent and in tone, of the green "veins" on the underside. also record a rather noticeable family of dwarf praenapaeae, about the size of cardamines, which I found emerging, on 9th August, on the very hot and arid mountain-side above Lavey-les-Bains, whilst other These dwarfs individuals, on the wing there, were of normal size. contrast strongly with a few giant specimens from Bex, which resemble Esper's true Alpine napaeae. I must again lay stress on the fact that the latter name was given to the enormous race of high altitudes from specimens which are stated to have been collected, in company with callidice, "in the month of August, on various high Alps near Geneva." Many individuals of that race, which Turati and I collected also at the Baths of Valdieri, at 1400m., in the Maritime Alps, are considerably larger than Esper's own figure; they quite agree with it by the small and pale grey upperside marking very different, and strikingly so in the female, from the much bolder ones of praenapaeae, but more similar, on both surfaces to those of subnapaeae, which differs chiefly

from true napaeae by its much smaller size.

I cannot omit to say that at the Pont de Nant, 1400m., I found the association of true napi and of bryoniae, which exists in so many Alpine localities and which always leaves one in a state of perplexity with regard to the nature of their relation. The bryoniae were nearly all of the most highly characterized form, with extremely extensive dark markings in both sexes, and the napi only differed from those of the plain by their slightly smaller size, contrasting with the very large one of most of the bryoniae. Very few examples could be suspected to have been produced by crossings of the two. The most surprising fact I witnessed is, however, that on 4th June both sexes of the first generation of napi were still emerging, together with those of bryoniae, whereas on 13th June the latter was still emerging, a few old males of the former were on the wing and a few perfectly characterized and unmistakable individuals of both sexes of its second generation were already emerging together with the second of P. rapae. distinctly exhibit on both surfaces the reduced and pale markings, which are, as I have noted above, the features of Esper's true Alpine napaeae, but they lack its very large size, so that they differ very little from the subnapaeae of Martigny. It seems one must conclude that napi and bryoniae do not interpreed at the Pont de Nant, although they inhabit the same grounds, or only interbreed very exceptionally, and that the first generation of napi emerges earlier than bryoniae, so that its most precocious females are in time to produce an offspring, which completes its life-cycle before bryoniae has finished to emerge for the first time. At the Baths of Valdieri, 1400m., I have, myself, bred napi in captivity and seen that its life-cycle is of 28 days or a moon, so that the aforesaid subnapaeae would have been produced by

ova laid in the middle of June; it is quite possible and even probable this should have taken place in the orchard, situated on the sunny side of the valley and near which I collected the subnapaeae and the P. rapae. My impression, so far as my own experience goes, in all the localities of this sort I have visited in the various parts of the Alps, is that the bryoniae are the aborigines and feed on the wild Bryonia, whilst the napi and the rapae have spread up the valleys following human habitation and feed chiefly on the cultivated Cruciferae: a constitutional difference thus presumably does exist between the two strains, but it is only of a low exergic degree, so that they intercross more or less frequently and this introduces some of the bryoniae features in a certain number of napi of all three of the generations, which the latter produces even at high altitudes and which I have described from Valdieri and from the Anzasca valley in Rhopal. Palae-

arctica, p. 333, and in the Ent. Rec., 1926, p. 173.

Pieris rapae, L. race secunda, Vrty.: I gen. metra, Steph.; II gen. secunda, Vrty.; III gen. rapae, L.—On 2nd June, 1933, I found both sexes were abundant everywhere and some were distinctly old; emergence went on till the middle of the month and a few laggards were still fresh at the end of it, when a few precocious individuals of the second generation began to appear in the Vaud. In the lower Valais emergences were delayed by the cold wind, which blew all through June, as it is apt to do in that valley; the result was most of the rapae were seen and were quite fresh at the end of that month and in the first days of July, between Vernayaz and Martigny, where I carried on observations regularly; they were all perfectly characterized metra. In 1932 rapae must have been on the wing rather earlier in the Vaud, because when I got there, at the end of June, not one was to be seen and the second generation made its appearance on 10th July, after which it increased rapidly in numbers till the beginning of August; towards the middle of that month only old individuals were on the wing, although there were large quantities of them. This II generation exhibits quite constantly the features of secunda, Vrty., as it does both northwardly, in Central Europe, and southwardly, in Italy, being of large size and having markings of a grey rather than of a black tinge. Where a distinct difference comes in, between this race and that of the southern watershed of the Alps, as observed by me in several localities, but more exactly in the Anzasca Valley and in the Susa one, is in connection with the third generation. There the II one emerges earlier and it is immediately followed, in August, by the III, which, on the whole, is distinctly different in aspect: in the Anzasca Valley it comes very near that of the southern tertia, Vrty., by its considerably smaller size, its sharp and very deep black markings and its underside with very little or no black dusting over the hindwing; at Oulx, in the Susa Valley, as I have described it in the Entom. Record, 1926, p. 174, it is similar to the nominotypical summer form of Northern Europe, and to the III of Central Europe; in both those Valleys the result of the emergence of the III early in August is that it produces a IV one in September. On the contrary, in the Rhone Valley there were no signs of the III on 21st August, when I looked out for it, before leaving, so that the latter must be the last one of the year and, as in September it can only have the faceis of nominotypical rapae, evidently form tertia, Vrty., is entirely skipped over on the northern watershed of the Alps. In other words, rapae behaves, in the Rhone Valley, in the same way as in Central Europe, producing three generations, and the waterparting of the Alps is the limit between this mode of emergence and the southern one, which produces four or five, according to localities. In Central Europe the race of localities where the II gen. belongs prevalently to the large secunda, Vrty. can usefully be designated by this name, as a whole; I see that in many localities of that region both the II and the III belong to nominotypical rapae in the majority of individuals and in this case the race can only be called rapae, like that of Scandinavia and of England, which is considered to have only one summer generation, besides that of the spring. I have remarked in my paper of the Entom. Record, mentioned above, that the right name for the southern race would be either tertia, Vrty. or phaiosoma, Vrty., according to the form which prevails in the III generation, peculiar to and characteristic of this race, as we have just seen.

Pieris manni (Mayer), Turati, race veragra, n. nov.: I gen. anteveragra, n. nov.: II gen. veragra, Vrty.; III gen. postveragra, n. nov.:—A few old males were met with all through June 1933, both on the slopes above Lavey-les-Bains and under the cliffs, from Martigny to Vernayaz, but the emergence had evidently taken place in May, in accordance with the date of 15th May on some very fresh specimens I have, collected by Reverdin; nevertheless, a sudden change in the weather, which had been exceptionally cold in June, brought out some late females at Vernayaz, which I found, on the 26th, still drying their wings after emergence and which are perfectly characteristic of the I generation; with them were males of the II generation in the same condition, as well as old males of the I; on 3rd July, at the same spot, there were also fresh females of the II and on the 10th there were many, but they were all quite worn at that spot. At the La Bâtiaz tower of Martigny the II generation appears much later: in 1933, on 25th July, many males were on the wing, but I only found one female; on the 31st also this sex was plentiful; on 10th August all the individuals I collected were old, but on the 19th another lot must have finished developing at that place, for a few individuals of both sexes were quite fresh on that day; they differed in no way from those of the earlier one. On the contrary we will presently see that specimens from Martigny of 14th September, sent to me by Bainbrigge Fletcher, and one of Wullschlegel have quite a different facies and can only belong to a III generation, so that manni evidently has three in the Rhone valley, like rapae. I have found the species also under the Follaterres and Vorbrodt reports it from Sierre.

As to the features of the three generations, the first stands nearest to farpa, Frhst., of Central Italy and the S.-E. of France, distinguished from the nominotypical one of Dalmatia by its reduced and lighter grey markings on the upperside and by its more thickly darkened underside, but it differs from it in that the latter surface has a distinctly brighter yellow ground-colour like nominotypical manni, and the females have, also on the upperside, a slight yellow tinge, which farpa never exhibits. On account of this constant peculiarity in the colour and the combination of the features I think it should be distinguished

by the name of anteveragra.

The II generation is, in the female sex, strikingly distinct from all

the other races of the species, so that I propose taking it as typical of the race and naming it veragra, like the inhabitants of this valley in the days of the Romans. In size it is very variable, some individuals equalling race creta, Vrty., of some localities in Italy, which is the largest form known, others being quite small; the males differ from creta and from secundogenita, Vrty., of Italy by constantly exhibiting a broader and darker black suffusion at the base of the wings on the upperside and by a brighter yellow underside. The females are nearly invariably yellow on the upperside, such as is never seen in any other race; there is a very broad light grey suffusion over the basal third of the wings; the black markings are usually very large and, notably, the anterior discal spot is often enormous, whilst in half the individuals there is a corresponding one on the hindwing, which is pale, but often of a peculiarly large size, between the third Median and the first Cubital All the markings are, however, quite different from those of rossi, Stefanelli, because they are never of a deep black tinge and they never have a sharp outline, as in the latter; they are very much variegated with grey and they shade off into grey suffusions, so that they are, in this respect, transitional to the spring farpa; in the same way the anterior discal spot is usually not connected to the outermargin by any streak and only occasionally by a faint grey suffusion; they thu resemble more secundogenita, Vrty., of the II than rossi of the III generation by the latter features, although the size of the markings is more like the latter; also the underside is more like that of the former by the amount of grey dusting, but the tone of yellow is much brighter and often saturated to a degree unknown in any other race. be noted that race alpigena. Vrty., of Piedmont, resembles veragra by its large size and rather bright yellow underside, but that the females have quite another facies, because they are perfectly white, their markings are black and sharp, as compared with veragra, and their extent is particularly reduced, as compared with all the other races, the apical crescent being narrow and with a sharp angular indent in its inner outline.

The III generation of the Rhone Valley, I have mentioned above, is markedly different from the two others: it resembles the first one by its size, which is even smaller than that of the latter, and by the thickness of the black scaling on the underside, but the black markings of the upperside are quite as dark and sharper in outline than those of the second generation, although their extent is much less; one of my females has a remarkably rich yellow underside. I name this Sep-

tember generation postveragra.

As I am dealing with manni, I must take the occasion to note that, in describing and naming the race of the west of France, Delahaye, in his "La Pieris manni en Maine-et-Loire," Angers, J. Serandean, éditeur, Dee., 1910," applies the name of andegava to both generations, placing it after manni and after rossi, Stef. in a mistaken quadrinomial way. I restrict his name to the I generation by naming the II postandegava, thus excluding rossi from that race; there does not exist any form like the one described by Stefanelli from Florence, either in Catalonia or in the north-west of France, as far as I know; the July specimens from Collioure, on the coast of the Pyrénées Orientales, figured under this name by Gelin in the Annals. Soc. Ent. de France, 1918, pl. I., seem to be similar to the IV. generation of Florence, I

have named septembrina, and so are August ones I have from Vernetles-Bains, which belong to a II generation, with much larger and darker black markings than the II one of July from the latter locality; as this II. generation comes nearer to the secundogenita; Vrty, of Florence than to the III gen. rossi, one can say the latter is entirely lacking in the west of France, where there seem to be three generations, instead of four, as in Peninsular Italy. Gelin figures a male of 2nd July from the Maine-et-Loire, a male of 18th August and two females of the middle of September from the Deux-Sèvres; this makes it obvious that those three generations are produced up to the extreme northern limit of the species, in the Anjou and the Poitou. The three last mentioned I take as "cotypes" of postandegava and I presume their II generation of July has the same facies, considering the II of the Vernet is exactly like them. I must furthermore note that my examples of the I gen. of the Vernet and of Barcelona are, on the contrary, not the northern andegava at all, but quite similar to farpa, The various forms thus combine seasonally in

different ways, according to regions.

Pieris brassicae, L. race brassicae, L. with I gen. chariclea, Steph.:-The number of individuals and the times of emergence of the generations of this species are very variable, in the Rhone Valley, yearly, according to the weather: in 1932 and 1933 the spring was cold and rainy and brassicae behaved, more or less, as in Central Europe; in 1934 it was warm and fine and that insect emerged as it does constantly south of the Alps, so that, when I arrived, on 22nd June, I found both sexes, with the features of the II generation, already rather worn and quite common and there can be no doubt that they produced a III generation during the summer, as they do in the Anzasca Valley. Instead, in 1933, the emergence, which had begun in May and went on during most of June, consisted of chariclea, in scarce numbers, and the second generation was, before I left on 20th August, still scarcer than the first, so that I only saw single individuals here and there. In the preceding year the males had begun to emerge at the end of July, followed by the females at the beginning of August, and both had then become more and more abundant, till I left on the 22nd. This is, more or less, what happens everywhere in Central Europe and the aspect of the second generation is also quite similar to that it has in southern Scandinavia; it thus is perfectly nominotypical and it exhibits no signs of transition to aestiva, Z = catoleuca, Röber, the characteristic form of the second generation in the Mediterranean region, where it emerges much earlier, in June, and there is a long pause, during the summer drought, before it is followed by the third one of September and, usually, by a fourth one, in November (in 1932 this last was extraordinarily abundant and destructive to cabbages all over Italy, owing, no doubt, to the very late warm weather).

As soon as one passes the waterparting of the Alps, one meets with these three perfectly constant generations and the summer ones are distinctly transitional to aestiva, by their thinly scaled undersides; as near to that boundary as the Anzasca Valley, I found there occurs a second emergence in June and till the middle of July and a third one beginning about 5th August, but becoming more abundant after the middle of the month; the latter is thus not very much later than the

II is, in some years in the Rhone Valley.

Aporia crataegi, L. race crataegi, L.:—Many individuals were quite fresh till the end of June and some even till late in July. It can be said of this race that it is of small size and otherwise perfectly similar to the nominotypical one of southern Scandinavia, as the males constantly have a well marked grey triangle or streak at the end of the nervures of the forewing and the females have a very limited transparent area in the middle of those wings. On the contrary, in the neighbouring regions, both of Geneva and of the Anzasca Valley, the races must be referred to basanius, Frhst., which was described typically from the Maritime Alps and which I have restricted to the intermediate forms and races, such as they are there, by erecting the name of meridionalis for the extreme southern ones, with no trace of grey at the end of the nervures in the male and with broadly transparent females, either prevailingly, or exclusively, according to localities.

Parnassius apollo, L. race valesiacus, Frhst.:—It is most remarkable how this species, not only comes down and reproduces, as shown by the females one can see ovipositing, at the very low altitudes of Martigny, Lavey and Sierre, in the Valley, but is found in these localities, in perfectly fresh conditions, till the middle of August. Concerning the race, much need not be said, because it has been worked out, described and discussed by several authors. Pagenstecher, in particular, has compared series from many localities of the Valais, pointing out small differences he has noticed, but concluding the same race exists from the top of the Simplon and Zermatt to the plain, as far as Martigny, whence he figures two females (Über die Verbreit. und die Lokalformen von P. apollo, in the Jarhb. Nassauischen Ver., 1909,

pp. 147-156, pl. VII.).

Vorbrodt, instead, states that "the alpine examples of the Valais have a distinct tendency to resemble geninus, Stichel, and those of the plains to resemble nivatus, Frhst." of the Jura. I can confirm this fully, for my materials show it very plainly: at the Pont de Nant, 1400m., and on the road to Champéry, at about 1000m., there exists a distinctly different race from that of the plain, by its much smaller size, duller colouring, more extensive black markings, especially the submarginal bands, and smaller ocelli; it seems to agree with the more extreme montana, Stichel, still better than with geminus. Nevertheless, my specimens of the Simplon and Zermatt, although they are from still higher altitudes, quite sustain Pagenstecher's conclusion that the race of the plains does not differ from them and must be referred to valesiacus, Frhst., for this author, in 1906, gave Zermatt as the locality of his typical series, adding the Simplon to it, as well. the Entomol. Anzeiger of 1921, p. 42, he figured a female and confirmed the fact that his males were from Vispeterminen, 1500m., above Stalden, and his females from Bérisal. I have collected this race, not only in the Valais, but also in the Vaud, at Lavey-les-Bains, on the hill of St. Triphon (both sexes of large size and particularly similar to nivatus, just emerging on 27th June; and on the road to Sépey.

Parnassius mnemosyne, L. race helvetica, Vrty. (=mixtus, Frhst.);—In the Entom. Zeitschr. XXIV., p. 155 of October, 1910, Frühstorfer had referred the race, which exists from Vernayaz to Bérisal, to the one he describes, there, from "types" of Macugnaga, on the opposite watershed, and names symphorus. Had this been maintained, my

name of helvetica, published in Rhopal. Palaearct., p. 320, in January, 1911, would have been a synonym, for my cotypes are from the "Valais," and one of the females more exactly from Bérisal, although I omitted to state this fact in my original description. All seem to agree that in that Valley there exists only one race, from the plains to high altitudes. When Frühstorfer collected it in the Lötschental and saw it from several localities, including Vernayaz, he realized how different it was from the symphorus of Macugnaga and in Societas Entomol., 1922, p. 23, he described it at length and named it mixtus, owing to its remarkable individual variability; his lengthy description is very good, but the name is synonymous of my helvetica. It must be added that Bryk, in the same Societas Entomol., p. 19, redescribes the race of Macugnaga and names it sire, quite ignoring the existence of symphorus. Subsequently he has attempted to justify this mistake and save his name, in Strand's Lepidopt. Catalogus, 27, p. 189 and in the Supplement to Seitz, by using the name of symphorus for the Valaisian race alone. This will not do at all, because Frühstorfer explicitely selected his types from Macugnaga and his description fits that race perfectly, but not that of the Valais, as his remarks on mixtus have shown later. My description of helvetica is very inadequate to illustrate the race of the Valais in particular, in the light of modern analysis, as I only compare it with the northern, nominotypical one, but the comparatively small size, the considerable extent of the dark pattern and the very pronounced sexual dimorphism, I lay stress on, are features, which, on the whole, are particularly conspicuous in this region and validate helvetica quite well also as the name of this particular race, now that it has been restricted to it by the distinction of other Swiss races. I was wrong in not giving the exact locality of the "types," but Rothschild and Jordan have already expressed the opinion that this is no reason for considering helvetica as a nomen nudum, as some German authors have done, and it must be taken into account.

I have collected it at Martigny, during June, and found it still quite fresh on the 28th, but always singly and only on the slopes by the La Bâtiaz tower, although Vorbrodt states it is not uncommon on the swampy grounds near Vernayaz and the Follaterres, and Rütimeyer has found it to be so on 20th May, 1934, when he collected a good many specimens (quite similar to the Martigny ones), which he has

sent to me.

Papilio machaon, L. race bigenerata, Vrty. (1919 = gorganus, Frhst., 1922), with II gen. aestivoides, Vrty.:—The mode of emergence is, as in P. brassicae and in L. sinapis, that of Central Europe, where the second generation is on the wing rather late in the summer and there is no time for a third one to be produced regularly and to generate chrysalids before the winter, although Vorbrodt mentions records of machaon in Switzerland till the beginning of October, which may apply to a third, exceptional, emergence or to laggard individuals of the second; Wheeler knew of none even in September. As in the aforesaid Pieridae, the limit between this digoneutic and the regularly trigoneutic race of Italy is, apparently, the waterparting of the Alps, for just beyond it, in the Anzasca Valley, where machaon is considerably more abundant than in the neighbouring Rhone one, I have witnessed, at Vanzone, 700m., the emergence of the II generation from 18th July to 8th August and of the III one from the 24th to the beginning of

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September; the latter was much less abundant than the former, evidently being the offspring only of the earliest July females and the later individuals presumably hibernating and constituting a digoneutic The III generation exhibits, on the whole, a distinctly different aspect from the II: it is considerably smaller in the male sex (not in the female one); all the black pattern is more extensive and, notably, the discal band is broader and, on the hindwing, more dentate inwardly; the dark suffusion along the hindmargin of these wings is darker, more uniform and more extensive; the blue scales are fewer and less bright, being more violet in tinge. In other words the II generation of the Anzasca valley and of northern Italy in general is aestivoides, Vrty., of Central Europe and is transitional to the enormous and thinly marked gigantea, Vrty., of some regions of the south and especially of Dalmatia and the Balkans, whilst the III generation, which is produced in Northern Italy, but not in Central Europe, including the Rhone valley, whence, as I have just noted, no records exist of its regular production in September, is transitional to sphyroides, Vrty., of Peninsular Italy and the south of Europe generally. I think the III generation of Northern Italy can usefully be named tertiana, taking my series of the Anzasca valley as typical of it, and this name can designate the race it characterizes, as a whole, to distinguish it from race bigenerata, which does not produce it.

In the Rhone valley the I generation was all quite worn and not uncommon at the beginning of June and nowhere to be seen, in the plains, at the end of the month, but I found some old individuals at the Pont de Nant, 1400m. as late as 11th and 13th August. All those I collected were quite similar to my typical bigenerata of May from the Vendée and to those I possess from many localities of Central Europe. The II gen. aestivoides, Vrty., emerged at Bex and at Martigny from 25th July (except a precocious female at Bex on 17th July, 1933), to the middle of August, after which only old individuals were met with.

Iphiclides podalirius, L. race valesiaca, Vrty., with I gen. plenissima, Vrty.:—I have pointed out the striking features of this race many years ago, when I named its summer generation in Rhopalocera Since then, I have, in the Entom. Record of 1926, p. 176, Palaearctica. named the I gen., taking Merano (Upper Adige) individuals as typical, but noting that my Martigny ones agree with them; I was mistaken in saying they are not quite as large and yellow. I added that in the neighbouring Anzasca valley the II generation is entirely different, being quite a characteristic zanclaeus, Z.; its I generation is unknown to me; as usual, the waterparting thus is the limit between the race of Central Europe, which plenissima stands nearest to, only differing from flammaeus, Fourcroy, of that region by its larger size and richer colouring (besides the great difference between their II generations valesiaca and zanclaeides, Vrty. or aestiva, Fuchs), and the southern nominotypical race podalirius. In this case, however, valesiaca passes the waterparting into some valleys of the Alps, for it is most highly characterized in the Upper Adige and it exists in the Susa valley, though it shows some signs of transition to the true podalirius of Piedmont.

The I generation was on the wing and some were still quite fresh at Martigny in the first days of June, but I saw nothing of it in the Vaud, so that I suppose it had flown there in May, for I found a very old female at Lavey-les-Bains on the 6th. The II generation I observed

in several localities, from Bex to Martigny and to Sierre, but it was decidedly scarce both in 1932 and 1933 and I never found it further down the Valley than Bex: its emergence began about 25th July and from individuals were to be good till the middle of August

fresh individuals were to be seen till the middle of August.

Coenonympha pamphilus, L. race postemiaustralis, Vrty. trans. ad centralis, Vrty. with I gen. emiaustralis, Vrty.—Here again, as in many other species, there is a most remarkable difference between the races of the two watersheds of the Alps: on the south, Italian, one there exclusively exist races belonging to the marginata, Rühl, group or exerge, as I have made it out in my paper on pamphilus in Zeitschr. für wissenschaft. Insektenbiologie, XXI, p. 191-208 (Nov. 1926), i.e., characterized by a sharply marked, deep black, marginal band on the upperside; quite near the Rhone valley, in the Anzasca one and in the region of Lake Maggiore, there is, in fact, the highly characterized ferrea, Vrty.; as soon as one passes the waterparting one finds, on the contrary, fully characterized races of the Northern and Central European nominotypical group or exerge pamphilus, L. The only remark I find there is to be made in this respect is, that, in the Rhone valley, from Bex to the Follaterres and to Sierre, wherever I have collected the II generation, which emerged more or less abundantly, during the first half of August, the upperside marginal band is of a slightly darker grey tinge and slightly more pronounced than it is in the more northern races, so that it is similar to that of the races of the south of France; these, however, unquestionably belong to the Northern exerge all the same. By the features of the underside the aforesaid Rhone race not only belongs to emiaustralis, Vrty., described from Geneva in the I generation, which was already abundant in the first days of June and which went on emerging till the 15th, and to postemiaustralis, Vrty., whose cotypes are from Dombresson, in the Jura of Neuchâtel, in the II generation, but it is to be noticed that the differences between the latter generation and my cotypes, are, if anything, in the direction of the more northern race centralis, Vrty., of the northern portion of Central Europe: that surface is, in both generations of the latter, more variegated, because the basal part of the wing is of a darker grey than the outer one, the white spaces are more extensive and the ocelli stand out more. Some specimens I have, collected by Wullschlegel, presumably in particularly dry and hot spots near Martigny, belong to the summer form I have named infraestivalis, taking them as co-types; this form is frequent and highly characterized in localities of that sort in southern France; they can be described as transitional to the more extreme semilyllus, Kroul, by their chestnut and fulvous underside markings, replacing the Amongst them is the peculiar grey to a greater or lesser extent. specimen I have named bipertita and taken to be transitional between the true pamphilus and the lyllus, Esp. exerge; I have described it in detail and discussed it at length in the paper mentioned above. unfortunately can add nothing to what I said there, because pamphilus was so scarce on the hotter slopes above Martigny that I only saw two on 19th August by the La Bâtiaz tower; presumably it emerges, on those arid grounds, at a later date, when the drought is over. On the dyke below the Follaterres, where the soil is damp, it was abundant on In the meadows of the Vaud the second generation suddenly appeared in a mass on 24th July, on the golf-links of Bex, but only about 15th August on the banks of the Gryonne, below Bouillet, so that its time of emergence varies considerably.

Vocanonympha arcania, L. race cephalus, Fourcroy.—Evidently very local or scarce in this region for neither Warren or I have met with it anywhere, although Wheeler states it to be common at Martigny, Sion, Loèche, Visp and Brigue. My examples, from Wullschlegel, and presumably of Martigny, differ in no way from the widespread race of Central Europe, including Paris, so that the name given, there, by Fourcroy to the species, is the right one to use for this race, as distinguished from the smaller, paler and more dully coloured nominotypical arcania of Sweden, to which the existence of the former name restricts the latter in connection with individual and local forms.

In my paper on the variations of this species in the Ent. Record, XXXIX., p. 39 (1927), I stated that Scopoli's name of amuntas might be the one to be used and that cephalus and saleviana, Frhst. would be synonyms of it. Since then I have been collecting materials to settle these points and they have shown that facts stand as follows: The race of Carniolia is the very distinct and magnificent one called triumphans by Frühstorfer, still larger and more richly coloured and boldly marked on the underside than insubrica, Frey, of the southern watershed of the Alps, so that amuntas applies to it and should have been used instead of triumphans if it were not that it is a homonym of amuntas, Poda, which, we will presently see, must be revived in the place of iphis, Schiff. As to saleviana, there actually is, in Central Europe, a considerable difference of size and a perceptible one in richness of colour, which is individual in some localities, but even racial in others, so that this name can be made use of to designate the largest and brightest form, restricting cephalus to the smallest and dullest, which stand nearest to nominotypical arcania, without ever being quite like it. I possess saleviana even from Berlin and from Vienna.

According to this distinction, my specimens of the Valais are quite similar to my Parisian ones and so are some collected by Bainbrigge Fletcher at Chillon, near Montreux, on 3rd and 5th July, and very kindly sent to me: they are all particularly small, pale and dull and, distinctly, not even saleviana, so that they stand very far from the very large, bright and boldly marked insubrica, Frey, of the south side of the Simplon and this name is one of those which must decidedly not be used for any specimen from the northern watershed. One of the Chillon males belongs to the form with a broad, diffused fulvous space occupying part of the hindwing, above, as it is figured by Hübner (fig. 240), but it extends more towards the base and it is less sharp in outline than in this figure; Oberthür has named it huebneri.

A little series of specimens from Eclépens, in the neighbouring Jura, sent by the same collector, shows that, there, saleviana is racial. The same cannot be said of the Geneva district, for even my examples collected by Reverdin at Versoix, one of the localities mentioned by Frühstorfer in his original description, belong to cephalus rather than to saleviana; also at Dombresson, in the Jura of Neuchâtel, both forms are mixed. A very large series from Hospitalet, 800m., in Causse du Larzac of the Cévennes, consists entirely of cephalus. On the Mediterranean coast race balestrei, Frhst., described from Menton and which I have from Marseilles, is exactly like cephalus in colouring and pattern of both surfaces, but is quite a giant, as compared with it, being of the same size as insubrica. Up in the mountains of the Maritime Alps, such as at the Baths of Valdieri, 1400m., there is a race intermediate between

balestrei and insubrica: it has the upperside colouring of the latter, of a rich, warm fulvous, or even of a decided chestnut tinge in some males. and a very broad black band extending inwards along the nervures, whereas the underside colouring is distinctly lighter, as in balestrei, the ocelli small, as a rule, and the white space of the hindwings very broad; at Valdieri the individual form macromma, Trti. and Vrty., with very large eye-spots, is evidently an occasional nearer approach of a few individuals to insubrica. On the west coast of France, Oberthür has already pointed out that the frequency of deeply fulvous coloured individuals, with an extremely broad black band, is quite a local feature, from Rennes to Cauteret; in the Hautes Pyrénées, and I can add that my large series from St.-Côme, in the Gironde, is, in every way, exactly similar to that of Valdieri, except for that increased frequency of the chestnut colour and for the complete lack of macromma individuals. It is well worthy of being distinguished by the name of fulvosatura. nov., whereas the Valdieri one must bear its original one of macromma, inappropriate as it is to the race, as a whole. The very different, but still darker, race of the Hautes Pyrénées I have named maesta (l.c., p. The Barcelona race is surprisingly similar to my tergestina of the neighbourhood of Trieste, on the Carso.

I must mention three interesting specimens collected for me by a friend, in July, at the Simplon Hospice: they constitute a perfect transition from true arcania to the Alpine gardetta, De Prunner (1798) = satyrion, Esp. 1805 = philea, Hüb., which is invalid on account of primary homonymy with philea, L., but it is replaced by neoclides, Hoffmansegg, 1804; a couple are philedarwiniana, Vrty., as described by me from the mountains above Lake Maggiore in the paper mentioned above, whilst a third one is nearly a gardetta, but betrays a strain of the preceding, on the underside, by the size of the ocelli, which are much larger than yardetta ever exhibits, so that it corresponds, in this respect, to the preceding grade of variation, Rebel has named epiphilea, although its upperside lacks the extent of fulvous, which is usual in this race, and resembles the dark gardetta one. The Simplon race is thus extremely variable and evidently fluctuates, according to altitude and spots, from philedarwiniana to the more extreme gardetta; I possess the former also from Gondo. As to other localities of this region, my Zermatt examples belong to epiphilea, Rebel, whilst at the Pont de Nant, 1400m., above Bex, I found a pure gardetta race, exactly similar to the Piedmontese nominotypical one by its rich and deep colouring, contrastive with the less saturated one of race neoclides, Hoff. = satyrion, Esp. from the Eastern Alps (see my paper, p. 74).

Coenonympha amyntas, Poda. = iphis, Schiff. race amyntas-bertolis, Poda-de Prunn.—Kirby, curiously enough, gives amyntas, Poda, of 1761, as a synonym of iphis, Schiff. of 1775, but Mrs. Nicholl has pointed out in the Trans. Ent. Soc. London of 1897, p. 428, that the former should be used and it is time this should be done, both for the species and for the nominotypical race, which is the same at Gratz, in Styria, and at Vienna, so that it holds good with either name. The species has only one generation in the Upper Rhone Valley, as in most regions, from the middle of June to the first days of July, but Höfer states that in Carniolia there are two and the II is distinguished by its smaller My specimens of Martigny and of Bex cover a very broad range of variation, from the nominotypical form to the facies of the race of

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the Western Alps, for which I have revived the most ancient name of bertolis, de Prunner, of 1798, in the Ent. Record, 1927, p. 122, noting that carpathica, Horm., subalpina, Reutti and belisaria, Obth., fall before it; this form is the one with no ocelli and no premarginal silver streak on the underside; in the Rhone Valley it is quite frequent, together with the nominotypical amyntas and the intermediate anaxagoras, Assmuss, so that I think the right designation for the race, as a whole, is the combination of the two names given above. The colour of the upperside varies considerably too, from chestnut to black, as Osteldher describes it from southern Bavaria and as my Vienna series exhibits it. A form which does not seem to exist here is exommatica, Rebel, with large ocelli, whereas it occurs individually at Vienna and in Carniolia, showing the tendency there is to vary in the opposite direction to bertolis.

✓ Aphantopus hyperantus, L. race hyperantus, L.:—Emerged from the end of June to the beginning of August. This race shows no signs of variation either towards the very large maxima, Vrty., of the Po Basin, or towards rufilius, Frhst., which has a reddish tinge on the underside.

V Pyronia tithonus, L., is reported from Charpigny and Aigle (middle of July to middle of August) by Wheeler. One can expect the race to be the nominotypical one of Germany, which is the only race known north of the Alps, but I have not seen it and Warren tells me it must

be very local indeed, for he has never met with it either.\*

Whyponephele lycaon, Rott. race fluminius, Frhst.: The few specimens I have collected at Martigny on the 19th of August are not sufficient to judge the race; according to Fruhstorfer's original statements, in his description of iphisius, it would belong to it, but it must be remembered that Courmayeur is explicitly the "type" locality therein and that he then (1909) had a very inclusive view of the race, including the one of Haudères, Arolla and Zermatt, which he separated later (1917) under the name of fluminius and from which I again separated degener of this last locality, and including his Jura (Gex) race okeanina. In his description of the latter, of 1910, he still considered the "Stalden, Zermatt and Arolla" race as similar to the Courmayeur iphisius, but, since he has separated fluminius, the Martigny race should, most probably, belong to the latter.

Maniola jurtina, L. race janira, L.: Emerged everywhere from early in June, and in some spots swarmed from the beginning of July, when the females appeared in numbers, to the middle of August. I have collected a large series of both sexes and compared it with the nominotypical race of Central and Northern Europe and with race phormia, Frhst., of hot valleys of the Upper Adige and other regions of the southern watershed of the Alps. I have detected no difference between examples from the damp meadows of Bex and those of the dry slopes of Martigny and the Pfynwald. Individual variation is considerable, as it is, more or less, everywhere, but all those series distinctly belong, on the whole, to the nominotypical janira and distinctly differ from phormia, notably in the female sex: the size is lesser, the apical ocellus is smaller and the fulvous area of the forewing is smaller or very much smaller and more broken up into several patches;

<sup>\*</sup> It is (or was), although very local, quite common at Charpigny in a restricted area at the east end of the road, scarcer at Aigle near the Grand Hotel. I have also taken it near Lausanne by the high railway bridge in the east road.—G.W.

the lesser, diffused patch, which extends inwards to the cell, is pale, shaded and, usually, very inconspicuous; males with a marked fulvous patch are rare, whereas in phormia they are quite frequent. Frühstorfer has named phormia the form and race which used to be recorded from S. Switzerland under the name of hispulla, Esp., and Wheeler had already remarked that in the Valais there only exist transitions to it; in fact, I have not found, there, anything more than the form I possess also from Holland, whence it has been named subhispulla by Schultz, and not more than one fifth of the females can be referred to it, the

rest being perfectly typical janira.

Erebia ligea, L. race meridionalis, V.d. Goltz.: A few individuals, which had evidently just emerged, appeared for a few days, in the middle of July, on the golf grounds of Bex, along the outskirts of the woods, and then totally disappeared, having, presumably, flown up the mountain These and the race I have collected on the road to higher altitudes. from Aigle to Sépey, belong to the largest and most badly marked form of ligea, which V. d. Goltz describes as an extremely widespread southern race, from southern France to Vienna and the Carpathian Mts., and which Seitz has well figured in his Supplement, I. pl. 9. It might be discussed as to whether this is not the same as Fruhstorfer's carthusianorum, but I think the latter can be kept separate on the strength of the smaller size and the darker rust-coloured bands mentioned in the original description, in which it is compared with the ligea of southern Germany, named, since then, meridionalis. I might mention that at the Pont de Nant, 1400 m. above Bex, I have found a distinctly smaller race, which consists partly of carthusianorum, with large, white-pupilled, ocelli, and partly of monticola, Vorbr., described from Lötschental, 1600-1800 m., examples, according to V. d. Goltz, and in no way different, according to him, from the nominotypical ligea of Scandinavia; this remark seems fully confirmed by my own specimens. Fruhstorfer states that in the Valais there exists, at Arolla, a still smaller race than his very small nikostrate of the Upper Adige. Pont de Nant euryale, Esp., began to emerge about the 4th July, and ligea about the 13th; on the 25th they were both abundant and it is worthy of notice that they flew, and I even saw them emerge, together, on the same plots of grass. This decidedly contributes a proof to the effect that they are perfectly distinct species, not a single individual being intermediate in this, or in other similar cases, either in general aspect or in connection with the androconial patches, not to speak of the genitalia.

Erebia euryale, Esp. race tramelana, Rev.:—Although Vorbrodt records this species in the Erstfeld valley of the Uri at 470 m., I was rather surprised to come across a fresh male of it, on 26th July, 1933, at Bex, along the outskirts of the woods in the park of the Hotel des Salines, by the gardener's house. It distinctly belongs to the same race as the specimens I have collected in numbers in the same mountain mass, at about 1500m on the road from Les Plans to Javerna, on 9th August, and at the Pont de Nant, 1400 m., from 4th July to 13th August. These afforded another surprise, for, although I possess no examples from Tramelan, in the northern Jura, to compare with them, it seems to me, judging from Reverdin's very good figures and description, there can be no doubt that, if they do not actually belong to race tramelana, they are a very near approach to it. They are certainly

markedly different from the usual Valaisian race, as represented in my collection from the Simplon, Zermatt and Arolla, and they differ from it precisely by the features Reverdin lays stress on: larger size; broader russett band in most individuals and of a more even breadth, but broken by distinct black streaks on the nervules; ocelli oval, instead of round, and with no white pupil, but often very large, and, finally, individuals with four and even five ocelli on the forewing quite frequent (25% of the males and 50% of the females at Pont de Nant), instead of being exceptional. It must, however, be added that the race of the Pont de Nant plainly shows a connection with race segregata, Rev., of the neighbouring Bernese Oberland, in 10% of my males, which are quite similar to the figures of the latter by having the russet bands reduced to separate spots of comparatively small size. It is thus obviously connected in several ways with, and it decidedly belongs to, the "northern strain," which V. d. Goltz has shown to be readily distinguishable from the "southern" one, including the usual Valaisian race helvetica, Vorb. According to that author tramelana cannot be differentiated from the Bavarian isarica, Rühl., which he says "also occurs on the entire northern slopes of the Swiss and Austrian Alps," so that, if this is an absolute fact, the latter name must apply also here, and tramelana is only a synonym, but we will presently see that this may be doubtful, because V. d. Goltz is apt to overlook minor racial features. The group of dark races, ocellaris Stdgr., segregata, phoreta, Frhst. and antevortas, Vrty., no doubt, belongs to the "northern strain," too. as a branch modified in aspect in a conspicuous way, but, in reality, closely connected to it: some of its features, its distribution and the number of transitional individuals and races prove it clearly, whereas no such thing exists between it and the "southern strain," etobyma, helvetica, and rusca.

I need not repeat the endless discussions, which have gone on for years, in connection with the nomenclature of this species and of its races, but I must recall that a full agreement has not yet been attained between the various authors on some points bearing on the

widespread Valaisian race's nomenclature.

To begin with, however, it is certain that the specific name must remain euryale, Esp., because that of philomela, published by Hübner (1799) and soon after by Esper (1800 or 1802) and which Fruhstorfer thought it necessary to revive, on account of priority, is a primary homonym of Papilio philomela, Joh. (1764) and of Fabr. (1793) and is thus invalid, according to the Rules of Nomenclature, now being followed.

The other point, which seems to have been settled in this century, is that it has been quite a mistake of the past to have referred Hübner's figure of adyte to a small mountain ligea, as one may be tempted to do at first sight. Meyer-Dür, followed by Frey, had already used the name of adyte for the Swiss race of euryale, but Reverdin was the first to examine Hübner's figure in detail again in 1918 (Bull. Soc. Lép. Genève, p. 28) and to conclude that it was the right view, adding, at the same time, that Hübner's philomela belongs to the same race (p. 32) and that helvetica, Vorbrodt, is a synonym of adyte. Vorbrodt accepted this conclusion in his first supplement, but he fails to see that, if adyte is a rather unusual individual form of the race he has named helvetica, but, nevertheless, belongs to it, as he, no

doubt, quite rightly recognises, it follows Hübner's name must be used for that race as a whole. In the Iris of 1926, p. 80, V. d. Goltz expressed the opinion that there is only one race from the Maritime Alps to the Stelvio and the Mendola, in the Upper Adige, including etobyma, Frhst., of the former Alps and rusca, Frhst., of Tessin; this inclusive race he makes the mistake of calling helvetica, very simply discarding adyte by saying it is a nomen dubiosum and quite overlooking the other fact that etobyma was described in 1909 and helvetica in 1912. Gaede, in Lepidopt. Catalogus of Strand, 48, p. 564, has carried on this impossible procedure, only correcting it as far as considering adyte a separate race, with the indefinite habitat: "Alps," but placing

etobyma as a synonym of helvetica.

As I have collected all these races in their own haunts and I have a considerable amount of material before me, I venture to suggest that etobyma, helvetica and rusca, although they certainly resemble each other very much, should be recognised as distinct, for it is equally certain they are not quite alike; I also suggest that adyte should not be used for the widespread race, whose usual aspect is not the one of Hübner's figure, but should be restricted to the peculiar race one meets with, not infrequently, in the eastern Alps and which actually is, in many individuals, perfectly similar, or, in others, similar by some features, to that figure: it is of small size, with short, round, wings, the white pupils in the ocelli are particularly accentuated, the underside is of a dark, blackish tone, instead of the more usual chestnut one, and there is a very distinct and continuous, pure white, space, which extends across half the hindwing and which has no projection protruding from its inner side towards the end of the cell, as there is in most euryale, but not in liqua. At Bormio, in the Valdidentro, at 1500m., and on the Stelvio road near the II Cantoniera, at 1800m., I have found this form, and transitions to it are as numerous as the other individual forms, which make up the helvetica race in most of its localities. By restricting the name of adyte, Hüb. to local races of this sort (not to be confused with alticola, V. d. Goltz, of ligea, from the same Alps, but always distinguishable by the androconial patches of the latter, which lack entirely in euryale) and that of etobyma to the race of the Western Alps, for which it was erected, the name of helvetica becomes the one to be used for the most widespread race of the Alps, as the German authors have done, but established, thus, in accordance with the Rules of Nomenclature they had ignored.

Erebia aethiops, Esp. (=medea, Schiff.: prim. hom.) race depressivaga, n. nov.:—The emergence of both sexes began, at Bex, on the 1st of August, but the females only became less scarce, in proportion to the males, about the 12th, when no more fresh males were met with; a few females were still emerging on the 21st. The species, or rather its males, were common in most localities I visited. All considered, I think one can safely say the race of the lowlands and namely of Bex, Colombey and Martigny, is not the same as the nominotypical aethiops of the lowlands of Central and southern Germany and most of Austria; it is smaller and the rust-coloured bands are, on the whole, much less extensive; those of the female are particularly so and less yellow; all these features constitute a marked variation in the direction of the still smaller and extreme, high mountain, race altivaga, Frhst.; a greater or lesser approach to that extreme exists higher up in the

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mountains, as, for instance, along the Sépey road, at 900 m., and at the Pont de Nant. 1400 m., where the size is distinctly smaller and the bands are reduced in extent. These races of the Rhone valley are thus strikingly different from the Jura and Bernese Oberland sapandia, Frhst., which is much lighter in colour and has larger ocelli, as Vorbrodt had observed it, and they are equally different from rubria, Frhst., of the Tessin and, it seems to me, of the Anzasca valley, where it is larger and more sharply marked, approaching taurinorum, Vrty., of the Po Basin. Therefore I suggest naming the lowland Rhone race depressayaga, and my Bex series can be taken as typical of it.

VErebia meolans, de Prunn. (=stygne, Ochs.=pirene, Hb.=pyrene, Esp.=irene, Hb.; the three last names, being primary homon.) race stygne, Ochs.:—A few males appeared along the cliffs, from Vernayaz to Martigny, about the 20th June, but the mass and the first females only emerged on the 28th and a certain number went on doing so till about 10th July; I found a female, in good condition, still on the wing,

on 19th August.

There would be a good deal to say about the nomenclature of this species and its races, but we must limit ourselves here to the following remarks: The Rule of primary homonymy preserves the name of stygne, in general use, because pirene and irene, which Fruhstorfer thought it necessary to revive, had been used previously in the same Linnean genus Papilio; that is exactly the reason for which Ochsenheimer had replaced them by stugge and, as he quotes Hübner first and the latter actually has a slight chance of priority more than Esper, Hübner's figure 223-4, with the locality: "Swiss Alps," must be taken as the "type" of stygne. This figure, it seems to me, agrees perfectly with my lowland specimens from the localities of the Valais mentioned above, both in size and in pattern, and, if there is a difference, it is that the rust-coloured band is slightly more broad and continuous than in most specimens. I thus cannot see at all how Fruhstorfer can have referred the Martigny race to Esper's figure, in which those bands are very much more extensive, and, in fact, enormously so, and the ocelli enormous too: according to me, it represents charea or praerutilia and Esper had precisely received it from the "Alps near Geneva" whence came the P. napi napaeae he figures on the same plate; this, however, has no more importance, since its name of pyrene is not to be What has importance is Hübner's figure, as the "type" of Here again I fail to see why Fruhstorfer refers it and its name of irene to the very small and dark race of very high altitudes (Dent du Midi and Col de Coux, at 1900m.); as stated above, the rust-coloured band of that figure is even more extensive than in the average lowland Valaisian form, far from being more reduced than in the latter, as it is, characteristically, in that mountain race. To my mind one should use the name of stygne, O., for the lowland race and that which Frubstorfer called *irene*, a name not valid, anyhow, because it is a primary homonym, should receive the new name of altivolans. author rightly points out the confusion created by Elwes in naming valesiaca the form with next to no mahogany patches around the ocelli, which only occurs occasionally on the Simplon, which was actually described from cotypes of the Spluga and of Graubünden and which is quite characteristic of the eastern Alps and of the Bernese Oberland, where it exists racially, so that the meaning of that name is

very misleading. Race valesiaca stands, with tetrica, Vrty. of Central Italy, opposite praerutilia, Frhst. of Savoy in the scale of the extent of the mahogany markings and between them are stygne, charea and nominotypical meolans, of which cubei, Frhst. is an absolute synonym.

Erebia triarius, de Prunn. = evias, Godt. race eurykleia, Frhst.;—Reported from Vernayaz, Martigny, Saillon, Sion and the Pfynwald. According to Vorbrodt, in the plain, the time for the butterfly is April and May, so that this would account for my not having been able to find it.

Erebia medusa, Schiff. race generosa, Frhst.:—A few, still fresh, everywhere in the first days of June and old females at St. Triphon as late as 2nd July. Fruhstorfer refers the race of the Valais to his generosa, described from the Tessin (Mt. Generoso) and, according to Warren, also the race of Fusio, which that author separates under the name of cercida, should be included in the former, whilst at Geneva there exists the distinct charila, Frhst., which Warren makes out to be the same as the German brigobanna, Frhst., and in the Jura there exists hippomedusa, O., which is typical from there.

✓ Eneis aello, Hüb.:—Favre had already reported the exceptional existence of this species in the plain, at the foot of the Mont d'Autan, near Martigny, and Vorbrodt confirms it by stating, in June, 1908, he has found several individuals in the Rhone valley, near Vernayaz.

Satyrus galathea, L. race nereus, Frhst., race nigriornereus, n.nov. and race nereine, n.nov. :-- The males were already abundant everywhere at the beginning of June, together with a few females, and the latter became numerous from the first days of July to the middle of August, when a few were still fresh. Fruhstorfer had at first, in 1910, erected the name of nereus in a very much broader sense than that he gave it later, but in the Societas Entomologica of 1916, p. 33, he concludes that the race of the Rhone valley, in the Valais, is quite peculiar to this region and that name must be restricted to it; nevertheless, it is still, to use his own words, a mixtum compositum, even within this limited area; namely, he states that the race of the higher slopes of the Simplon and other mountain localities of the Valais are an approach to pygmaea, Frhst. of Geneva, both by its smaller size and by the aspect of the chequered pattern, as compared with that of the plain. This is quite true, and I note that also my examples of the Pfynwald, which is well known for the mountain-like appearance of many species, belong precisely to it. I thus think the name of nereine will be necessary for it, to obviate confusion, taking the Simplon race as It is also worthy of notice that the race of the damp meadows of the Vaud, from the Bex neighbourhood to the Lake, is, on the whole, rather smaller and distinctly darker than the typical nereus of the dry slopes of Martigny, at the La Bâtiaz tower: notably, the males are nearly always yellow, instead of pure white, and, in both sexes, the premarginal row of clear spaces is markedly lesser in extent, owing to the general increase of the black pattern, affecting also that part of it: nigriornereus can thus designate it well.

Note.—Wheeler, in his *Butt. Switz.*, p. 143, has actually included S. lachesis, Hüb., on the strength of a report in the *Bull. Soc. Ent. Suisse*, Vol. IX., n. 2, based on two specimens, which were supposed to

<sup>\*</sup> The Jura race differs greatly in different years; in some years almost all are hippomedusa, in others few or none of this form appear.—G.W.

have been taken at Bex by M. Borel. Vorbrodt includes it too, with the naïf remark that they can only have been immigrants. I think I have been fortunate enough to settle the fact that this species can be cancelled from the Swiss fauna, with perfect confidence. Wheeler says that "Borel's collection consists only of a few cases of insects taken by himself in the neighbourhood of Bex, so that there is no possibility of mistake as to loc." I have traced those cases, which are now in the little museum of the local school. It is quite true that nearly all the insects are unquestionably of that neighbourhood, but there is one exception, which removes the lachesis doubt, and that is a Tisiphone pasiphaë, Esp. As one would have to be insane to believe this insect could have "migrated" to Bex, as well as the lachesis, it is quite clear those three specimens must have been sent to somebody from the south of France and Borel had, in some way, received them and mixed them up with his own captures. There is no trace of the lachesis, or of their pins and labels, left in the cases now and the collection has been partly

destroyed by mites.

Pararge achine, L. race latealba, nom. nov.:—The male sex emerged abundantly during the beginning of July in 1932 and 33 and from 20th June in 1934, in certain spots on the outskirts of woods, such as the golf-grounds of Bex; the females appeared much later and were much more rarely seen, on account of their habit of flying very little and sitting amongst thick foliage in trees and shrubs; on the 31st they were all quite worn; on the Sépey road, at 900 m., I met with one as late as 17th August. There exist two principal extreme forms of achine in Europe, which unquestionably constitute two races, in the sense usually accepted in most other species and, as a matter of fact, more distinct from each other than are a great many of those now recognised. Nevertheless, when Lowe pointed this out, in "the Entomologist" of 1904, p. 272, it roused, in those days, the criticisms of several authorities on the subject (l.c. p. 322); he was quite right in sustaining his arguments in 1905, p. 60, but none of his critics seem to have discovered the point, in which he has actually been at fault: that was in not ascertaining which of the two forms and races was the nominotypical achine of Scopoli. He unfortunately hit on the wrong one and renamed mendelensis the very one which is perfectly recognisable in Scopoli's rough figure, as might have been expected, considering the latter's insects were from the Eastern Alps (Carniolia), where that form is highly characterised and distinctly racial; a race, there and elsewhere, it certainly is, although it is not confined to that region, as remarked by Lowe's critics, who contest it on this account, and although it does occur in some localities of other regions as a simple individual variation, mixed with the opposite extreme form. Such is the case in my Bex series, where I have found that about 4% of the individuals resemble nominotypical achine, or rather resemble the less highly characterized ones of it, such as they exist in the series I have collected in the fir-woods of S. Stefano di Cadore, 900 m., in the Carnic In this intermediate form the white, band-like, space of the underside, broadens outwardly to beyond the ocelli in the three anterior internervular spaces of the hindwing. In nominotypical achine it does not do so in any part of the wing, so that it lies entirely within the ocelli. In the opposite extreme variation it broadens out to the margin of the wing, across the whole of the latter, so that all the ocelli stand out on

a broad white surface. The extreme degree, in breadth and clearness, of this surface I find in my specimens from Auzay in the Vendée, which I consequently select as typical of this form and race, giving it the name of latealba. Another distinct racial characteristic of it is that the black spots on the upperside and especially those of the hindwing are smaller than in the achine of the eastern Alps and less oblong in shape; a third characteristic is the larger average size of the butterfly.

All the Bex examples can, practically, be said to belong decidedly to latealba and the most highly characterized ones are nearly as much so as the Vendée ones. According to the researches made by Lowe's critics a very extreme latealba exists in Podolia (S.W. of Russia) and my Vienna series certainly belongs to it; no nominotypical achine has been found by them anywhere in France or in western Switzerland. The latter has been found, as the constant racial form, in eastern Germany (Dresden) and at Buda Pest, and I possess a series of the most highly characterized specimens from St. Amata, in Lettland, besides those of the eastern Alps. Local conditions must be the chief causes of the difference, because both forms extend, side by side, all the way to eastern Siberia.

I must record the very fine race of the Venaria Park of Turin, which surpasses all the others, I have seen, in size and is worthy of the name of **gigas**, nom. nov. The nominotypical achine race has a forewing measuring, from its joint to the apex, 24 to 25mm. in the male and 25 to 26 in the female, the latealba one 26 to 28 and 27 to 28, respectively, whilst the female of gigas reaches 30mm. or more. In pattern gigas could not be ascribed correctly to either of the two other races, because the features of both surfaces are quite intermediate, so that this is a further reason for keeping it apart from them.

Pararge aegeria, L. exerge vulgaris, Z. (=egerides, Stdgr.) race vulgaris, Z., with II gen. aestivalis, Frhst.:—A few old females of the I generation were on the wing at the beginning of June; then, I saw nothing of this species anywhere, till a few individuals appeared at Bex from 8th to 20th of August, when I left and missed the end of the emergence; on the contrary, I have a series of perfectly fresh males taken at Geneva all through July. I take it that the latter belong to a II generation and that it is followed, there, by a III one in September, whilst at Bex there are, presumably, only two. facies of those specimens are different and the Bex race quite follows the general rule in the butterflies of this region, in that it cannot be referred to elegantia, Frhst. of Geneva, but it corresponds perfectly to the widespread rulgaris = eyerides of Germany and Northern France, excluding its western coast zone, where true exerge aegeria, L. has extended from the Iberic Peninsula. The Bex specimens are, in fact, much more clouded with black and colder in tinge than elegantia, on the underside, and the fulvous is not as warm on the upperside either. They quite correspond to Fruhstorfer's description of the summer generation, drawn from Coblence specimens: fulvous markings lesser in extent and suffused slightly with black, so that the general tone is duller than in the spring generation, which has broad pale yellow ones.

Lasionmata megera, L. race megera, L. trans. ad vividior, Vrty.: I gen. megera, L.; II gen. filipluma, Ball. trans. ad vividior, Vrty.:— Fresh females existed till the beginning of June, both in the Vaud and in the Valais; the species then, very soon, vanished entirely and nothing

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more was seen of it anywhere till 1st August, when a single, very fresh, female turned up at Bex, but the real emergence only began with the males, after the middle of the month and the females followed on the 21st.; also at Martigny they appeared at the same time; one can thus be pretty certain there are only two generations. As to their facies, the I gen. could only be nominotypical megera, considering its only racial variations are those of Peninsular Italy and of Sicily and presumably of the southern Balkans and Asia Minor, as I have shown in my little monograph on this species in the Entom. Record of 1922 Concerning the II gen. which varies much more geographically and can be divided in a few races, I have remarked that in Central Europe it exhibits a change of aspect from filipluma, Ball, to the more southern vividior, Vrty., of the Iberic, the Franco-iberic and the Northern Italic zones, but that the change is gradual, both locally and individually, so that it is often difficult to draw the line between those The waterparting of the Alps does constitute a sharp demarcation, for in the Anzasca valley, just south of it, there is one of the most highly characterized vividior, of a rich and vivid tone of colour, whilst in the Rhone valley, just north of it, some signs of a brighter colouring than that of the typical filipluma, of the north are already detectable in a certain number of individuals, but only to a That is why I think the "trans. ad." denomination is slight degree. the correct one to use for the latter.

Lasiommata maera, L. race macroleucocinia, nov., with II gen. postleucocinia, Vrty., and race macroleucocinia trans. ad herdonia, Vrty. Frhst.:—On 3rd June I found several males, which had just emerged, in the meadows from Bex to St.-Triphon, and during the rest of the month they became abundant all over the region here dealt with; the first female appeared on the 15th of June and freshly emerged ones were met with till the end of July, after which they were all old. Vorbrodt states the existence of only one generation in Switzerland, from June till September. Wheeler had previously maintained there were two in the plains; he gives July to September as the time of emergence of the second, but such an early beginning cannot be correct. In the Anzasca valley the latter begins to emerge in the middle of August and I have named it postleucocinia, on the strength of its much smaller size than that of the first, which is leucocinia, Frhst., as far down as Vanzone at 700 m., and of its remarkably large ocelli, often belonging to form triops, Fuchs. I have seen nothing of it in the Rhone valley before I left, on 22nd August, and I believe it cannot have been produced at all in the short and bad summers of 1932 and 1933.

In this region there are two races: One is that of higher altitudes, characterized chiefly by its markedly smaller average size (length of forewing, from base to tip, where fringes begin: 22 to 25 mm. in both sexes) and also by its slightly darker tone of colours, lesser extent of fulvous and duller and more clouded underside. This is leucocinia, Frhst., of which he figures the male genitalia, from Zermatt, in the Entom. Zeit. XXII, p. 123 (1908), contrasting them with those of a specimen from Moravia, and which he describes as "a new subspecies or form found all over the Alps of southern Switzerland and namely at Zermatt and on the Simplon, whose female is characterized, amongst other features, by the chestnut-brown suffusion of the forewing." In

the Entom. Zeit. Guben, 1909, p. 133, he creates some confusion by again describing it from "the Simplon, Zermatt and Courmayeur" as a distinct individual form, especially of the female sex, of the wide-spread race he describes, there, under the name of herdonia; the first description is, of course, the valid one and it leaves no doubt as to the proper use of the name for the aforesaid mountain race, as a whole, now that we find it convenient to split herdonia and separate the former from it.

The second race of the Upper Rhone valley is that of the plains and of the lower altitudes, distinguished by its larger size than the preceding, leucocinia (the wing measure defined above varies, in both sexes, from 25 to 27 mm.), by its slightly clearer colouring in most individuals, notwithstanding their great variability, by the slightly more extensive fulvous areas and by the clearer underside, usually with a more distinct silvery sheen. I propose naming it macroleucocinia, because none of the existing names applies correctly to it. Fruhstorfer included in his herdonia the races of all altitudes in the Jura, the Valais and Piedmont, in a comprehensive way, stating his type was from Arcine, in Savoy, but he lays stress on the point that his name is meant particularly for the race which is always spoken of, quite wrongly, as adrasta, Hüb., whereas it differs markedly from the true and very distinct adrasta of France and Spain and it stands between the latter and his ordona (a synonym of the true hiera, F.) of southern Germany. In the Ent. Record, 1927, p. 154, I have already pointed out that the approach of herdonia to adrasta is, in fact, quite true and obvious in the greater part of the herdonia zone, as made out by Fruhstorfer, and notably in the Western Alps and in the Jura, but that in the Anzasca valley, and I must add, in most localities of the Upper Rhone basin, the aspect of this insect is instead, distinctly different, because there are no advastaeformis, Vrty., individuals or they are quite exceptional and not well characterized; it thus stands, there nearer to hiera = ordona than to adrasta, and that is why I use the names of leucocinia and of macroleucocinia for the races of those two valleys.

To be still more accurate one can, however, note that on the hot and dry slopes, such as those of La Bâtiaz, above Martigny, 10 or 20% of the individuals could, broadly speaking, be called adrastaeformis, Vrty., on the strength of the fulvous areas they exhibit, so that the race could be designated as macroleucocinia trans. ad herdonia, Vrty.-Frhst., whereas in the damp meadows of Bex and that part of the Vaud such forms never occur at all, as stated above, and the opposite individual variation, resembling hiera = ordona by the great reduction of the fulyous, is, on the contrary, quite frequent: about 20% of the females are of this description and have no trace left of the fulvous patch on the inner side of the band of that colour. This second, darker race, I take as typical of macroleucocinia. Its second generation, recorded by Wheeler from Aigle, is evidently the same postleucocinia as in the Anzasca valley, according to that author's statement that he has found triops, Fuchs, there, at the end of August, for this form, with the ocelli increased in number, is precisely characteristic of that small generation.

Minois dryas, Scop. (=phaedra, L.) race dryas, Scop., and race tassilo, Frhst.:—The males made their appearance in the first days of August, when I collected a series of them at Colombey and, on the 7th,

on the dyke below the Follaterres; the females did so some days later

and on the 21st they were still emerging at Bouillet, near Bex.

The geographical variation of this species is very simple and it can be summarized by saying it consists in a series of grades passing from the giant drymeia, Frhst. of the warmer valleys of the Upper Adige (S. Tyrol), which is culminating, besides size, by the enormous ocelli and by the accentuation and sharpness of the white bands on the underside of the hindwings, through julianus, Stauder, which spreads from Istria to the Veneto, to Emilia and to northern Tuscany, through armilla, Frhst., described from Schönberg, above Innsbruck, but existing also in the Tessin and found by me to be the race of the Anzasca Valley and to extend as far south as Saint Martin de Vésubie, in the Maritime Alps, and, finally, through tassilo, Frhst., described from Wörishofen, in S. Bavaria, and constituting, I think I am not wrong in stating, the race of the Grand Salève and Geneva, to the opposite culminating grade, consisting in the nominotypical dryas of This last race was described from Carniolia and Frubstorfer suggests distinguishing that of central and northern Germany from it by the name of phaedra, L.; he does not, however, say which are their distinguishing features and, to my mind, there are none and they both belong to the most widespread race of the species, which extends from the Carpathians, across Central Europe, to the Atlantic coast of France; all my series from many localities of this vast region are perfectly identical with each other and, curiously enough, so is the one I have collected in the Venaria Park of Turin and a female from Susa. which suggests it is also the race of the plains in the western Po Basin.

If it be taken, by the comparison of these races, that tassilo only differs from the nominotypical one by the larger size of the females and of their ocelli than is ever found in the latter, whereas armilla is distinctly larger and more deeply coloured in both sexes, and only differs from julianus by never producing its enormous ocelli in the female, one must conclude that Vorbrodt was wrong in referring the race of the Valais to armilla: the males are decidedly of the smallest size everywhere; the females are so, too, in the mountain localities, such as on the Sépey road, at 900m., and do not surpass the size and

the ocelli of tassilo even in the plains.

Karanasa ferula, F. (=cordula, F.) race inframilada, nom. nov. and race conspicuella, nom. nov:—At Martigny males were numerous and the first female emerged on 10th July; on the 25th and 31st there still were newly emerged individuals of both sexes. single, perfectly fresh, male appeared, close to the Hotel des Salines, on 1st August. At about 900m. of altitude, at the "grands rochers," on the Sépey road, males were beginning to emerge on 27th July and The series of the females were mostly still fresh on 17th August. specimens I collected in these localities distinctly belong to two different races, which only overlap in a certain number of their most extreme Any attempt, one might make, to refer either of them to those which have been described and named can only lead to a mistake and convey a wrong impression of their aspects. The race of Bex and Sépey shares the mountain features of very small size (length of forewing 25mm. in the male and 27 in the female), of small ocelli, and of no white dots between them in the male, with milada, Frhst. of the Upper Valais, described from Täsch and Zermatt, but it cannot be identified with it, because the underside is much darker in both sexes and has either no silvery white spaces at all or a very narrow and indefinite central one in the male, whereas their sharpness and extent is a characteristic of milada, and because the females have nearly no fulvous on the upperside even of the forewings, whereas a broad band of a light ochreous yellow is another prominent characteristic of the latter; my Sépey specimens can well be defined as belonging to a dwarf race, quite similar in pattern and colouring to the gigantic one, of the Anzasca Valley, I have named conspicua in the Ent. Rec. of 1927, p. 173, which measures 30 to 31mm, in the males and which reaches 32 in the female sex; they are respectively the smallest and the largest European races of ferula; I thus propose naming the Sépey one conspicuella.

The race of the Simplon has, curiously enough, remained undetermined to this day and I cannot give a definitive judgment of it, for all I have seen is a couple from Bérisal, Bainbrigge Fletcher has very kindly sent me; I can only say it seems to be very similar to my conspicuella of the Vaud by its very uniform underside and other features, although the male is not quite as small and more specimens are necessary to establish whether it actually belongs to that race or it is, on the

whole, a nearer approach to milada.

As to the Martigny race, Fruhstorfer defines it as intermediate between milada and that of the upper Adige (S. Tyrol), for which he wrongly suggested using the name of hippodice, Hb., and which I have named orientalpium (l.c.); he notes in particular, that the Lower Valais race is much larger than milada and that it has a tendency to produce four ocelli on the forewing, whereas in milada they are often actually reduced to one only, thus constituting, according to him, a transition to actaea, Esp., which the sharp white markings of the underside recall I will not enter here in a discussion of this view, which Oberthür shared in connection with his actaeina of the Cottian Alps; it involves the question as to whether actaea and ferula (=cordula) are two very distinct exerges of the same species or two entirely distinct species, a point on which no one has as yet been able to furnish exhaustive arguments. Fruhstorfer ended by concluding in the Soc. Entom., 1910, p. 59, that they were species, on the strength of the genitalia, and, in this case, his previous view of milada would not be correct, but Powell, who has bred the two insects, side by side, and compared them, from the ovum onwards, has not been able to make up his mind, as he states it in an article in Oberthür's Étude Lép. Comp., Vol. X, p. 284. connection with the Martigny race, I should add to Fruhstorfer's remarks that, now I have discovered conspicua in close proximity to the Rhone valley, it is more exact to say the former is intermediate between milada and the latter, both in size and in pattern, for conspicua very much resembles orientalpium by its dark underside in both sexes and by the very limited amount of fulvous on the upperside of the female and these are precisely two of the features in which the Martigny race is intermediate between them and milada. It is not transitional, because it never produces either a conspicua or a milada amongst its individual variations, but it is a perfectly distinct race from both, which, to my mind, should receive a name of its own; I thus suggest that of inframilada, which conveys its position in facies, as well as geographically. I must note that Vorbrodt is not correct in stating peas, Hb., only to

be found between Sierre and Aigle; it comes from his using this name to designate individuals with four or five occili on the forewing, such as race inframilada is, in fact, well known to produce more than other races, but which should be called ornata, Schultz; the peas of Hübner and of Esper is the female form with an unusually broad ochreous band on the upperside and with an unusually white underside, which is, on the contrary, peculiar to milada of the Upper Valais and to orsiera, de Prunner, of Piedmont, or, that is to say, to the two races whose peculiarity is the maximum development of the clear spaces on both surfaces of the two sexes; there is no doubt the original specimens were sent to those two authors from Piedmont and the small size of Hübner's suggests its belonging to a race of high altitudes, similar to milada.

VHipparchia statilinus, Hufn. race onosandrus, Frhst.:—When I last visited Martigny, on 19th August, there was no trace of this species yet; it is well known to be abundant there: a series of both sexes, in perfectly fresh condition, I possess, from Les Follaterres, bears the date of 26th August and Bainbrigge Fletcher found fresh females on 14th September. This race was described principally from specimens of the Upper Adige, but others, from Sion, are included in the original

description.

√ Hipparchia alcyone, Schiff. race genava, Frhst.:—The time of emergence of the males is the middle of July in all the localities, from Sierre to Aigle, after which only worn individuals are met with; a few females appear even before the males, at the beginning of the month, but the mass emerges about the 20th and a few laggards quite late in We need not go back to the question of the specific distinction between fagi, Scop. = hermione, L. and alcyone, which was so much discussed before 1909, when there seemed to be no way of drawing a line between them, owing to the great resemblance of some races of one to some of the other, giving an impression of continuous transition. The problem has, apparently, been satisfactorily solved by Jullien's discovery of the abdominal appendices (Bull. Soc. Lépid. Genève, 1909: Un problème résolu), which Fruhstorfer has called : "Jullien's organs" and which have different characteristics in those two insects, so that the latter author was able to separate their races and separate syriaca, Stdgr. and ellena, Obth., as two more species (Stett. Ent. Zeit., 1910, p. 71. with 22 figures of microscopic photographs by Jullien). Amongst other facts, that discovery proved that fagi = hermione does not exist at all in the Upper Rhone valley, as it had been suspected by Wheeler, Culot and others, who believed, however, in the presence, there, of intermediate forms, owing to the aspect of the race of alcyone of that region, which does point, superficially, to that of fagi and which only has the extreme alcyone facies in some individuals. Fruhstorfer has described this race as genava, from Martigny, laying stress on its darker appearance and on its broadly yellowish bands, as compared with his vivilo of the Jura, in which the bands are very developed and of a pure white, with slight traces of yellow only along their outline. noted no difference of aspect in any sort of locality, from Bérisal and Sierre to Sépy, at 900 m. in the Vaud, and I have sought in vain to witness the difference of habits, which Wheeler says exist at Aigle on opposite sides of the valley, i.e. that of resting chiefly on trees on one side and on rocks on the other. What I noticed was, that, in July, when the weather was cloudy and less hot and the alcyone were young, they liked to settle on the warm stones in the full sunshine and that, in August, when it was very hot and they were less vigorous and active, from old age, they usually looked out for shady spots and retired amongst the foliage, settling on the boughs of trees or on the stems of thick bushes; in the former case males were mostly seen, in the latter one, females became prevalent. I think some of these causes must, by a coincidence, have given Wheeler the impression that the side of the valley had to do with the difference of behaviour.

Aulocera circe, F.: —I have seen nothing of this species, which is reported from between Aigle and Sépey and from between Visp and Zermatt, so that I can only presume it belongs to the nominotypical German race, as does the one I have collected, in 1935, above Montreux, on the road from Glion to Val-Mont, 700 m., and in the garden of the Grand Hôtel du Mont Pélerin, 900 m., above Vevey, where males were

emerging just before the middle of July.

Eumenis (according to Wheeler this and the following species actually belong to a different tribe than the preceding, whereas, according to Fruhstorfer, in Seitz's F. Indo.-austr., p. 307, they should not even be separated generically from the Hipparchia; I think an intermediate conclusion is the most likely to be the correct one) semele, L. race cadmus, Frhst., and, probably, also race teres, Frhst.:—I first saw this species at Martigny on 31st July, when the males had evidently just begun to emerge, and both sexes were common, there, on 19th August, worn and fresh; Bainbrigge Fletcher has found a few fresh females as late as 14th September. The race is distinctly the dark cadmus with very reduced fulvus markings, of a deep and dull reddish tinge, and with no, or nearly no, white band across the hindwing on the underside, and, as a matter of fact, when Fruhstorfer described it, selecting specimens from the Upper Adige as typical, he also included those he had from "the Valais, the Simplon road, Zermatt, Geneva." Nevertheless Wheeler states that the form "with large reddish-or. band, of large size," which he actually refers to aristaeus, Bon., as Tutt had done in connection with English specimens, "is not uncommon as ab. in the Valais and is the more usual form at Bérisal." We need not be too astounded at the blunder in the name, which is only one instance amongst the many, which used to be made in times when geographical variations had not been worked out sufficiently to discern their real peculiarities and names were used on the strength of the most conspicuous feature in the original figure or description, regardless of the other more subtle, but racially more important, ones. Suffice it. then, to put things straight here, by making it clear that the form and race of semele described above belongs in some cases to cadmus, with unusually broad fulvous bands on the upperside, but with its characteristic deep, reddish, tone of colour and with no, or a very small, white band on the underside, and in other cases to teres, Frhst., with those bands of a yellowish, ochreous tone above and with a broad white band across the underside of the hindwings; the latter was described from Digne but I have found it to be widespread in the Alpine region and a single female I caught on the Rhone dyke, below Les Follaterres, belongs to it; there remains to be seen whether there are localities in the Rhone valley where it predominates, such as one finds them in other regions and notably where surroundings are arid.

Eumenis briseis, L.: I have not seen any Valaisian specimens from

either of its two known localities, on Mt. Ravoire, above Martigny, and at Naters, near Brig, nor have I found any data concerning the race to which it belongs.

✓ Apatura ilia, Schiff.:—Although I have not met with this species in any of its recorded localities, from Aigle to Martigny and Turtmann,

there can be no doubt the race is the usual nominotypical one.

✓ Apatura iris, L. race iris, L.:—In 1932 the emergence was distinctly later than usual: the mass of the males only appeared, for instance, at the Coulet, above Bex, about 5th August and a male, which had evidently just emerged, settled, on the 13th, on the top of a motor-car, standing before the door of the Hôtel des Salines, at Bex, where the porter captured it with his fingers and brought it to me, after I had, in vain, spent the morning stalking iris on the precipitous ravines of the Coulet; a female was very fresh on the Sépey road on the 17th. In 1933 I found some equally fresh males, in this locality, on 27th July. The race is quite of the typical average size and contrasts with

the giant race praegrandis, Turati, of the Anzasca valley.

Limenitis populi, L. race diluta, Spuler.:—According to Wheeler, "widely distributed, but very scarce in E. Vaud; not quite so scarce in the forests of the Valais." That author also informs us that the ordinary form in the E. Vaud, at any rate, at the lower elevations (Veytaux; Aigle; Tiniére valley; a mile beyond Sépey; all recorded from 13th to 26th June; a further record is a more recent one by Fison of a couple at Charpigny, north of the Tour, on 20th June) is the one, which is transitional to tremulae, Esp., with the white spaces very narrow and much suffused with brown, and the ground colour brown, without a trace of blue-black; also Fison names his couple tremulae. It seems to me this should be dealt with as a local race and designated by Spuler's name of diluta, described as having, in both sexes, "besides the spots of the discoidal area, only darkened smears in the marginal cellules above and beneath"; Seitz figures it in Vol. I, pl. 56e, as tremulae, but corrects this name in his text.

Limenitis drusilla, Bergstr. (=camilla, auctorum, nec L.=rivularis, Stichel, nec Scopoli, whose figure represents perfectly clearly Neptis lucilla, F., so that his name is not the one to be substituted in place of camilla, as Stichel has done) race drusilla, Bergstr.:—In 1932 a few very fresh individuals of both sexes turned up at Bex, on the outskirts of the woods, along the golf grounds from 19th to 25th of July and I then saw nothing more of the species, either there or anywhere else. In 1933 it was on the wing in the same locality and at the same time of year and I also found males just emerging at the "Grands rochers" of the Sépey road on 27th July. In 1934, evidently owing to the warm spring, emergence at Bex, in the usual place, was actually as early as the 20th of June. Wheeler states there certainly is a second generation, in this region, at the end of the summer. My specimens of the male sex are quite similar to Bergstrasser's figure and, as far as size is concerned, they are thus rather on the large side, whilst the females suggest transition to the very large herculeana, Stichel of the south, like the prodiga of Geneva, described by Fruhstorfer; they, however, only exhibit a slight trace of the characteristic additional white space of the latter, on the disc of the forewing, and it is entirely missing in the male, so that I take it, the Vaud race must not be considered race prodiga; there remains to be seen whether that feature is more accentuated in the September emergence; in Italy it is so quite constantly and I have applied that name to the III generation, so that it seems very likely the same should happen here, near the original locality of that form. There seems to exist no record of a spring generation, such as the one which emerges in Italy in May and which I have named prinigenia; there it is in time to produce the second generation at the end of June and in July.

\*\* Limenitis camilla, L., 1764, (=sibilla, L., 1767, et auctorum) race camilla, L.:—At Bex and at Lavey I found a few individuals on the wing at the end of June and fresh females still existed about 20th July. They all distinctly belong to the usual nominotypical race of Central Europe, as figured by Roesel, III, pl. 70, f. 1.3, to which Linnaeus gave the name of camilla in Mus. Lud. Ulricae, p. 304 (1764) and which are thus the "types" and unmistakably establish, as pointed out by Stichel in the Stett. Ent. Zeit., 1907, p. 29 and 35, that this name is the one the species must bear and not the later one of sibilla. previous existence of this camilla, L. also makes camilla, Schiff. a homonym, which can, on no account, be used for the other species of Europe and must be substituted by drusilla, as I have mentioned it The race of the Upper Rhone valley, of camilla, thus follows the usual rule of most species and resembles that of Central Europe more than the neighbouring race of Geneva and the Jura, which Fruhstorfer has named puellula and which is transitional to angustetasciata, Streckfuss, of Carniola and Italy, where it is particularly well characterized at Turin.

Euphydryas aurinia, Rott. race artemis, Fabr.:—A laggard female I found in the quarry by the St. Triphon station on 8th June and those collected by Bainbrigge Fletcher at Villeneuve, on 14th June, and kindly sent to me, belong to the form with a dull, uniform, fulvous colour on the upperside and an equivalent ochreous underside, to which Tutt applies the name of artemis. More specimens are required to make sure it is constant and racial in this region. It is found, as a rule, mixed with the brighter and more variegated form, Tutt considers nominotypical of aurinia, and it is so also in my series of Geneva. The interesting form frigescens, intermediate on both surfaces between true aurinia and glaciegenita, Vrty. (=merope, auctor. nec de Prunn.), I have described from a female collected by Wullschlegel, is probably from Jour-Brulée, 1500 m., above Branson, as Vorbrodt says the latter collector had found true aurinia in that locality.

Euphydryas, cynthia, Schiff. race cynthia, Schiff.:—Although this is not a regular inhabitant of the lowlands, in the Valais, it must be mentioned here, as an occasional visitor, because Warren informs me he has met with one individual at Branson, in the Martigny district. It is noteworthy that this is the locality where callidice was observed during some years. I have recorded in this Journal that I found a couple of cynthia at Oulx, in the Susa Valley, at an altitude of about 900 m., which, considering the differences of climate and surroundings on the two watersheds, correspond pretty well to the 500m. of Branson.

Melitaea didyma, Esp. race ignea, Vrty. and race subtarlonia, Vrty.:
—In the forward year 1934 Rütimeyer found males on the wing on 20th May; in the late years 1932 and 1933 there were none even in June and the males appeared on 10th July and were only abundant at Martigny on 25th July, whilst the females were only found on the

15.x.35

31st and several old ones were still on the wing on 19th August, when I actually also met with a perfectly fresh male; in the Vaud I only found it on the road to Sépey, at the "grands rochers," where both sexes were beginning to emerge on 27th July; at Sierre both sexes were fresh and old on 29th July, in the Pfynwald; in other localities I found a few individuals during the same time. Those three localities seem to afford good examples of the extreme local variations in the lowlands of this region, for they produce two perfectly distinct If we charitably abstain, as in other similar cases, from commenting on the frightful lists of misapplied names, beginning with meridionalis, graeca and occidentalis, we find in writings on the Valais, and we compare those races with the others which have been described and named, we find that they quite resemble the two I have recorded from Northern Italy in the Ent. Rec. of 1929, p. 74. At Martigny and at Sépey I was interested to find didyma, on the whole, has the same facies as race ignea I have described from the shore of Lake Maggiore, at Intra, where, however, it is on the wing at the end of April and at the beginning of May, instead of July, as in the Valais; the difference of surroundings is, thus, evidently made up by that of the season; the interesting point of this resemblance is that I had remarked, in my description of ignea, how its features very much recalled those of the nominotypical didyma of Central Europe, and I had concluded it was a branch of the latter exerge, which must have come down into Italy and mixed, there, with race tarlonia, Frhst., of the Central exerge, whose haunts are the greater part of the Ossola valley, receiving from it a strain one can detect in about 25% of its The fact that ignea exists also in the Valais strongly sustains my hypothesis that it is "a large and gaudy southern race of the nominotypical exerge," to quote my own words, as we have seen that, in most species, the Valaisian race is either the same or closely allied to that of Central Europe; the other fact that the larvae, on Lake Maggiore, feed up in March, instead of May and June, points, too, to their having the constitution of the Northern exerge. Vice versa, I have also pointed out in my aforesaid article, p. 72, that, in the case of didyma, it is quite obvious that the Central exerge has spread northward considerably, overlapping and interbreeding with the Northern one and producing the synexerges rubida and subrubida. Here again, then, it need not surprise one that in the Valais, in the dry and hot Pfynwald, one should meet with another race, which belongs precisely to the Central exerge and which is nearly the same as its race tarlonia of the south side of the Simplon, but much smaller. I had recorded a race of this sort, giving it the name of subtarlonia, from the Pian del Sole, 900 m., above Lake Maggiore, where I had collected it from 2nd to 9th June, 1922, and that name applies perfectly to my Sierre series of specimens; amongst them there are even some, which exactly resemble, by their yellowish tone of fulvous and by their thin black markings, recalling the less extreme examples of marsilia, Frhst., the form praemarsilia, Vrty., of the late emergence of subtarlonia at the Pian del Sole, and thus complete the resemblance between the didyma from there and from Sierre, remarkably.

I must furthermore note that there exist, in the Valais, two races also at high altitudes, corresponding to the two former of the lowlands and presumably belonging to the Northern and to the Central exerges,

respectively: Some specimens, I have from Zermatt and Chandolin, belong to the first and consequently are very similar to its alpine race rectealpina, Vrty., described from Bormio, in the Rhaetian Alps; they differ from ignea by their smaller size and by their duller colouring in both sexes; the males are of a deeper fulvous tone and the females are, on the contrary, paler and often yellowish white, rather than fulvous, besides being preponderantly of the melanic form usually known as alpina, Stdgr. The other race is larger and more like the darkest tarlonia also in colouring and pattern; the female figured by Seitz, pl. 66, under the name of alpina is of this sort, as stated by me in the Ent. Rec., l.c., p. 89, where I have named this race atralpina. I have shown, there, that the name of alpina, Stdgr. cannot be used for any Alpine race: only for the dark female individual form of any region.

Melitaea cinxia, L. race pilosellae, Rott.:—Not uncommon in certain areas, such as the golf ground of Bex, the meadows along the Gryonne and the clearings in the woods on the hill of St. Triphon, where I found both sexes emerging and some individuals already old during the earliest days of June, 1933, whilst a few, in the latter condition, were still to be seen at the end of the month. In the survey of the races of this species, I made in the Ent. Rec., XL, p. 143 (1928), I noted that they are nothing like the striking geographical races and exerges of most other Melitaea. I added "the nominotypical one of Scandinavia is small and of a bright, clear, fulvous, with a thin black pattern. the whole of France one usually meets with a form, which only differs from the preceding by its slightly larger average size, so that one is scarcely justified in distinguishing it and utilizing the name of pilosellae, given by Rottemburg to the Parisian insect described Geoffroy and figured very well by Esper, pl. 47, fig. 3," under this name, two years later. In most localities of France the average pattern is thicker than in this figure and so it is in the Vaud, but not as much so as in race delia, Schiff. of Austria and, although individual variation is considerable everywhere, on the whole, this Rhone race is quite like the widespread French one. The most important feature of race pilosellae, is that it produces, very often, a partial second generation, of minute size, which never occurs either in Scandinavia or in Italy. Wheeler mentions no records of it in Switzerland; Vorbrodt says it does occur there, exceptionally, in August, whilst Fruhstorfer actually goes so far as stating that at Geneva, in the Valais and southern France it produces every year a very distinct summer form, he names phaira, recognizable from the I generation by its paler colouring and by its thinner black bands, especially on the forewing.

Melitaea phoebe, Schiff. (previous to Knoch and not to be discarded, as a nom. nudum, unless the same is done in connection with most of the names of that author) race monilata, Vrty.:—Vorbrodt states two generations are usual in Switzerland, in May and June and in July and August. There seems to be something wrong about this, as the second, if it existed, would be more likely to be on the wing at the end of August, like the ones of dejone and parthenoides in this region and like phoebe's in Italy, whereas there are no records of the species at that season. The dates of captures, he has collected, distinctly point, like my own, to a single, long-drawn, emergence from June to the end of July. I witnessed that emergence, between Vernayaz and Martigny, from 3rd July to about the 18th, after which all the individuals were

decidedly old, and I found both sexes abundant, but not very fresh, in the Pfynwald on the 29th, whereas some specimens collected there by Reverdin on the 11th are quite fresh. I was glad to find that the lowland race of these localities, for whose name of monitata I am responsible, having erected it on the strength of a few examples obtained from Wullschlegel's widow many years ago, is decidedly very well characterized in the great majority of individuals; it gives one the impression of being a synexerge between the Northern and the Central exerges of the species: its clear fulvous tone and the comparatively thin and light coloured black markings recall those of the widespread lowland race tusca, Vrty., of Italy, whereas its characteristic central row of large, deep black, spots, standing out and contrasting with them, in a way which is not seen in tusca, seems to reveal a strain of the nominotypical phoebe of Vienna, where they are often seen to the same degree, but associated with a thick black pattern and with a rich colouring in general, standing quite opposite that of monitata. The synexerge theory is, moreover, suggested by the remarkable individual variations of my Sierre series: some are quite similar to alternans by their large size and their comparatively thick black pattern and variegated fulvous colouring, others are quite tiny and have a thin pattern and an even, ochreous, ground-colour, so that they are a close approach to the form emipauper, Vrty., which constitutes the II generation in Italy.

Concerning alternans, Seitz, described from Zermatt, it may be said that that name applies to the race of all the Valaisian mountains, which is distinctly characterized, as compared with most others of the species, by the variegated colouring of the fulvous, alternating reddish tones to ochreous ones in the various parts of the wing, and thus resembling, in this respect, suboccitanica, Vrty., of France, from which it chiefly differs by the thicker black pattern, so that it is transitional between the latter and the still blacker nigroalternans, Vrty., of Piedmont; in all three some individuals exhibit a sharp contrast of fulvous and yellow colours and some are nearly of an even, fulvous, tone, but those names can and must certainly be used for the races, taken as a whole. The much larger, less variegated and more deeply coloured race of the neighbouring Anzasca valley agrees, on the contrary, well with koios, Frhst., described from the Upper Adige, but found in many

warm valleys of the southern watershed of the Alps.

Melitaea diamina, Lang. (=dictynna, Esp., prim. homon. I have pointed out in the Ent. Rec., 1930, p. 151) synexergic race composita, nom. nov.: - Emergence took place in the plain, between Vernayaz and Martigny and on the golf-links of Bex from 20th June to about the same day of July, a remarkably late time, considering there are years when it appears in the middle of May, such as in 1934; on the left bank of the Rhone, at Bouveret, whence Wheeler records "remarkably fine specimens" the species must have been quite over on 2nd July, for I was unable to find it on that day, whilst Bainbrigge Fletcher found it just appearing at Villeneuve on 14th June and, in 1934, I found both sexes fairly common, but extremely worn, on the 28th June, in the meadows to the north of the St. Triphon hill; on the road to Champéry, at about 900 m., it was, instead, still fresh on 8th July; at the Pont de Nant, 1400 m., its emergence lasted from the 4th to the end of the month and at Javerna, 1700 m, there were many perfectly fresh individuals on 9th August.

In all these localities, and also in the Lötschental, there exists nearly the same race, notwithstanding the remarkable differences of altitude and of surroundings. At first I was quite puzzled as to how it stood in the classification of the races of diamina, I have made out in the Ent. Rec., XLIII, p. 66 (1931), but an analysis of its features soon showed that its chief peculiarity consists precisely in not belonging fully either to the Northern or to the Central exerge, but in exhibiting a mixture of certain characteristics of both, which have evidently met and interbred, in this intermediate region, in very much the same way as those of didyma and of phoebe, but with a more com-

plete combination as a result.

The chief points to notice are, as usual in this species, on the underside: The bright russet colour, I have pointed out as the principal characteristic of the Northern exerge, in the transverse bands of the hindwing, notably in the nominotypical diamina of central Europe and to the highest degree in its alpine race oriental pestris, Vrty., of the Eastern Alps, is not exhibited to its fullest degree of richness and brightness in any of my specimens and exists, in a paler tone, only in about 10% of them; the darker chocolate tone, which replaces it, not uncommonly, in central Europe, is much more abundant here (40%) and it is accompanied, to about the same extent, by an unusually blackish colour, which constitutes a peculiarity of this race, for I have rarely seen it from elsewhere; the remaining 10 or 20% consists of well characterized alpestris, Frhst., of the Central exerge, with the aforesaid markings of a pale yellowish russet or partly quite of a straw yellow, such as one never meets with in any pure strain of the Northern exerge. The latter, scarcer, specimens also betray their origin from the Central exerge by the considerable reduction and partial effacement of the black markings on the underside of the forewing, which is the second characteristic feature of that exerge, when large series of both are compared. Instead, in all my other Rhone specimens those markings are more complete and prominent than I have seen them in any other European race, except the peculiar wheeleri, Chapm. of Reazzino so that, when they exist together with corresponding thick ones of the hindwings and the deepest colouring described above on these wings, they strongly recall the Siberian mountain race erycina, Led. I propose naming this race composita, selecting the latter form, as its typical individual one, owing to the fact it is the most peculiar and the most abundant. I might mention that a single couple I have from the Simplon (either Bérisal or the Hospice) is, on the contrary, a highly characterized alpestris, with thin markings and the palest colouring on This form seems to be decidedly more frequent in the plains than at the Pont de Nant, where, therefore, composita is most I might add all my specimens from Geneva (Versoix) are perfectly nominotypical diamina, with a bright russet underside.

Melitaea parthenoides, Kef. (=parthenie, auctorium, nec Borkh.) race completa, Vrty., with I gen. completa trans. ad communis, Vrty.:—Both sexes of the I generation were emerging, during the first days of June, in many localities between Lavey-les-Bains and St. Triphon, in the damp meadows; the species then entirely disappeared until the 18th and 21st of August, when, in 1933 and in 1932, respectively, I found large numbers of it, emerging in a mass along the Gryonne, under Bouillet, but it was not out anywhere else before I left. In 1934

Rütimeyer found both sexes at the Follaterres on 20th May.

15.xi.35.

Although individual variation is extremely broad, the II generation seems to agree very well, on the whole, with the most widespread one of Central Europe, I have named completa, from the Parisian district, in my paper on this species in the Ent. Rec., 1931, p. 136. generation, on the contrary, is not like the communis, Vrty. of that region, which differs distinctly from completa by its much larger size; in the Rhone valley there is scarcely any perceptible difference between the generations and, at the utmost, one might call the I one completa trans. ad communis, on account of its slightly larger size and thicker A considerable number of individuals of both generations vary in the direction of the more heavy black markings of semiplena, Vrty., of some localities in Central Europe, thus accentuating the contrast between this race and sphines, Frhst. of the Geneva district, in which they are, on the contrary, very thin and the fulvous colour is

lighter and brighter.

Note: -As I am dealing with this region, I take the occasion to record that in the mountains there exist two distinct races of varia, Meyer-Dür.: in the Entom. Rec. of 1931, p. 152, I remarked that the nominotypical one of the Eastern Alps does not exist in the Western Alps and that the specimens from the Valais (no exact locality) figured by Herrich-Schäffer, figs. 270-4, belong to the western race, I have named, there, variabella, although they are not quite so distinct from the former as is usual in the Cottian and in the Maritime Alps, whence are my typical specimens. As a matter of fact, only figures 273 and 274 are distinctly like the latter; the male and female of figures 270 to 272, which correspond exactly to specimens of the Simplon Pass, presented to me by Bainbrigge Fletcher, are small, heavily marked and transitional to the nominotypical eastern varia. It must also be added that a series I have from Zermatt belongs entirely to the same race as the latter by its very small size, frailness, pale, dull, colouring and very melanic and rather translucent females. There remains to be found out what localities of the Valais the two races respectively inhabit; it is evidently the transitional zone between their (eastern and western) areas.

Melitaea parthenie, Borkh. (= aurelia, Nick.) race micromelanica, nom. nov.: - It is difficult to define races in this species, because individual variations are considerably more conspicuous than the subtile local ones. Fruhstorfer, in his little monograph in the Archiv. für Natury., 83 Jahr., 3 Heft, p. 174, lays stress on the surprising amount of local variation there is, however, in the Valais. The opposite, extreme ones, are, according to him, that of the Simplon ("very large, with distinctly large, light ochreous yellow markings," in his own words), which I have described as transitional to rhaetica, Frey. in the Ent. Rec., 1931, p. 188, and named poenina, and that of the lower Valais, as represented in his collection by a series from "Chiélboz, 1200 m.," above Fully, and opposite Martigny: "large, dark, entirely aureloide individuals, with clear, male-like females, which are thus not variegated." Some specimens, I have, collected by Wullschlegel, who frequented that locality very much, correspond to this description and I have already remarked in the Ent. Rec., l.c., that, to my mind, they can be defined as similar to Nickerl's race and form aurelia, which is the most common and widespread one in central Europe, but with distinct signs of transition to race imitatrix, Vrty., of the Cottian Alps.

Fruhstorfer, then, mentions a transitional race, between those two extreme ones, from the Rohrberg, above Brig, and a fourth race, he found between the Bistenen Pass and Vispeterminen, which is characterized by its smaller size than any of the preceding and by being much darker than the Rohrberg one, so that it gives one the impression of being an alpine race. Specimens from Evolena, 1500 m., in the neighbouring Val d'Hérens, sent to me by Bainbrigge Fletcher, answer this description perfectly, as they might have been expected to.

What, on the contrary, might have surprised one is that the race of the plain, in the Pfynwald of Sierre, belongs to it too, if it were not a known fact that many species have quite an alpine facies in this locality. It is the most heavily marked and the smallest form of the species, the forewing, from the base to the tip measuring, in both sexes, about 15 mm., against an average of 17 in poenina. The name of micromelanica will be useful to designate it and can be used for the race, as a whole, where it predominates. At Bérisal I have found it mixed with poenina and Oberthür's figures in his Études Lépid. Comp., IV, figs. 359-60, from this locality, are a near approach to it, but it only occurs there occasionally, whereas, inversely, in the Pfynwald and still more so at Evolena transitions to poenina are the exception.

Melitaea athalia, Rott. exerge helvetica, Rühl (=pseudathalia, Rev.) race veragrorum, n. nov., and race subluciflua, n. nov. :—Curiously enough, the athalia of this region, although they are amongst those which have been collected most, have remained undetermined to this day, as regards their position in connection with the other described and neighbouring races. Fruhstorfer has described the widespread one of the Western Alps under the name of celadussa and that of warm and dry localites, from Geneva and the Jura to the coast of Eastern France, under the name of luciflua. He has given an account, in his monograph of this species, in the Archiv für Naturgeschichte, 83 Jahr., Abt. A, 3 Heft., p. 182 (July 1919), of its variations in the Tessin, where his melida of dry localities corresponds to luciflua, a larger, brighter and more boldly marked race resembles his delminia of S. Tyrol and a small, dark, one of high altitudes approaches nominotypical helvetica of Graubünden. Rocci, in the Boll. Soc. Ent. Ital., LXII, p. 183 (Dec. 1930) and in the Memorie, X, p. 10 (Sept. 1931) has discussed at length and illustrated also genitalically the two forms and races divergens and maximaeformis of the the lowlands of Lombardy and Piedmont, which correspond to the largest race of the Tessin just mentioned. has shown that the name of delminia cannot be applied to them because they somewhat differ from it in general looks and especially because its genitalia belong, on the whole, to true athalia, with only a few transitions to helvetica, whereas divergens and maximaeformis are perfectly pure helvetica. To divergens I think one can refer also the race I have collected in the mountains around Lake Maggiore, at Pian del Sole, 900 m. and at the Passo di Colle, 1200 m. and that of Vanzone, 700 m. in the Anzasca valley. They are all on both surfaces, of a rich, bright fulvous, with bold, black, markings standing out sharply, and a more or less limited amount of black suffusion at the base, as in delminia, and the females do not differ as much from the males as they do in most races, the fulvous not being paler and more variegated, or very little more, and the pattern not being broader, nor shaded in outline and diffused. Only in the totally alpine locality of

Macugnaga, at 1300 m., is a tendency to vary in the direction of nominotypical helvetica discernible, and then in size more than in colour and pattern. The race of hot and dry localities in Piedmont, corresponding to luciflua, of the other watershed of the Alps, by its small size, pale colouring and thin pattern, has been called hastensis, Rocci

(Memorie Soc. Ent. Ital., X, p. 208 (June 1932).

intermediate between it and divergens.

Comparing the athalia of the Valais and the Vaud with the preceding, one finds their local variations, although they blend individually and locally into one another, can be classified in the three usual standard forms and races: one of the damper lowlands, one of the drier ones and a third of the higher and more alpine surroundings. None of these can actually bear any of the existing names and, notwithstanding that they are, all three, intermediate between some of them, their aspects are, on the whole, so distinct and constant that the "trans. ad" expression would not convey them and determine their peculiarities at all satisfactorily, besides being cumbersome and unpractical for butter-flies which are very much handled in collections. I thus propose

naming them as follows: Race veragrorum, as represented by a large series I have collected, from the first days of June to the middle of July, in the damp meadows from Bex to the Lake, is most nearly allied to divergens; the male, in fact, can be called exactly like it, by its size, its rather broad and rounded wings, and, on both surfaces by its rich, warm, fulvous and its thick black pattern, more or less uniform in extent on all the parts of the wing, standing out sharply. The females, are on the contrary, entirely different from those of divergens, because very few resemble the other sex, as they usually do in the latter; they are of larger size than the male, and some are very large, somewhat as the maximaeformis found amongst the divergens in some localities, but far less frequently, according to my experience; they recall celudussa, much more than divergens and maximaeformis, by the tone of fulvous, which is usually distinctly paler and duller than in the male and with a tendency to be more variegated, and by the black pattern, which is usually less deep in tone and more shaded in outline, but all these features are not as pronounced as in celadussa and the underside, in particular, is always warmer in colour and bolder in pattern than in the latter, so that it is

Race subluciflua of the dry and hot, rocky, mountain sides, such as along the path that rises at the back of the La Bâtiaz tower, at Martigny, is smaller than the preceding, of a less saturated tone of fulvous on both surfaces and has a black pattern which is either thinner, and, in some cases, very much thinner, all over the wings, or leaves, at least, a broader space of fulvous between the central, S-shaped, band and the thin inner submarginal one; the underside is, especially in the females, but even in some males, quite discoloured and with the thin black streaks of celadussa, such as one never sees them in veragrorum; nevertheless, none of these characters, which are precisely those of luciflua, ever reach, in the specimens I have met with, the extreme degrees they usually exhibit in the latter, in its typical Geneva locality and in many of the S.-E. of France, though Fruhstorfer states luciflua does occur in the Valais, without furnishing further indications; as no spots would be more likely to produce it than those mentioned above. I conclude it can only be an unusual individual variation there and

the name can, anyhow, certainly not be used for the La Bâtiaz race, as a whole.

Race subhelvetica, nom. nov. is another of those which are a cause of vexation to the student and especially to the collector, on account of its intermediate features, which cannot be correctly classified under the heading of the most extreme variation in the same direction and notably under that of nominotypical helvetica, Rühl. This, in its typical locality of Graübunden and Filisur, in the Grisons, is small and remarkably pale and dull in colour, on both surfaces and in both sexes; the black pattern is brownish in tone, even in the male, usually broadly diffused and shading off into the ground-colour, but mostly, as well described by Rühl, with an unusually broad space on the disc, beyond the central S-shaped band; on the hindwing that space is increased, as a rule, by the obliteration of the latter and contrasts with the broadly darkened basal area, as well as with the thick submarginal bands, whilst on the underside there is a corresponding broad area of pure silvery white and very broad submarginal lunules of the same colour; the black streaks, on this surface, are even thinner than in celadussa and in the females the russet is replaced by a pale brownish yellow, and, in some males, by a dirty brown. The widespread mountain race of the Valais and the Vaud, though closely allied to veragrorum, shows a more or less decided tendency to vary in the helvetica direction; none of its characters, except the small size, are, however, ever fully reached and, compared with it, it at once strikes one as being richer in colour, less broadly and more sharply marked and in not having the peculiar broad space on the disc at all as prominently, on either surface. I name it, in consequence, subhelvetica from a series of the Lötschen (Wyler-Ried, Ried Fafleralp and Platten). A few specimens I have from the Simplon seem transitional to veragrorum, being less alpine in looks.

Melitaea dejone, H.-G., exerge berisalii, Rühl, with II gen. berisalella, nom. nov. :-Although the spot, where these insects come down the mountain side to the plain, near Martigny, in considerable numbers. has been very much encroached on and spoilt by the construction of the new road to Finhaut, I found them there from 28th June to 10th July, when the females were numerous too. I possess the II generation collected by Reverdin on the 22nd August. It is distinctly different from the I by its smaller size: the actual measurement of the forewing. from its root to the apex, where the fringes begin, is of 18 mm. in the male, against 19 to 21, and 18 to 20 in the female, against 21 to 23, but the wings are strikingly longer, narrower and more pointed, so that their surface and their size are, in reality, smaller than those figures seem to show; the black marginal band is comparatively rather broader in many examples; I thus consider it worth distinguishing by the The area of this species seems to extend from name of berisalella, Martigny as far up the valley as Stalden and Varen, near Loèche, Saillon and Sierre being the chief intermediate localities whence it is known, for it is very local and more usually found in the vineyards, though plentiful where it exists. The II generation is said to be on the wing till September.

Sheldon has shown, in the Ent. Rec. of 1916, p. 263 and pl. IV, that berisalii differs genitalically from dejone in the few specimens he has examined, but he states he considers it would not be wise to

## British Dipterological Literature (II).

An annotated List of Systematic Monographs and Books, published in English, dealing with British Diptera.

By H. W. ANDREWS, F.R.E.S.

The following Papers and Monographs have come to my notice since the publication of my first "List" in *The Entomologist's Record* for March 1931.

- General.—Percy H. Grimshaw, F.R.E.S.: "Introduction to the Study of Diptera, with a Key, for the Identification of Families." (Published in Proc. Royal Physical Society, Vol. 32, pt. 4, pp. 187-215: also obtainable as a pamphlet, price 2/-, from Dr. A. C. Stephen, The Royal Scottish Museum, Edinburgh). This is a publication, not only for beginners, but for all students of British Diptera. The introduction is very lucid and illustrated with figures of chaetotoxy, venation, etc. The Key is adapted from Lindner's Die Fliegen der palaearktischen Region, and there are six plates. It is to be hoped that the author will continue with similar publications for the individual families.
- ----do----F. W. Edwards: "Some Perthshire Diptera" (Published in The Scottish Naturalist, May-June and July-August, 1933, pp. 87-117. Gives records and descriptions of Mycetophilidae, Chironomidae, Ceratopogomidae, Tipulidae, Empididae, Dolichopodidae, Phoridae and Syrphidae. Over 20 species new to Britain are recorded, including 4 new to science.

## NEMATOCERA.

do—F. W. Edwards: "Notes on Highland Diptera, with descriptions of six new species." (Published in the Scottish Naturalist, March-April, 1932, pp. 43-54). Brief notes on sundry species mainly Nematocera with detailed description of six new species, 1 plate of wing venation.

Tipulidae.—H. Audcent: "British Tipulidae" (Diptera Tipulidae). (Published in Transactions of the Entomological Society of the South of England, Vol. 8, part 1, October 1932: pp. 1-54; can also be obtained as a separate publication from E. Rivenhall Goffe, Hon. Sec., Society for British Entomology, 102, High Street, Southampton: price 4/-). A comprehensive and up-to-date monograph consisting of Introductory remarks, Analytical tables, and notes on species, with localities; Bibliography, Index, Label list of genera and species, and 3 plates of wing and structural details.

Cecidomyiidae.—Richard S. Bagnall: "The Gall-Midges (Cecidomyiidae) of the Aspen (Populus tremula) in Scotland, with Description of a New Harmandia Gall." (Published in The Scottish Naturalist, May-June, 1932, pp. 13-70). Gives a key to the galls concerned and a list of Scottish records.

———do.——Richard S. Bagnall: "A Preliminary Account of the Scottish Gall-Midges (Diptera—Cecidomyiidae)." Published in The Scottish Naturalist, May-June and July-August, 1932.) After Introductory Remarks gives a list

of over 400 species recorded from Scotland.

Ptychopteridae.—H. Audcent: "British Liriopeidae (Diptera Nematocera)." (Published in Transactions of the Society for British Entomology, Vol. I., Part 2, November, 1934, pp. 103-118.) Descriptions of the genus and species of Lirope, Mg. (Ptychoptera, Mg. of Verrall's List), with Analytical tables, Bibliography, and 4 Plates of wings and structural details.

## BRACHYCERA.

Tabanidae.—E. Rivenhall Goffe: "British Tabanidae (Diptera) with an account of the principal variation, with descriptions of a number of New Forms and of some Additions to the British List." (Published in Transactions of the Entomological Society of the South of England, 1930, pp. 43-114. Obtainable separately price 5s.: see under Audcent, "British Tipulinae" above). A revision of the Tabanidae in Verrall's British Flies, Vol. V. Analytical tables with short descriptions and localities: 2 Plates: Bibliography and Synonymic List of The British Tabanidae with their named forms of the Palaearctic Region. A most useful monograph especially in view of the cost of Verrall's Vol. V., the only other publication I know of containing this group.

do.—J. E. Collin: "A review of Mr. E. Rivenhall Goffe's paper on Tabanidae." (Published in The Entomologiet's Record, March, 1931, pp. 37-39.) A critical review of Mr. Goffe's work above with notes on several species.

----do.——E. Rivenhall Goffe: "Male Tabanidae (Dipt.) in the New Forest, Hants, 1934." (Published in Journal of the Society for British Entomology, Vol. I., Pt. 4, October, 1935, pp. 100-109.) Notes on habits, variation, etc., of male Tabanids, forming a useful supplement to the author's "British Tabanidae" above.

Asilidae.—B. M. Hobby: "A Key to the British Species of Asilidae (Diptera)." (Published in Transactions of the Entomological Society of the South of England, Vol. 8, Part I., November, 1932, pp. 45-49. Obtainable separately price 1s. 9d.—see Audcent "British Tipulinae" above). Analytical Key to the British species of the four subfamilies of Asilidae with brief bibliography, but no detailed descriptions or localities. Again, a help to students who have not got Verrall, Vol. V.

## PROBOSCIDEA.

Platypezidae.—J. E. Collin: "Notes on British species of the genus Microsania, Ztt., Diptera (Platypezidae)." (Published in the Proceedings of the Entomological Society of London, 1933, p. 146.) Analytical table of 3 British species of

this genus with notes on habits.

----do.—F. W. Edwards: "Microsania pectinipennis, Mg. (Dipt. Platypezidae) attracted to bonfire smoke," and "Some further records of smoke-flies." (Published in Journal of the Society for British Entomology, Vol. 1, Part 2, October, 1934, pp. 31-32.) These are not analytical papers but contain notes on the extraordinary habits of this smoke frequenting genus.

Pipunculidae.—J. E. Collin: "The British Species of the genus Verrallia (Diptera)." (Published in the Entomologist's Monthly Magazine, October, 1931, pp. 234-236.) A revision of the genus as given in British Flies, Vol. VIII.

Analytical table, notes on species and localities.

Syrphidae.—J. E. Collin: "Notes on some Syrphidae (Diptera)." (Published in the Entomologist's Monthly Magazine, July and August, 1931, pp. 153-159, 177-182.) Corrections of Nomenclature and descriptions of several species new to Britain.

Oestridae.—Austen, E. E.: "Notes on the Oestrine parasites of British Deer." (Published in the Entomologist's Monthly Magazine, January, 1898, pp. 8-13.) Records, and Notes on habits with brief descriptions. This paper was

accidentally omitted from my first "List."

Tachinidae.—C. J. Wainwright: "The British Tachinidae (Diptera)."

First Supplement. (Published in Transactions of the Entomological Society of London, Vol. LXXX., December, 1932, pp. 405-423,) This paper in the author's words "records and describes a dozen or more additional species to those given in British Tachinidae (vide my "List" p. 5) and adds further information regarding some of the earlier known ones."

Anthomyiidae.—J. E. Collin: "Notes on Perthshire Anthomyiidae, etc." (Published in *The Scottish Naturalist*, July-August, 1933, pp. 119-123.) Records and describes 5 species of *Anthomyiidae* and one of *Cordyluridae*; all

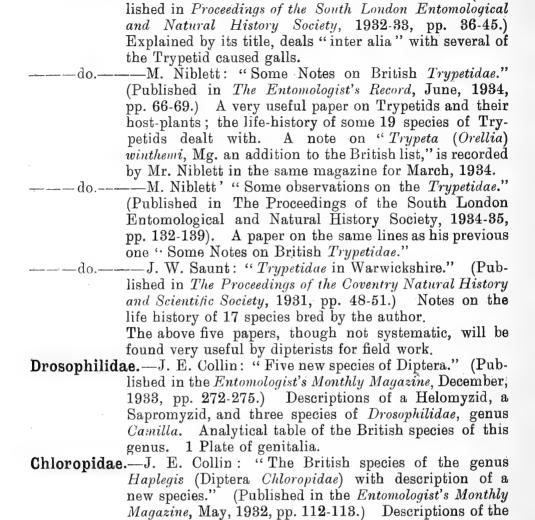
new to Britain.

Cordyluridae.—R. H. Meade: "A descriptive list of the British Cordyluridae." (Published in the Entomologist's Monthly Magazine, July and September, 1899, pp. 169-177, 217-224.) Analytical tables and brief descriptions of species. This was omitted from my "List" and I record it with some doubt as being out-of-date, but in view of the scarcity of the literature on British Acalyptrates, I give it for reference.

Trypetidae.—M. Niblett: "Some Gall-causing Trypetidae." (Published in The London Naturalist, 1930). Notes on the

host-plants of several gall-making Trypetids.

do. M. Niblett: "Plant Galls and their causers." (Pub-



Though not strictly covered by the scope of this "List" those who can read French and pay the somewhat high price of fr. 300 will find that Seguy's "Muscides Acalypteres et Scatophagides" (forming Vol. 28 of the "Faune de France," and published by Paul Lechevalier et Fils, 12 Rue de Tournon, Paris VI.) fills up a big gap in our British Dipterological Literature. There are 832 pp., 903 text figures and 27 plates each with 12 wings.

four British species, with localities.

I would thank various correspondents, especially Mr. Percy H.

Grimshaw, for their help in compiling this List.





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