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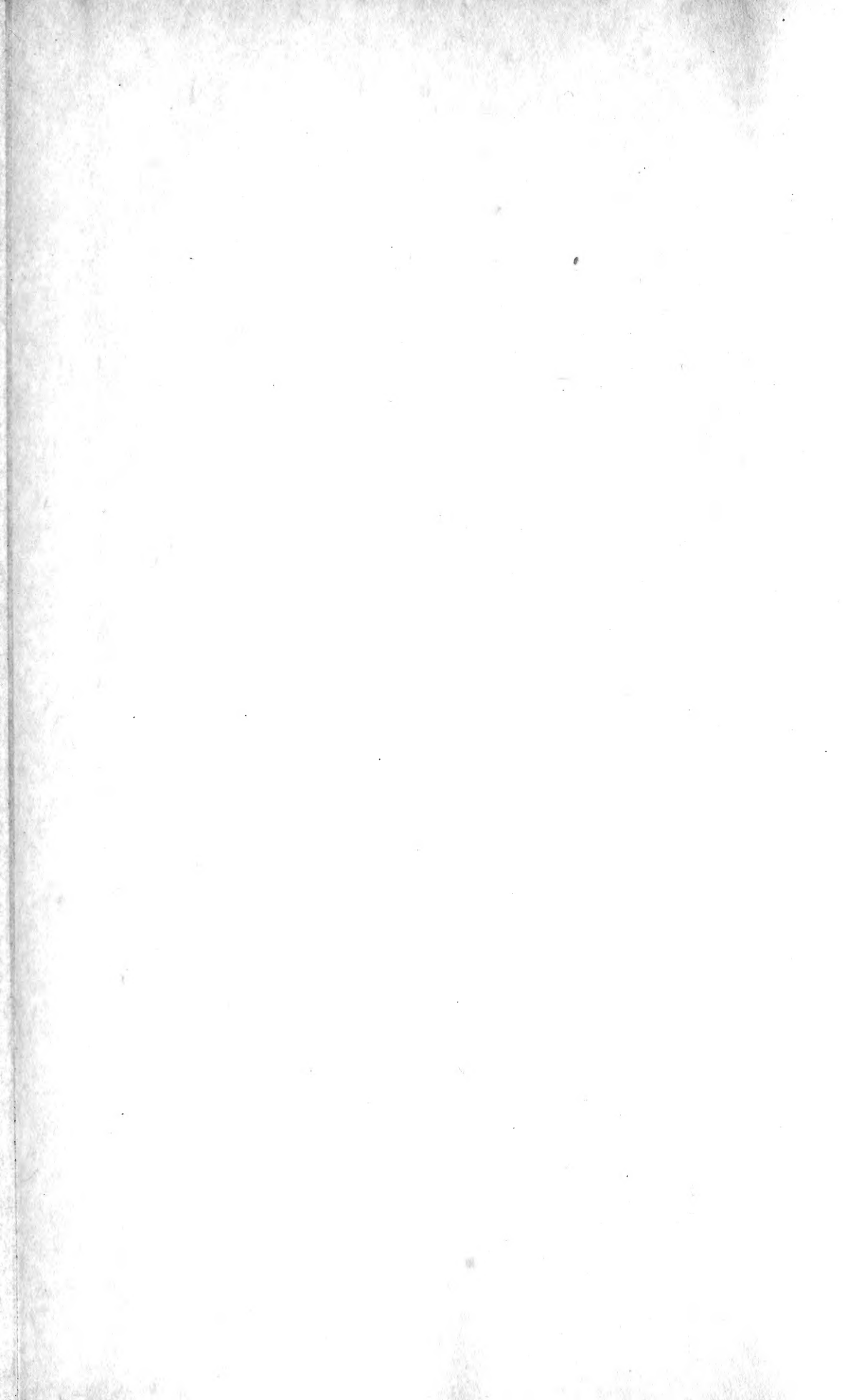
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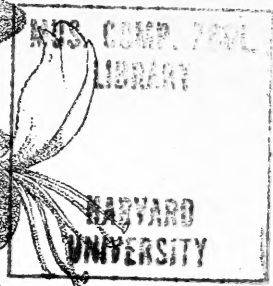
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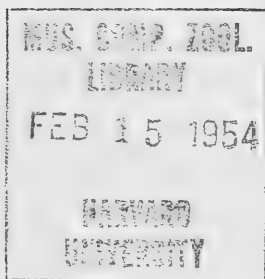
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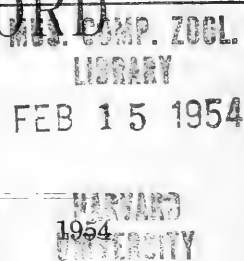
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Some Observations on *Pieris napi* Linn.

By N. T. EASTON, F.R.E.S.

In his paper on cold storage of Pierid pupae (*Entomologist*, **86**: 85) S. R. Bowden mentioned that he had obtained offspring from two-year-old pupae. He tells me that these were wild-stock *Pieris napi* L. stored at 1° C.: one ♂ and two ♀♀ were used in the experiment, but only one was observed to pair and no more than three of her 20-odd eggs hatched.

This unsatisfactory outcome cannot by itself prove very much, but this year (1953) I carried out a similar pairing between a 1951 ♀ and a 1953 ♂ which was most successful. This pairing resulted in a brood ('53/*E*) of very large pupae, six of which have produced males of larger than normal size this autumn. I give the details of this pairing below.

On 25.7.53 Mr. Bowden removed from storage at 1° C. a green pupa of his 1951 brood '51/ π , which produced on 7.8.53 the ♀ π 12, ab. *pallida* Frohawk and heterozygous for *sulphurea* Schöyen. I received this insect on 10.8.53 and caged her with a wild ♂ *P. napi* caught in my Reading garden on 11.8.53; a pairing was obtained the same afternoon. My hopes of a successful pairing sank as they were still *in cop.* at dusk, some five hours later, whereas the normal time spent *in coitu* is between $\frac{3}{4}$ and 2 $\frac{3}{4}$ hours (J. A. Thompson: Some Preliminary Observations on *Pieris napi* L. *Proc. S. Lond. ent. nat. Hist. Soc.*, **1946-7**, p. 115).

I separated the pair manually, as gently as I could, just before dark and attempted to procure another wild ♂ the next day without success. At about noon on the following day a further pairing, with the same wild-caught ♂, took place and lasted this time for the normal 2-hour period. Separation was accomplished without manual aid and eggs were being laid on 13th August and following days.

This wild ♂ was subsequently removed and used to fertilize an *adulwinda* Fruhs. ♀ which later produced a small brood.

Most of the eggs of brood '53/*E*. hatched and eventually 50 very large pupae resulted, of which 27 were of the green form. The only casualties were one young larva which died on 27.8.53 and two more which died in pupation on 10.9.53. No "blacking-off" was experienced and all pupae appear very healthy.

Since the emergence of the six very large males between 27.9.53 and 1.10.53 no further colouring of pupae has taken place. 44 pupae remain and will probably pass the winter in this state.

The parental brood '51/ π was mentioned in S. R. Bowden's paper, already quoted. He reports that it was not particularly strong or healthy, as eight of the original 48 pupae "blacked-off" in natural

storage during the first autumn and winter. Six buff pupae, stored at 1° C. from 20.1.52 to 14.6.52, yielded five butterflies (and one Tachinid), whereas the 16 green pupae stored at 1° C. from 20.1.52 yielded only six butterflies in August 1953, the rest dying at various intermediate dates.

Three points thus stand out and these may be summarized as follows:—

1. Female pupae in cold storage can remain fully fertile after two years.

2. A female which, owing to a mishap, had to be manually separated after a first (and presumably abortive) pairing, was able to produce fertile ova by the second pairing with the same male (cf. Thompson, *ibid.*, pp. 115, 116).

3. In spite of the age of the pupa and the possibly weak stock from which it came, pupae and imagines of larger than normal size were produced.

A Further British Specimen of *Heterographis oblitella* Zell.

By H. C. HUGGINS, F.R.E.S.

There appears to be less known of *Heterographis oblitella* Zell. as a British species than of any other Phycitid. Barrett (*Lep. Br. Is.*, X, 35) sums up all that is known about it in this country as follows:—
“ The first recorded was taken on the coast of the Isle of Wight in the year 1876 by Mr. J. B. Blackburn; more recently Mr. W. Warren has placed on record the capture of another, in the Isle of Wight, about the year 1874-5. This specimen he found resting upon a blossom of *Inula dysenterica*. If I understand Mr. Warren correctly he has since taken a second specimen in the same locality. Beyond these captures we have no knowledge of the existence of the species in these Islands.”

So far as I am aware nothing further has been recorded of the occurrence of *oblitella* to this day, and I have been unable to discover anything else about Warren's problematical second specimen.

L. T. Ford (*Guide to the Smaller British Lepidoptera*, p. 13) simply says: “ A scarce immigrant,” whilst Beirne (*British Pyralid and Plume Moths*, p. 88) mentions the Isle of Wight records (unfortunately misprinting the dates “ 1814-16 ”) with the comment “ there do not appear to be any more recent records.” He does, however, give the very helpful hint that the species resembles superficially a species of *Ephestia* and for this reason possibly may be overlooked. I fancy this last piece of information was derived from my late friend William Fassnidge, who told me the same thing and probably obtained the knowledge in the course of his extensive Continental collecting.

On the evening of 29th September 1953 I set my m.v. lamp trap in the garden here at Westcliff-on-Sea, Essex. As it was a poor night I switched it off soon after 9.0 p.m. and after taking out the cartons and ejecting a few unwanted Noctuids saw what appeared to be a rather large dark *Ephestia* in the bottom of the trap. I take a number of *E. clutella* Hübn. in the trap, but this moth did not appear to be sitting

in quite the usual *Ephestia* style, so I boxed it at once and killed it for further examination. Owing to the extreme narrowness of the base of the fore wings and the pronounced curve of the costa *Ephestia* have a characteristic ridge-shaped pose at rest, and also a tendency to sit with their tails cocked up; but this moth was sitting with the wings in a much smoother posture.

In the morning I noticed that the markings agreed with no *Ephestia* and the fore wings were more uniform in width, with a straighter costa. On removing it from the board I looked up various species but could make it agree with none. Amongst others I tried *oblitella*, but Barrett describes and figures this insect as whitish-drab, whereas my moth, a female, is greyish-black. I therefore took it to South Kensington, where Mr. Tams and I spent some time on it, but without coming to any conclusion; so I left it for further examination.

Some days later I was still puzzling over it, and *oblitella* again occurred to me. I re-read Barrett and this time noticed Ragonot's statement, which I had previously overlooked, that the moth—the female especially—is sometimes so suffused with fuscous scales that the wings become quite of a uniform blackish-brown colour. Accordingly I wrote to Mr. Tams suggesting that he should compare it with Continental female *oblitella*, and two days later had a letter from him to say that Mr. Martin, of the Museum staff, had some days previous to the receipt of my letter had the same brain wave as myself and definitely identified the moth as *oblitella* but that he had not yet had time to notify me. I was rather glad of that pressure of work, as it was gratifying to my vanity to have arrived at the correct conclusion independently!

The rediscovery of this insect today, in my town garden where moths in general are scarce (my best evening at the trap included less than 300 insects), suggests that should a sharp scrutiny be made of *Ephestia* type insects at Dungeness and elsewhere a good many more will probably be found, though this district is quite rich in isolated migrants: I have taken both *Heliothis armigera* Hüb. and *Nycterosea obstipata* Fab. in the garden, and *Daphnis nerii* L. and *Leucania albipuncta* Schiff. have occurred a short distance away.

The larva and food-plant of *H. oblitella* are apparently still unknown* and should they be discovered it is probable that the species will be found in some numbers, as was the case with *Nephopteryx obductella* Zell. after I had worked out the British life history.

In my "Notes on Microlepidoptera" in *Ent. Rec.*, 65, 15, I suggested that the m.v. lamp would produce modern records of Crambids, etc., of which we had only very old ones. This was a pretty obvious prediction which would scarcely place me in the class of Mother Shipton or Captain Coe, but I did not expect to be the first to fulfil it and in my own back garden.

My grateful thanks are due to Mr. Tams and Mr. Martin for their help in identifying the moth.

[*Lhomme (*Cat. des Lép. de France et de Belgique*, II, No. 1718) has: "Chenille vit en Algérie dans les boutons floraux d'*Acacia tortilis*, *A. farnesiana* (P. Chrétien: *Ann. Soc. E. Fr.*, 1916, p. 420). Cette espèce a, en Algérie, plusieurs générations; le papillon se prend de mars à juin et de juillet à octobre (P. Chrétien)."—ED.]

An Account of Rearing *Heliophobus anceps* Schiff.

By F. H. LEES, F.R.E.S.

I reared this species from the egg when living at Little Aston, South Staffordshire, in 1930-31. Between 17th and 19th June seventy-four eggs were laid by a moth that flew in through an open window. They began to hatch on 30th June; my diary does not state the proportion. Half were given knotgrass (*Polygonum aviculare* L.) and *Silene inflata* Sm. (*cucubalus* Wibel), the rest knotgrass only. A note regarding other larvae found among the *anceps* and presumably imported with the *Silene*, on 7th July, is all the evidence I have that half of them were still on a mixed diet a week later. On 22nd July I record: "Larvae of *N. reticulata** in outdoor (planted) cage are much behind those indoors in glass-top boxes. As plants of knotgrass were very mouldy at base have transferred the larvae (28) to another cage in shed without any soil. Those in boxes number 37 and are half as big again as those in cage."

My next note, on 5th August, makes it evident that some time during the previous twelve days the larvae in boxes had been transferred to a cage, for it reads: "Some of the larvae of *N. reticulata* are now nearly full fed, others quite so; a slight disturbance of the surface of the soil accidentally revealed a pupa in fact." I remember well my difficulty at that stage of knowing how matters really stood, as when the larvae had material to hide under or soil to burrow in none were to be found by day, and at night I was too busy to investigate very particularly. I made no further notes until 22nd August when I sent a larva that was nearly full grown to a friend to 'blow' for his collection and remark: "Many of the smaller larvae have died off, usually just on attaining last instar; I suspect they are the ones from the plants outside that went mouldy."

Knowing a little more about these things than I did then I should imagine that having attributed a cause I took no special steps to safeguard the remainder and consequently it was fairly inevitable that my next note, on 29th August, reads: "Feeding *N. reticulata* this evening [I] discovered at least half a dozen dead larvae and a few rather flaccid laggards. I think only those that fed up quickly and went down early in the month (of the indoor reared batch) are likely to have produced pupae." This most certainly proved to be the case. On 11th September I noted that: "Only 2 *reticulata* larvae now come up to feed; one looks unlikely to live much longer but the other is apparently healthy and in view of my departure to Wales will have to go into an outdoor cage and take its chance."

On 29th October there is an entry in my diary which, in view of my discovery the following February, may have a significance that eluded me at the time. It reads: "Have also moved one lot of *reticulata* pupae to a cage in which I can damp them if desirable; I think I counted 8. There were a few dark brown pupae with them in same pot which must be some other species."

On 19th November I record sending three of my *seventeen pupae*

**Heliophobus anceps* Schiff. = *Neuria reticulata* Villers = *N. saponariae* Borkh.

of *N. reticulata* to a friend, and then on 25th February 1931 comes the statement: "On lifting the moss in a cage containing among others several pupae of *N. reticulata* I found two of the latter with the abdominal portion of shell broken away and *dead moths* stuck in the front portions; they are so dried up now as to suggest that the development and attempted emergence took place in late autumn. I cannot think of any special conditions likely to 'force' them." Might not these well have been the "dark brown" ones of 28th October? The circumstance may at any rate be of interest as a hint of a possible double-brooded tendency one might take advantage of. My diary is not very helpful on the point when (as I am sure was the case) I began to feed the larvae entirely on knotgrass. Living as I did next door to an arable farm it was much easier to supply than *Silene inflata*, which usually took some finding, and, as a matter of fact, if I had not been able to turn up my diary I should have said that I had fed the larvae entirely on knotgrass.

Two pupae died during the winter and ten perfect moths emerged between 25th June and 7th July 1931. Not a very great success and proving only that the species *can* be reared on knotgrass.

Migrants in Devon, 1953

By FRANK H. LEES.

Two migrant species I have not recorded before were taken at Maidencombe last summer, *Celerio galii* Schf. at light on 3rd July and *Leucania albipuncta* Schf. in the moth-trap on 8th August. The first-named, kept for eggs, produced, alas, but less than a dozen that proved infertile, a great disappointment. Many years ago the late P. P. Milman took *L. albipuncta* at Paignton; his specimen is dated 1 Sept. 1908. A second one in his collection he bred from a Paignton larva, the date on the label being 12th June 1939. Since 1900 other records are: J. Walker, Torquay, one, August 1908; another in the same area in 1911, and, in that year also, one at Strete by E. R. Bankes. Unlike *Leucania vitellina*, *L. albipuncta* is not one of Devon's regular visitors. *Celerio galii* was recorded in North Devon (larvae) in September 1907, at Start Lighthouse 3rd August 1937, at Slapton 22nd September 1947, and larvae at Kenton in September 1949, so that its capture here, too, is something of an event.

Quite a number of *Plusia ni* Hub. have been taken in Devon this year. My moth-trap claimed one male on 12th June, one male on 16th August, and one female on 19th August. From the latter I obtained eggs that in due course produced some sixty moths between the 21st and 29th September, eight of which were unfortunately cripples. I quite expected to take the species again in the trap in October, but out of doors the temperature must have proved too low for them. Kept at temperatures between 65° and 75° F. their average time in the egg was 5½ days and in 19 clear days from date of egg-laying I had pupae, so that the larvae lose little time doing much else but feeding. They gave me quite a busy time, too. The average time in the pupal stage was about 15 days. I don't think *P. ni* any more than *Heliothis peltigera* Schf. is likely to establish itself in the West Country as the larva appears to lack the stamina to survive the vagaries of our climate.

Regarding *H. peltigera* I can only blame the weather for the almost complete extinction of larvae feeding happily in the hot sunshine and dry conditions of late June on marigolds in the garden. Moths had been noted on five occasions between 25th May and 24th June and I had kept a small brood from eggs obtained and odd larvae seen around later, in semi-wild conditions. Then came the cold snap in July (by the 7th average temperature had fallen some twelve degrees) and *peltigera* decided that life was not worth living. From some thirty nearly full-fed ones salvaged and brought indoors only three larvae pupated and from only one pupa was a moth obtained, on 12th August. With us there were no wild August (or September) *peltigera* but further along the coast (probably from somewhat earlier broods than mine) a few late captures were made. On the other hand *L. vitellina* Hüb. must have found it quite a good year, for a friend took twelve, I think, at Prawle and I have had reports of others. I did no sugaring this year and in former years had taken but a few at light, but perhaps due to m.v. the trap secured three very perfect specimens and my porch light one, on 31st August, 15th September (2) and 29th September respectively, the last one a very dark and perfect female. I didn't sacrifice it for eggs on that account. A ♂ *Herse convolvuli* L. which managed to get into the trap without damage on 16th September was the only one of its species taken this year. I released it and hoped to see more over the tobacco-plant flowers in the garden later, but none came.

For the rest of the migrants I can record but a poor year for *Laphygma exigua* Hüb. (21st and 25th May, 12th June, 28th and 31st August, and 9th September). Oddly enough the one in June was the only perfectly fresh one. We nearly always have at least one *Rhodometra saccharia* L. to report, but not for the 1953 season, and *Nycterosea obstipata* Fab. narrowly escaped the same verdict—the trap took one ♂ on 23rd September and another on 11th October.

On only one occasion did the numbers of *Plusia gamma* L. approach the hundred mark, on 15th September, when I made the figure 98 in the moth-trap for that night only, as the play-bills say. For a few nights before the arrival of *Plusia ni* in August a number of the small race of *P. gamma* (see *Ent. Rec.* 65: 193) were seen—in fact my first entry in my diary on 16th August was "*gamma* 9 (1 v. small, a bit like *ni*)". The previous very small *gamma* nearly made me miss it, for of course it was *ni*.

My last comment concerns the very poor show put up by the Pyralidae this past summer and autumn. The weather in July was, of course, all wrong for them, but even *Nomophila noctuella* Schf. had one of the poorest seasons I can remember.

Some Lamp Trap Records, 1953

By CLIFFORD CRAUFURD

A mercury vapour lamp trap was operated in my garden in Hertfordshire from 25th March until 23rd October, 1953, with the exception of the following dates when I was away from home: 1st to 3rd June, 7th July to 1st August, 31st August, and 23rd to 30th September. The garden is very circumscribed, being surrounded by trees.

The area of light, that is to say the lawn on which the trap was operated, is only about 30 × 30 yards. There are houses all round the garden.

Black bulb. The black bulb was used from 25th March until 4th September. The largest number of moths attracted in one night with this bulb was 114, on 22nd June. The only blank night was 31st March. The average number of moths per night with black bulb was 26.

White bulb. The white bulb was used from 5th September till 23rd October. The last 36 nights gave an average number of 81 moths and the average over the whole period 25th March to 23rd October was 42. On 4th September with the black bulb 54 moths were taken and on the following night, 5th September, with the white bulb 312. The meteorological conditions on these two nights as regards wind force, wind direction, and temperature seemed to me to be the same; but of course they may have seemed quite different to the moths!

The commonest species was *Amathes c-nigrum* L., of which 1,558 were taken. Second in point of numbers was *Triphaena pronuba* L., with 807. Next came *Agrochola lychnidis* Schiff. and *Agrotis exclamatoris* L.: 744 and 673 respectively. Some very fine melanic forms of the latter appeared, forms which I have not seen in this area previously. Of *Apamea monoglypha* Hufn., usually the commonest insect at ordinary electric light and Tilley petrol lamp, only 315 were taken, whilst no fewer than 283 specimens of *Apamea obscura* Haw. (*gemina* Hub.), usually rather scarce in this district, came to the trap. *Amathes xanthographa* Schf. evidently prefers sugar to light; only 37 appeared, between 11th August and 17th September, whereas one could sometimes take the best part of a thousand at sugar in a week. Of *Spaelotis ravida* Schf., which we account a visitor from overseas, 9 came between 8th August and 10th September. Seven fresh specimens of *Heliophobus anceps* Schf. (*saponariae* Bork.) were attracted between 12th June and 3rd July; we have not yet succeeded in finding its larva! Four male *Cyenia mendica* Cl. were taken; this is never a common insect here.

Other interesting species taken were *Atethmia xerampelina* Esp. (22), *Polia nitens* Haw. (*advena* Fab.) (19), *Xylocampa areola* Esp. (19), *Deuteronomos fuscantaria* Haw. (17—usually rather scarce here), *D. alniaria* L. (*tiliaria* Bork.) (6), *Pheosia tremula* Cl. (5), *P. gnoma* Fab. (1), *Drepana binaria* Hufn. (4), *Chesias legatella* Schf. (*spartiata* Hbst.) (3—scarce in a district where the only broom is an occasional ornamental variety in gardens), *Harpyia furcula* Cl. (2), and *Amathes stigmatica* Hb. (1). Species new to the district were *Epione repandaria* Hufn. (*apiciaria* Schf.), *Thera obeliscata* Hüb. (twelve in all—one on 22nd May and 11 between 8th September and 1st October), and *Nonagria typhae* Thun. (1).

The total number of moths taken over the whole period was 7,035 and the number of species recorded was 176.

It was found that the Geometridae while attracted to the light in fair numbers did not enter the trap so readily as the others but remained resting on the sheet, etc., until daylight.

On the average, a night with a higher temperature than the preceding one would produce more moths; but a change of wind to N.E. or E. would bring the numbers down even if the wind was hardly perceptible. It appears that humidity is more important than tempera-

ture; but the most important point is wind direction. A wet, warm, overcast night with a west or south-west wind seems to give the best results.

A daily record was kept, and first and last appearances of each species noted. The date in all cases was that of the morning on which the trap was opened.

All moths not required were taken at least half a mile away and released. A ridge, trees, and houses ensured that they were released beyond the visual rays of the lamp. No lethal chemical was used in the trap.

An Account of Results obtained when Breeding *N. io* and *A. urticae* for the Purpose of Marking and Liberating to trace their Movements

By C. M. R. PITMAN.

It was recorded in a preliminary note in *Ent. Rec.*, **65**: 221, that the author was endeavouring to breed as many *N. io* and *A. urticae* as possible during the spring and summer of 1953 with the object of marking and liberating the butterflies at Clarendon, Salisbury, Wiltshire. The marking was performed by using one or more spots of Old Gold lacquer on one or more wings of the butterflies, and by the use of various combinations it was possible to indicate each day of release separately. It was therefore possible to know the date of release of a recaptured insect.

The choice of the species concerned was dictated by the ease with which the larvae are obtained in large numbers, their relative ease of rearing and the fact that they are fairly well known and conspicuous butterflies.

The experiment was an attempt to see if it was possible to collect information in this manner of the movements of these two species and to discover what happens to the swarms of larvae seen from time to time on nettles.

In order to obtain information concerning the released butterflies notices were placed in the local press, but there was, unfortunately, little chance to make the experiment more widely known, hence a certain number of recaptures from a distance may have been lost for this reason. The local reports were obtained from interested persons and members of various local organisations; reports were well authenticated and where possible accompanied by the recaptured insect.

The larvae were bred in cages of various types, old, but clean, oil drums, large earthenware pots, tea chests and large cardboard boxes, all of which were well ventilated. The larvae were successfully reared in all these improvised breeding cages with the exception of the metal drums with which a good deal of trouble was encountered and numerous larvae died, due apparently to a virus disease and considerable condensation within the drums. It soon became apparent that to rear successfully large numbers of larvae ample light and air must be provided.

To obtain the necessary larvae a search was made and the first brood

of *A. urticae* was found to be relatively scarce whereas the second brood was probably commoner than usual, which might suggest an unrecorded immigration towards the end of June. In contrast *N. io* was more in evidence than for many years in the neighbourhood.

The situation selected for the release of the insects was the crest of a hill close to my house. This site offered open country all round it and had many advantages compared with my garden where a small scale experiment along the same lines had been tried in the previous year.

On release, *N. io* in many instances spiralled or climbed rapidly up into the air, in a manner reminiscent of a homing pigeon endeavouring to find the correct bearing, and made off in a N.N.E. direction regardless of the direction of the wind. In contrast to this *A. urticae* appeared to be in no hurry to fly away; many remained sitting about on the grass for a while and when they did leave there was no dominant flight direction. The days selected for liberation were sunny and bright with little wind, and the time of release either mid-day or between 6.00 and 6.30 p.m. On 25th July there was a moderate N.N.S. wind which appeared to make it hazardous for the butterflies, for on this day the 370 *N. io* released at 12.30 mid-day appeared to find it difficult to become airborne but showed no difficulty in flying against the wind once they were in the air.

Most of the reports and observations received were made within a few days of release, but it is interesting to note that *A. urticae* remained active and more constant in the area of liberation for a longer period than *N. io* in spite of the fact that there was almost double the number of *N. io* released. The greater number of reports of the marked butterflies came from the N.N.E. direction from the point of release. Apart from the many expected reports of butterflies visiting Buddleia and other flowers in nearby gardens in all directions, there are two definite records of *N. io* entering houses, possibly for hibernation, one at Whaddon on 14th September and the other at Alderbury on 16th September; both of these places are almost due south from the point of release, the former 2 miles, and the latter $1\frac{1}{2}$ miles, away. A field of clover about 1 mile N.N.E. of my home provided the main source of local information later; when this was cut, a waste area of cleared woodland, another mile further on in the same direction at King Manor, provided a good area to watch the marked butterflies flying among scores of unmarked butterflies. During October when most of the flowers had gone I visited several old barns, huts and other likely hibernating situations to look for hibernating butterflies. About 50 *N. io* were seen of which 10 were marked, 7 of them in one old summer house $1\frac{1}{2}$ miles due N. of the release point. Only 9 marked *A. urticae* have been found hibernating and five of these were amongst a group of 39 unmarked specimens in my own house. The number of *A. urticae* visiting Michaelmas daisies has been unusually high this autumn while *N. io* has been rather less than usual and scarcely any marked butterflies were seen. In all, 2,581 *N. io* and 1,332 *A. urticae* were marked and released; details of recaptures at a distance greater than 1 mile from the point of release are shown in the accompanying tables.

In the case of *A. urticae* many of the marked butterflies were to be seen actively flying about the release area for several days and a few for several weeks after release. Smaller numbers of *N. io* were seen in the

N. io

Table showing the number of marked insects recaptured and, in brackets, the number of days after release.

Place of recapture	Distance from release point (in miles)	JULY							AUGUST							Date of release	Number released
		17	20	25	28	1	6	9	11	14	17	20	25	28	30		
Salisbury	1½	2(7)	1(2)	1(2)	1(21)	1(89) hib.											
Wilton	7½		1(26)														
Laverstock	2½			2(42) hib.		1(1)								1(2)			1(43)
Milford	2						1(71)										
Amesbury	8							1(16)									
Old Sarum	4							2(17)					1(1)				1(9)
Britford	1½							1(25)									
King Manor	1																
Ford	3																
Whaddon	2																
Alderbury	1½																
Porton	5																
—	1½ miles N.																

hib. = specimens found hibernating

release area especially when considered in relation to the number of each species released.

The results obtained by these elementary experiments cannot be considered comprehensive owing to the restricted area and materials available. For an experiment such as this to bring about a more satisfactory result would require considerably more work and material, and would have to be carried out on a far greater scale than my limits afford me. However, the results have been a partial success and I am more than anxious to improve upon the method of marking in order to convey some information to the finder with a hope that it will be possible for him to contact and pass on the information of his discovery direct to the liberator. It is possible that some of the marked butterflies will be seen again in the spring and any information regarding these insects would be very acceptable. It is only by the unfailing support and co-operation of fellow entomologists throughout the country and maybe even on the Continent that success can be attained in an experiment of this nature.

An Entomologist in Argentina

IV. Journey to Misiones

By KENNETH J. HAYWARD, D.Sc. (Hon.), F.R.E.S.

When my engagement by the Ministry of Agriculture as chief of one of the exploring expeditions sent out to search for the overwintering haunts of the locust ended, I found myself without a job and decided to return to England. To have done so at that time would, however, have resulted in my arriving during the winter, and after many years spent abroad in hot climes I desired if possible to avoid this contingency; I therefore began to look around for some means of delaying my departure so that I could reach England in the spring or early summer. My thoughts turned to an extended collecting trip in Misiones, then the Mecca of all Argentine entomologists. It was essential that I should cover my expenses so I discussed my plans with various people with a view to obtaining their assistance, and when the Director of the National Natural History Museum offered to give such a trip his official blessing and to supply me with travelling passes in exchange for part of the material collected I had no further qualms and went ahead with my preparations. As a matter of record I may add that I not only paid my way but a small profit remained, about 42,000 insects being eventually distributed of which some 8,000 found their way to the British Museum at South Kensington.

The National Territory of Misiones consists of a narrow strip of Argentina running back into south-eastern Brazil and is bounded on the west by the higher reaches of the Paraná, here known as the Alto Paraná, and on the south and east by the Alto Uruguay. Across the Paraná lies Paraguay. The southern portion of this territory is open and undulating, dotted with many scattered woods which increase in number and size as one travels north till this type of country finally gives way to dense virgin forest, cleared in places along the Alto Paraná for planting yerba or *Ilex paraguariensis* St. Hil., the so-called Argentine

“tea”. The composition of the forest is very varied, there being between seven and eight hundred different species of trees and bushes, but to the east the woodland is chiefly composed of Brazilian pine (*Araucaria angustifolia*) or what we call the monkey puzzle. The undergrowth is everywhere very thick and to pass through it one must cut a way with a machete, and in many places, especially near the rivers, there are dense clumps of bamboo of which the finest is known as *tacuara*, the canes often exceeding five inches in diameter and sixty feet in height. From an entomological point of view Misiones has the richest fauna of any part of Argentina though this is in reality zoogeographically representative of southern Brazil. No less than 35% of the species, sub-species and forms of Rhopalocera so far known from Argentina have been found in this territory.

At the time of which I write very little was to be obtained in Misiones beyond essential foodstuffs and this meant very careful calculating and planning beforehand. In addition everything had to be packed in cases that permitted of easy handling and which could, in case of necessity, be transported in *piraguas* or dugout canoes. Above all it was essential that sufficient tins and small boxes be taken for sending the material collected back to Buenos Aires as the climate of Misiones prevents the proper drying of plants and insects and there is the ever-present danger of mould. I was told afterwards that much of my material was set without any further relaxing as soon as the parcels were opened although the insects had been taken perhaps a month previously.

For my travelling cases I selected the boxes then in use for packing tins of cooking oils: these measured about two feet long by a foot square and I fitted each with a hinged and padlocked lid strengthened, as was the bottom, with a pair of battens and added rope handles and a coat of grey paint, the whole costing about half a crown so that as they were emptied they could be thrown away. These cases proved so suitable from every point of view that we have since adopted them as standard travelling outfit, but we no longer obtain them for two and sixpence! Excluding my personal kit and a hammock I required eight of these cases, one of which, containing a little of everything, I kept with me, the remainder, which like the ten little nigger boys gradually became less in number, being sent ahead from point to point by cargo train or steamer.

I had a long outstanding invitation to revisit the Chaco Santafecino so decided to travel through that part of the country instead of taking the river steamer direct to Corrientes. On 16th October, having despatched my heavy baggage direct to the latter port, I left by the evening train for the city of Santa Fé where I had a small matter to attend to, arriving early the following morning and continuing on to the Chaco that same night. When I had finished my business I strolled out along the banks of the Setabul lagoon, a large sheet of water connected with the Paraná and in which the fish were dying, their bodies lying in hundreds along the shore. It was interesting to be able to identify the species and note their size, and I collected many carnivorous beetles that were feeding on their rotting flesh. In a nearby rose garden great numbers of rosechafers (*Macrodactylus*) were playing havoc with the blooms, but for some reason they were attacking only the red flowers, those of other colours being left untouched. A new railway bridge was

under construction across the lake, and the deep shafts that had been sunk to take the piers had cut through a stratum of fossil bones representing many different species of animals and these were now piled up in heaps on the shore, nobody apparently taking any interest in them. I was sorely tempted to select some of the finest; but they would have proved a weighty and cumbrous addition to my baggage at the outset of a long trip, so I reluctantly passed them by.

Late that evening I entrained for the north, and daylight found me once more amongst the red quebracho forests. I had been looking forward to seeing again the country of which I retained such pleasant memories, but dawn revealed not the lily-covered ponds with their bright plumaged *jacanas* and black coots and occasional duck and teal but a burnt up land where the pools showed only as bare patches of cracked and sunburnt mud. Even the forest lacked its usual flowers; everywhere lay the aftermath of a great drought soon to be broken.

I stayed a month at Villa Ana from where I made a short trip to Villa Guillermina further to the north. I was surprised at the little change in the countryside, the same clumps of flowers growing in the same places, the small forest paths unaltered; time seemed to have stood still over the intervening years since I had left the district. At first I found few insects, but after the first rains they began to appear in increasing numbers though they never became plentiful. Once again the railway embankments proved the best collecting ground, especially during a prolonged spell of heavy winds when the insects gathered on their sheltered side. Some of my most successful days were those spent along the Pindo stream where I was reminded of our camping trip of 1926 by finding traces of one of our camps. Here the lagoons and rivers were very low and I took the opportunity offered of collecting water molluscs along their shores, finding amongst others a species of *Mycetopoda* in one of the lakes, the only freshwater razor-shell I have seen. I devoted one morning to an examination of some ant nests and was rewarded with seven myrmecophilous Staphylinids.

On 16th November I left for Resistencia, having collected some 3,000 specimens only, the smallness of my bag giving some idea of the unfavourable conditions reigning at that time. Resistencia is a large straggling city offering little possibility of collecting unless one goes far afield, so I took the first opportunity of proceeding to Corrientes, about an hour's journey across the river. Here, too, it was necessary to go far outside the built-up area to find good collecting ground, but by walking for about an hour I was able to reach some forest along the river bank to the east. This place looked promising in every way and its exploration proved interesting, but the results were negligible and on no day did I collect more than about fifty or sixty specimens. I can only put this down to the drought as by all standards the forest should have been swarming with insect life. Most of the material I took in Corrientes was the result of night collecting around the numerous lamps in the riverside park, one lamp in which the frosted globe had been broken and replaced by another of clear glass proving especially attractive. The majority of the insects found here were beetles, chiefly *Carabidae*, a different species predominating each night; but there were also moths and many Hemiptera, especially some of the giant Belostomid water bugs.

From Corrientes I took the river steamer to Posadas in Misiones, a journey that occupies two full days and the intervening night. For the first twenty-four hours the channel is comparatively narrow, bounded on the south by the wooded coast of Corrientes and on the north by numerous small islands that are covered with dense forest, some belonging to Argentina, others to Paraguay. Although to the traveller the river looks alike all over, it is actually quite shallow in parts and the steamer zig-zags from one bank to the other as the pilot seeks the deeper navigable channel.

This was the first time I had travelled along the upper reaches of this river and I grudged every minute I was absent from the deck. Small *yacaré* alligators lay basking in the sun on every sandbank or slipped silently into the water as we passed and with my field glasses I could watch the herons and other water birds that abounded along the shore and even pick out the smaller birds amongst the trees. As we neared the banks the forest revealed itself in all its luxuriance, the *tacwara* canes looking like clumps of giant ferns amongst the woodland trees, many of which were crowned with white or yellow flowering creepers and some were possessed by small *Cebus* monkeys or by the larger noisy *Alouatta caraya*. From time to time we passed small villages whose history reaches back to those days when the Jesuit priests dominated this corner of the land and the steamer would stop and send a small boat to the shore with mail and passengers. When darkness fell we travelled with all lights out, so I was disappointed in my hopes of night collecting. This black-out is necessary as the pilot literally sees his way, since it is by watching the movement of the surface of the water that he picks out the deeper channel, and any light would blind him. What a wonderful collection of insects might be expected were it possible to traverse these narrow waters in a fully lit-up steamer!

At daylight the following morning we reached Ituzzaingó and after passing through the rapids of Apipé began the day-long journey to Posadas. We reached this port at dusk when the golden haze of twilight lay over the boat-strewn harbour and its steep containing bank on which innumerable little white-washed wooden shacks nestle precariously amongst the flowering shrubs and green exuberance of Misiones. Seen in the rose tinted evening light the view over the river from Posadas is one of which I never tire and it brings back memories of other evenings when on Mediterranean shores in the soft hazy half-tones of the sunset I have looked down on the harbours of Greece and Italy and the islands of the Aegean.

I was lucky in Posadas in that on my first exploratory walk I stumbled on an ideal collecting spot and one that could be reached in less than twenty minutes' walking. I was perhaps more fortunate than I then realised, as although I have paid many further visits to this town I have still to find a more favourable piece of ground. It lies on the edge of the river behind the railway station and a shipping basin and was once forest but is now reduced to a few shady trees and several acres of scattered undergrowth amongst which one can wander at will. Because it is subject to flooding it is free of the poor shacks that one finds on the outskirts of all the larger Argentine towns and in spite of grazing cattle it abounds in flowers. Here I saw on the wing for the first time many of my old friends of museum cabinets, especially the larger species such as swallowtails and the bigger Nymphalids. Sweep-

ing proved unproductive, but there were abundant bees and wasps, hemiptera and beetles to be found on the flowers, and I paid a daily visit to this spot and was always well repaid for my trouble. I had hoped to obtain many insects at the lamps around the plaza and in the streets, especially water bugs and other aquatic species which might be expected in view of the proximity of the river, but the moon was full and I soon found that any systematic searching was so much waste of time. Posadas introduced me to the hot humid heat of Misiones that was to be my lot for the next few months, a climate made bearable only by the relative coolness of the nights. Here, too, I made acquaintance with the red soil that is typical of this region, a soil which leaves its mark on everything, staining clothes and all with which it comes in contact and even colouring the paper money with a reddish hue.

My original plan called for halts at two or three intermediate ports before arriving at Puerto Bemberg (now known as Puerto 17 de Octubre) and where I proposed to make my first long stay, but the evident scarcity of insects following the drought and other considerations caused me to abandon this idea and go straight through.

The river northwards from Posadas is narrow, sometimes not more than two or three hundred yards wide, and the containing banks are in most places very high, often well over two hundred feet. The vegetation is unchanged from that seen further south but for some unexplained reason there are no alligators along this stretch of waterway, perhaps because the river is much deeper. To the left lies Paraguay and along both banks at frequent intervals there are clearings where yerba has been planted. The distance from Posadas to Bemberg is just under 200 miles, but thanks to a bright moonlight night we completed the journey in a little over twenty-four hours. Sometimes for long periods night mists hold up river traffic, all movement ceasing, the boats lying at anchor till wind or the morning sun disperses the fog.

Puerto Bemberg is a large yerba plantation where there were at that time a million and a half bushes in production. Since those days much further land has been cleared and there are now plantations of tea, pineapples, citrus and other subtropical crops, and Brazilian pine and other useful quick-growing trees are being planted on a large scale. My arrival had been previously notified and I was met on the bank by the manager and his assistant and within a few minutes found myself comfortably installed in a little wooden hotel surrounded by forest and was informed that I was to consider myself the guest of the Company for the duration of my stay. From this moment I was to begin collecting in earnest.

(To be continued)

Current Notes

In the *Entomologist's Monthly Magazine* for November 1953 there is an interesting paper (page 278) by Lt.-Col. F. C. Fraser on the resting habits of *Kallima*, the leaf-butterfly. After complaining that "the aged and hoary fable of how the insect protects itself by assuming the attitude of a dead leaf" is still being repeated the writer points out

that whereas the undersides of this butterfly's wings are brown the leaves on twigs are green and that dead leaves, even when they remain on bush or tree, do not stand upright on the stem. He then relates, from his own personal observations on many occasions, how the female butterfly when alarmed flies down and sits "canted over at an extreme angle just as does *Eumenis semele* L." among the dead leaves on the ground, in which situation and in which position it is virtually invisible. The male "flies to the nearest trunk of a tree and there settles down with its wings closed just as do many Vanessids, its colour harmonising well with the bark of the tree."

The Institut National de la Recherche Agronomique of the French Ministry of Agriculture will hold a Symposium on the acoustics of Orthoptera stridulation in April next. It will be held at Jouy en Josas, Seine et Oise, from 5th to 8th April and a syllabus of the sessions, lecturers, particulars of papers, etc., may be had from the Laboratoire de Physiologie Acoustique, Institut National de la Recherche Agronomique at Jouy en Josas. For those who, during their stay in Paris, would like to visit any particular laboratory, the office of the Institut will be at their service for making contacts and arranging interviews. Special financial arrangements will be available for young research workers who ask for it. Immediate application should be made by those who wish to read papers or show slides, films or exhibits.

In a paper by H. F. Barnes, *Bull. Soc. ent. Fr.*, 1953, 127, on a new gall midge of lavender, a species of *Thomisiana*, Cecidomyidae, the author says that midges of this genus can lay their eggs only where there has been some natural or artificial abrasion or other injury. The larvae of *T. oculiperda* live between the bud and stock of newly-budded fruit trees and roses and prevent the union of scion and stock, and may cause serious damage in rose nurseries. Ample breeding places are provided by the summer pruning of fruit trees and the trimming of wild roses, in hedges.

The damage done by the raspberry cane midge, *T. theobaldi*, is caused in a different way. The larvae cause only superficial damage to first year canes, but by allowing the entry of spores of pathogenic fungi produce "raspberry blight," in which the fungi may kill the canes before they can fruit in the following year.

Schwingenschuss (*Z. wien Ent. Ges.*, 1953, 38, 282-285) in his Beitrag zur Lepidopterenfauna von Niederösterreich describes two new aberrations: *Deuteronomos erosaria* Hübn. ab. *saturata* (dunkel rot-gelbe). This appears to me to be a synonym of ab. *aurantiaca* Lempke (*Tijdschr. Ent.*, 1951, 94, 293). *Sarothripus revayana* Scop. ab. *gloriosanans*, a combination of ab. *obscura* Warren and ab. *ramosanus* Hübn. This is a synonym of ab. *combinata* Cockayne (*Ent. Rec.*, 1951, 94, 293). Sheldon in his paper in the *Entomologist*, 1919, overlooked ab. *obscura* Warren (Seitz. *Macrolep.*, 1914, 3, 290). I have examined the type, which is from the New Forest. There are a number of specimens of ab. *obscura* in the Rothschild-Cockayne-Kettlewell Collection, which I was unable to name until I saw Warren's type. E. A. C.

Will those of our subscribers who have not yet paid their subscriptions for 1953 please note that no further copies of the *Record* can be sent to them until their subscriptions have been received by our Treasurer?

Notes on Microlepidoptera

By H. C. HUGGINS, F.R.E.S.

Pyralis lienigialis Zell. The status of this species in the British Isles seems to be most peculiar. There would seem to be no ground for considering it an immigrant as there appear to be no records for any coastal area: the only large capture (I believe about 20 specimens) is that made many years ago at Stony Stratford in Buckinghamshire. Several have also been taken at Oxford and one or two isolated examples elsewhere, all inland.

The food-plant is generally stated to be unknown, though my late friend W. Fassnidge told me it fed on vegetable rubbish. From the intervals between the captures there would appear to be no ground for assuming it has died out, so that it is possible that the discovery of its life-history may prove it to be not uncommon. On the other hand its near relatives are all fairly active insects and it is evidently strongly attracted by light; I believe all our British examples have been so taken, so that if it be not uncommon more regular captures might be expected. My own specimen was taken by the late Colonel Donovan on 26th August 1930. It was taken at rest in his bedroom at Bourton-on-the-Water, where he supposed it had been attracted by the light. Donovan was a most active collector for the next ten years and never saw another. When we were corresponding about 1935 on Irish Lepidoptera I asked him if he could make any suggestions about obtaining the moth. The answer was characteristic of his generosity: a small parcel enclosing a box containing the insect and a letter saying he had given up expecting to catch another and that he thought it would be more suitably placed in my collection than his as he only dabbled in micros.

Beirne (*British Pyralid and Plume Moths*, 1952, p. 115) suggests it may be a pest of stored products, but this seems hardly likely at Stony Stratford and Bourton-on-the-Water.

It seems quite probable that this moth may turn up at the m.v. lamp in the near future. Should this happen a determined attempt ought to be made in the district to work out the life-history.

Cnephasia colquhounana Dbl. This fine Tortrix would appear to have other food-plants than those recorded. Barrett (x, 259) quotes McArthur that it feeds on thrift and sea plantain and also Partridge and Donovan as regards thrift. I have no doubt it feeds on both of these; I have found the larva on thrift myself, but it undoubtedly also feeds on other plants some distance from the sea. This year (1953) when in the Burren I risked climbing to some of the slabs about half a mile from the sea after dark one evening. There were a number of pale insects flying over the grass and rock which by torch-light I took for *Crambus perlellus* and did not bother about for a time as I was endeavouring to net a Noctuid which was dashing over the slabs. Even-

tually I succeeded in catching three of these which all proved to be *Apamea monoglypha* Hufn., so I then turned to the smaller moths, which had however mostly disappeared as it was blowing up cold, but the two I caught were both *colquhounana*. These could not possibly have fed on any coastal plant, so it would be interesting to find out their diet and also how far inland the moth penetrates. I had always heard it was a purely coastal species, in fact it has been suggested that it is a coastal form of *C. bellana* Curt.

Barrett describes the moth as hiding by day and flying rapidly when disturbed. This does not agree with my experience; all the ten specimens I took in the daytime were sitting on rock faces and were so sluggish I boxed them with ease, whereas *Perizoma minorata* Treits. found at the same time in the same places required the net. I believe, however, that Barrett had no personal experience of *colquhounana*.

Notes and Observations

ORTHOSIA CRUDA SCHIFF. IN DECEMBER.—I have just taken a specimen of *Orthosia cruda* Schf. at my m.v. light here at Clarendon and as I think its unusual appearance at this time of the year will be of interest to you I enclose it herewith. *Poecilocampa populi* L. and *Operophtera brumata* L. were common again tonight, and I also took one *Sarothripus revayana* Scop.—C. M. R. PITMAN, Clarendon, Salisbury. 14.xii.53.

[The moth, a male, arrived alive and in good condition. I have not seen any previous record of *O. cruda* appearing in the imaginal stage in December. P. B. M. A.]

ORTHOSIA STABILIS VIEW. IN DECEMBER.—The exceptionally mild autumn spell has brought yet another very unexpected visitor to my m.v. trap in the form of a male *Orthosia stabilis* View. on 14th December, some three months ahead of its normal time of emergence. I gather that there are a few scattered records of this insect appearing in the late autumn, but it is extremely unusual that any of this group is seen before early March.—C. G. M. DE WORMS, Three Oaks, Shore's Road, Woking, Surrey. 16.xii.53.

NYCTEROSEA OBSTIPATA FAB. AND PLUSIA GAMMA L. IN DECEMBER.—I think it of interest to report that on the night of 8th December 1953 I found in my m.v. trap here a fresh female of the 'Gem', which is well known as an autumn visitor, but, I gather, it has seldom been seen as late as this in the year. *Plusia gamma* is still coming nightly.—C. G. M. DE WORMS, Three Oaks, Shore's Road, Woking, Surrey.

ERANNIS LEUCOPHAEARIA SCHIFF. IN DECEMBER.—I have to record seeing a male *Erannis leucophaearia* Schf. here on 5th December 1953. This seems to me to be an extremely early date for this species.—J. M. K. SAUNDERS, 27 Cannonbury Avenue, Pinner, Middlesex. 20.xii.53.

MOTHS IN DECEMBER IN SURREY.—The recent prolonged spell of mild weather has led me to switch on the mercury vapour lamp trap in my garden, with some surprising results. On the morning of 12th Decem-

ber I found in it an *Agrotis segetum* Schiff., an *A. ipsilon* Rott., an *Orthosia stabilis* View., and a *Phigalia pedaria* Fabr., as well as seven *Plusia gamma* Linn. and a number of *Poecilocampa populi* Linn., *Phlogophora meticulosa* Linn., *Conistra vaccinii* Linn., *Eupsilia satellitia* Linn. (*transversa* Hufn.), *Graptolitha ornitopus* Hufn., *Tranniss defoliaria* Clerck, *Operophtera boreata* Hübn., *O. brumata* Linn., *Hapalia ferrugalis* Hübn., *Depressaria propinquella* Treits., and *Gracillaria elongella* Linn. A further *O. stabilis* appeared on the morning of the 19th, when next the light was used.—R. M. MERE, Mill House, Chiddingfold, Surrey. 20.xii.53.

LATE RECORDS OF LAOTHOE POPULI L. AND PLUSIA GAMMA L.—A worn male *L. populi* came to my light at Swanage, Dorset, on 15th November, and on the same night a specimen of *P. gamma* with oblique white streaks across the tips of the 'gammas'. The streaks are parallel with the costa.—A. G. B. RUSSELL, Scar Bank House, Swanage.

ATETHMIA XERAMPHELINA ESP. AT CAMBRIDGE.—During the autumn the commonest moth at the m.v. lamp in my garden here (after *Amathes c-nigrum* of course!) was *A. xerampelina*, more ♀♀ than ♂♂, including one of the latter which seems referable to *ab. unicolor*. Prior to this I had taken several specimens at the house lights over a period of three or four years and all had been ♀♀. I now have batches of eggs from six moths, which I shall try to rear in sleeves.—W. H. STOREY, Cambridge. 7.xii.53.

ANANIA NUBILALIS HÜBN. IN HERTFORDSHIRE.—Early in 1953 I collected some old mugwort stems from a farm near Baldock, Herts. They were kept out of doors until June, when they were put into ventilated cages indoors. From these stems I hatched 7 ♂♂ and 2 ♀♀ *Anania nubilalis*. From an article by Mr. H. C. Huggins in *Ent. Rec.*, 62: 221 I understand this moth to favour coastal areas. From the spot where the stems were collected to the Thames estuary at Tilbury is about 40 miles and from the Essex coast at Foulness 55 m. The mugwort plants were growing on the bank of a small stream which flows through the farm. I obtained a number of fertile eggs but was unable to rear the larvae.—JOHN F. REID, 19 High Street, Leighton Buzzard, Beds. 2.xii.53.

CAPTURE OF A NEW ZEALAND AGROTID IN ENGLAND.—My friend, Mr. J. N. Thornton of Leeds has sent me a specimen of the Noctuid *Graphania dives* Philpott, which was taken alive on Spurn Head, Yorkshire. As far as he can remember it was on a warm afternoon in July 1950. Mr. W. H. T. Tams has kindly identified the specimen for me, which he states is a New Zealand species.—S. GORDON SMITH, Estyn, Boughton, Chester.

LEUCANIA VITELLINA HÜB. IN SOUTH DEVON.—*J. vitellina* seems to have been common and widespread as a second brood in southern England this year. I took 12 specimens at sugar and m.v. light in the Salcombe area of South Devon, September 6th-13th, and another at Portland on 2nd October. In addition I bred 18 specimens from a South Devon female taken in September 1952. These were forced and emerged 2nd-16th January 1953. The pupae were kept at room temperature and

the resulting moths were well coloured, darker than the lightest wild specimens.—AUSTIN RICHARDSON, Beaudesert Park, Minchinhampton, Glos. 14.xii.53.

PLUSIA NI HÜB. AND OTHER MIGRANTS IN DEVON AND CORNWALL.—I took 5 specimens of *Plusia ni*, all males alas, in the Salcombe area of South Devon on 20th-25th August last. I was evidently just too late for what was probably another immigration as they were mainly in poor condition. At the same time, and ten days later, I found numerous *Plusia* larvae feeding on lettuce plants but succeeded in breeding only some 4 dozen fine *P. gamma*. *P. gamma* imagines were present in fair numbers but suddenly, on 7th September, 1,000-1,500 appeared in the trap, for one night only. This may have been due to weather conditions but appeared to me to be an immigration as subsequent nights produced only normal numbers. Other migrants taken during the same period included 1 ♀ *Herse convolvuli* L., which laid 4 infertile eggs, 3 *Laphygma exigua* Hüb., 1 *Heliothis peltigera* Schf. and, later in North Cornwall, 1 ♂ *H. convolvuli* (15th September).—AUSTIN RICHARDSON, Beaudesert Park, Minchinhampton, Glos. 14.xii.53.

ABUNDANCE OF POECILOCAMPA POPULI L.—At light here on 7th December there was an unusually large number of *P. populi*. This species has been very common this year. At light also on the same date there were present 3 *Conistra ligula* Esp., 1 *Eupsilia transversa* Hufn., 2 *Plusia gamma* L., 2 *Colotois pennaria* L., many *Operophtera brumata*, and the first *Erannis defoliaria* Cl.—C. M. R. PITMAN, Clarendon, Salisbury. 9.xii.53.

COLLECTING LARVAE BY NIGHT.—During this remarkably mild spell of weather there have been many Noctuid larvae to be found at night with the aid of a torch. I find it most productive to go out as soon as possible after dusk and work along the small banks and hedgerows bordering the woodlands. My larvae of *Satyrus semele* L., which should normally be hibernating, come up to feed on the grass stems every night at dusk. The *A. villica* continue to feed, but my *C. dominula* are snugly in hibernation. For all hibernating larvae I line my larva cages with corrugated cardboard; thus although the cages remain moist the larvae have a dry and warm resting place for their diapause period.—C. M. R. PITMAN, Clarendon, Salisbury. 9.xii.53.

SECOND BROOD OF SPILOSOMA MENTHASTRI SCHF. (LUBRICIPEDA L.).—On 23rd May I received a pair of the 'White Ermine' *in cop.* The female began laying the next day and by the 26th she had laid five batches of eggs. These hatched and the larvae pupated in due course; most of them had spun up by the first week in August. The cage containing the cocoons *in situ* was then taken to the bottom of my garden for the winter. On glancing into the cage for no particular reason on 10th November I was surprised to see a freshly emerged female drying her wings at mid-day. She remained alive until 8th December and on the 6th and 7th laid two batches of eggs. Unfortunately no male emerged, so there was no hope of a pairing. It seems strange that only one out of approximately 200 pupae should deviate from the natural life-history of the species.—C. M. R. PITMAN, Clarendon, Salisbury. 9.xii.53.

EUPROCTIS CHRYSORRHOEA LINN. IN HAMPSHIRE.—With reference to the existence of *E. chrysorrhoea* L. in Hampshire (*Ent. Rec.*, 65: 350) it occurred many years ago in considerable numbers on the shores at Sandown, Isle of Wight. I last bred it from there in 1925. It occurred up till 1947 on Portsea Island marshes, east of Portsmouth, and is probably there now.—A. H. SPERRING, Slindon, Fifth Avenue, Warblington, Hants. 15.xii.53.

DELLEPHILA ELPENOR LINN. AT PORTSMOUTH.—In reply to Mr. J. H. Johnson's query (*Ent. Rec.*, 65: 361) *D. elpenor* L. does not, I believe, have any suitable habitat in Portsmouth; but it occurs in Hyden Wood, 11 miles N.E. of the town, and in other nearby localities.—A. H. SPERRING, Slindon, Fifth Avenue, Warblington, Hants. 15.xii.53.

PARASITES OF *LIMENITIS CAMILLA* LINN.—With respect to Mr. G. E. Hyde's Note on the parasites of *L. camilla* L. (*Ent. Rec.*, 65: 361) I bred this species over a period of about 20 years consecutively but have never yet bred a parasite from it. The localities from which the larvae were obtained were within a radius of 10 miles from Havant, Hampshire. The average number bred each year was 30-35 and they were bred in the hope, unfortunately not realised, of obtaining ab. *nigrina* Weym. Many years ago I bred the species also from New Forest larvae, but again I never obtained a parasite.—A. H. SPERRING, Slindon, Fifth Avenue, Warblington, Hants. 15.xii.53.

CALLIMORPHA JACOBÆAE AB. *FLAVESCENS* TH. MIER. IN CAMBRIDGE.—I think it worth putting on record that a colleague of mine, Miss Short, bred out in May this year (1953) two specimens of *C. jacobæae* in which the normal crimson colour is entirely replaced by yellow. Unfortunately for breeding purposes one of these specimens (now in my collection) was dead when it was found, though in good condition, whilst the other made good its escape. The exact locality from which the larvae were collected is unknown with any certainty, apart from its being somewhere in the neighbourhood of Cambridge, since larvae from various localities were grouped together for breeding purposes and allowed to pupate on the soil floor of a small greenhouse. I feel that for the next few years it will be worth while looking for further specimens in this area, as not only must the original strain still be about but it is also possible that the escaped specimen mated with one of the immediate local examples.—B. O. C. GARDINER, 34A Storey's Way, Cambridge. 21.xi.53.

MANIOLA TITHONUS L. ON MARSHES.—In the *Record* of last October (*Ent. Rec.*, 65: 279) Mr D. F. Owen remarked that he considered the North Kent marshes an unusual habitat of *M. tithonus*. Perhaps because I was born at Gravesend I have always considered these marshes, and particularly the river walls, as one of the typical localities for this butterfly and I am pleased to hear that it still survives there. I have not looked for it this year but in the past few years have found it abundant on the river walls at Paglesham, Canewdon, and Creeksea, and have noticed, possibly this was coincidental, a higher percentage of extra spotted forms than in the lanes and woodlands. It also abounded on Canvey Island two years ago.—H. C. HUGGINS, 65 Eastwood Boulevard, Westcliff-on-Sea. 27.xi.53.

POLYOMMATUS ICARUS ROTT. PAIRING WITH LYSANDRA CORIDON PODA.—At about noon on 12th August last, while working a colony of *L. coridon* in Wiltshire, I discovered a fresh ♀ *P. icarus* in cop. with a ♂ *L. coridon*. They were placed carefully in a large pill-box and remained together for a further half-hour before separating. (It is not of course known how long they had been paired before being found.) Both Mr. A. Valentine and Mr. G. H. W. Cruttwell, who were with me at the time, observed them together. Since I was due to leave for Cornwall two days later and was unprepared for breeding of this kind, Mr. R. Pitman kindly agreed to take the ♀ *icarus* and to obtain eggs from her if possible; she was therefore handed over to him the following day. He informs me that a number of eggs were laid, and that some of them, at any rate were fertile, taking three weeks to hatch, which is of course a much longer period than normal for *P. icarus*, and totally unlike *L. coridon*. At present it is known that a few larvae are alive, but it is not possible to say how many. If they hibernate successfully, it is hoped to keep detailed records of their progress, and to make a further report in due course.—NORMAN A. WATKINS. 11.xi.53.

[It is probable that the ♀ *icarus* had paired with a ♂ *icarus* before it paired with the *coridon*.—ED.]

SPHINGID LARVAE FAILING TO PUPATE.—I was interested to read Dr. Hayward's remarks on this subject (*Ent. Rec.*, 65: 314) as Bell & Scott in their book on the Indian Sphingidae (*Fauna of British India, Moths*, v.) mention a similar case in *Leucophlebia emittens* Wlk. The authors also mention that the larvae of *Leucophlebia lineata* Westw. and of the allied genus *Clanis* often fail to pupate in captivity and give what is, I think, the key to the problem. All these larvae are recorded as remaining in the pre-pupational stage for a very long time and I suggest that during this period the larvae are very susceptible to unfavourable conditions both of temperature and humidity. Conditions suitable for Dr. Hayward's unknown larvae and for that of *L. emittens* possibly cannot be maintained in captivity, hence the failure to obtain pupae. This is, I think, a far more probable explanation than Dr. Hayward's suggestion of toxicity developing in the cut food-plant.—D. G. SEVASTOPULO, Kampala, Uganda. 21.xii.53.

CHEIMOPHILA SALICELLA HUBN. IN COUNTY DURHAM.—Meyrick (*Revised Handbook of British Lepidoptera*, p. 672) gives the British range of this insect as "England to Westmorland, local" although Robson, in his *Catalogue of the Lepidoptera of Northumberland, Durham, and Newcastle upon Tyne*, vol. II, p. 109, states that Mr. Finlay took a single specimen in Meldon Park in Northumberland. These statements are far from giving a correct picture of the situation, for the species swarms in the lanes between Bewicke Main and Wreckenton, Co. Durham, where its larvae feed on bramble and other rosaceous plants as well as on ash. In addition, I have noticed the species in Gibside Park in Northwest Durham whilst, during the present season, the larvae were observed in October feeding on bramble on an isolated pit heap near Birtley, also in Co. Durham.—J. W. HESLOP HARRISON, King's College, Newcastle upon Tyne. 16.xi.53.

DISTRIBUTION OF *PSEUDOIPS BICOLORANA* FUESS. (PRASINANA L.).—In reply to Mr. Thorpe's query in the October number (*Ent. Rec.*, 65: 296) we take this insect from time to time both at light and at sugar in Leicestershire. We find, however, that the most regular way to take it is by beating oak for the larvae; it must be noted, however, that it is the scrub growing out of the trunks of oaks of between one and two feet in diameter which the larvae favour rather than the main part of the tree, and using this method we do not find it at all rare.—HERBERT A. BUCKLER, Sutton Bassett, Market Harborough. 16.xi.53.

FOODPLANTS OF *PSEUDOIPS BICOLORANA* FUESS. (PRASINANA L.).—A contributor writing in *Ent. Rec.*, 65: 296 asks for the foodplants of *P. bicolorana* other than oak. The following note may be of interest to him and to others who may breed this fine insect in the future.

On 10th July 1953 a ♀ *P. bicolorana* came to a m.v. lamp at Selsdon, Surrey, and was retained for breeding purposes. Later that night it was placed in a cage with a sprig of oak in water, and given a feed of sugared water. During the next forty-eight hours it laid about ninety eggs; it was then released well fed and apparently none the worse for its confinement.

Most of the eggs were laid on the undersides of the oak leaves, only four being on the stems and twenty-three on the muslin covering the top of the cage. The eggs on the muslin were removed from the cage; twelve were passed to a friend, Mr. G. V. Owen, and the rest were placed in a glass-topped tin. Hatching commenced on 22nd July and continued for five days. The larvae on the oak appeared to wander about for a few hours before commencing to feed, usually lying alongside a vein on the underside of a leaf where they were quite difficult to detect.

When the eggs in the tin began to hatch fresh birch leaves were supplied, but not one of the young larvae would eat them. After two days five of the larvae were dead and I then removed the birch and replaced it by oak, which was readily accepted. Mr. Owen later reported that he had supplied his larvae with birch and that they had all died without feeding.

Another ♀ was obtained at West Wickham, Kent, on 20th July by a friend, Mr. E. Trundell, who also tried to feed some of the newly hatched larvae on birch. Once again the result was complete failure.

The larvae feeding on oak moulted three times prior to hibernating, changing to a deep chocolate colour after the last moult. They fed for a few days longer then took up their winter positions lying full length along the stems of the oak. By 14th October all had ceased to feed.

Have any other readers of the *Record* tried rearing *P. bicolorana* on one of its alternative foodplants? If so, would they let us know how they fared?—R. F. BIRCHENOUGH, 8 Ravenswood Crescent, West Wickham, Kent. 25.xi.53.

THE 1953 SEASON IN NORTH HAMPSHIRE.—For the past six years I have used a bright m.v. light in my garden on all suitable nights, and, though exact counts were not made, there has certainly been a diminution in the numbers of most species attracted during that period. How far this has been due to the concentration of moths resulting from the operation (I kill very few) and how far to other causes such as weather

and the destruction of all arable land in the immediate vicinity for housing estates, I would hesitate to guess. Several of the less frequent species failed to appear at all during 1953, a list which includes *Stauropus fagi* Linn., *Gastropacha quercifolia* Linn., *Polyploca ridens* Linn., *Cossus cossus* Linn.; *Tethea ocularis* Linn. and *Zeuzera pyrina* Linn., whilst many others were represented by a single specimen. The capture of the year was provided by *Leucania unipuncta* Haw. on July 10th. It was not a good year for immigrants, though *Vanessa atalanta* Linn. became fairly common in the late summer. *Aglais urticae* Linn. achieved a record abundance for this district in September, when hundreds could be counted in every field of clover, lucerne or scabious. Late larvae of this species were common and I have wild ones under observation still (December 5th); these are probably doomed as nettles have died down. *Nymphalis io* Linn. has almost become double brooded here; I found three nests of larvae of this species at Camberley on September 4th at different instars, and a fourth enormous nest at Farnborough on October 3rd. All were successfully reared, the last *N. io* emerging on November 18th.

A local tragedy is the disappearance of *Ischnura pumilio* Charp. The colony was hundreds strong when, three years ago, the military authorities began to use liberal amounts of anti-mosquito oil on the marshes. Not a single specimen has been seen since. Its disappearance is the more remarkable as *Ischnura elegans* van der Lind. has increased considerably in strength whilst *Erythromma najas* Hans. has actually colonised the area since the oil was first used.—A. W. RICHARDS, Nether Edge, Fox Lane, Farnborough, Hants. 5.xii.53.

HETEROMORPHOSIS IN LYSANDRA CORIDON PODA.—On 26th July 1953 I took a ♂ *L. coridon* which appears to be a fine example of heteromorphosis. Both forewings and the left hindwing are typical, but the underside of the right hindwing has several streaks of what appear to be blue upperside scales and there are also additional patches of dark-brown or black scales towards the edge of the costa and margin of the same wing. While the blue streaks seem fairly easy to explain, it is a little difficult to account for the dark patches; unless they represent part of the broad outer border of the upperside of a forewing reproduced here. I should be grateful if any of your readers could throw any light on the probabilities of this.—NORMAN A. WATKINS. 12.xi.53.

FURTHER OBSERVATIONS ON VANESSA CARDUI LINN. IN 1952.—I have just read the following Notes in the *Circulaire* No. 41 of the "Centre d'Observations pour les Migrations de Papillons" published in Switzerland. These two extremely interesting observations have come from Austria and are about a southward movement of *Vanessa cardui* in 1952.

Mr. K. Mazzuco of the Austrian Centre of Observations writes: "In spite of very numerous *cardui* larvae that were found at the end of August, it was impossible to find a wild fresh specimen. No sooner had the butterflies emerged than, after a preliminary flight, they disappeared in a southerly direction."

The other observation, also from Salzburg, says that "On the 14th of August 1952 *cardui* was seen on a mountain flying south at about 2,200 metres' altitude. The butterflies were flying quietly against a

strong wind at the rate of about 3 a minute. This observation explains the disappearance of *cardui*, which until now was quite incomprehensible in this region."

I consider that these observations cancel out to a large extent my remark (*Ent. Rec.*, 65: 169) that if *cardui* and *Celerio lineata livornica* Esp. had to depend on a southern movement to continue their existence as a species they would now be extinct. It was evidently far too sweeping a statement, anyhow so far as *cardui* is concerned. There is no reason to suppose that *cardui* emerging in August or September in the north of France or England would be unable to fly south because of the weather; but unless the southward movement were made in large numbers it would be difficult to detect, e.g. if they all flew off separately after emerging.—VERA MOLESWORTH MUSPRATT, Aicë Choko, St. Jean-de-Luz, Basses Pyrenées. 3.xii.53.

PROCIS STATICES LINN. IN LONDON 120 YEARS AGO.—In *The Book of Butterflies, Sphinxes and Moths* by Captain Thomas Brown, F.L.S., M.W.S., M.K.S., President of the Royal Physical Society, Vol. I, p. 100, published in London in 1832 and forming Vol. 75 of Constable's *Miscellany* is the following statement. "The Forester (Ino statices of Leach) has been observed in vast numbers disporting on the north bank of the Serpentine, in Kensington Gardens, while not a single one was to be seen on the opposite bank, nor even in any other spot in the neighbourhood."—E. A. C.

A NOTE ON THE PUPAL COLOURATION OF VANESSA IO LINN.—On the 15th May 1953 I found 79 *Vanessa io* L. larvae; they were all about the same size, extremely easy to rear, and I lost only three of them. On the 22nd nearly all of them stopped feeding: they were moving about in all directions seeking places for pupation; a few were already hung.

The cage was a large one and it had two big containers full of nettles, also a number of sticks which I put in when I saw they were ready to pupate. Three sides of the cage are made of wood; the front consists of two panels of glass, and the two lids are of fine wire gauze netting.

Only one of the larvae chose a stick on which to pupate, and except for 10 all the others pupated on the stalks and leaves of the nettles. The pupae on the nettles were all light green with brown and golden points, some with a lot of gold; the one on the stick was the same.

The lids of this cage did not close as tightly as I wished, so I had put on them a small wooden box full of sand and heavy enough to keep the lids well closed. This small box took up about one-tenth of the space of both lids. The ten larvae which did not pupate on the nettles hung themselves under the box on the wire gauze. Their colouring was so different from the rest that they might have been another species. The ground colour was a pale beige and they were speckled all over with darkish grey; they had few golden points. It seemed as though some strong light coming through the gauze had faded them and where the box had protected them they had retained their proper colour, darkish grey. Of course this could not be the case and I think they had taken on this speckled colouring because of the wire netting above them. After seeing this big difference in the colouring between the pupae on the nettles and those on the gauze I was sorry I had not experimented like

Poulton did with different coloured boxes; but I don't think I should ever have produced this speckled appearance!

Fifty-four butterflies emerged between the 12th and 15th June. There were no aberrations, so except for a few they were all set free. Three days after releasing them no *io* were seen in the garden again. Twenty-two pupae remained and nearly all of them produced tiny hymenoptera on the 1st and 2nd July, also two big diptera which I failed to catch, and five of them just rotted away.—VERA MOLESWORTH MUSPRATT, Aicé Choko, St. Jean-de-Luz, France. 15.xi.53.

AN UNRECORDED MIGRATION OF *VANESSA CARDUI* LINN.—On 25th September 1943 a cloud of *Vanessa cardui* L. was seen crossing the camp site of the 97th General (British) Hospital at Berine near Tunis. The previous few weeks had been conspicuously free from visits from any butterflies to the neighbourhood and the sudden appearance of vast numbers flying at a height of about thirty feet above the ground toward the coast aroused interest among even the least entomologically minded members of the staff.

The swarm continued to pass all day long, and in the evening the butterflies began to settle on the plain. I took a walk along the road beside which the hospital was encamped and found that the insects had settled over a 'front' of about half a mile. Each morning the migrating swarm rose as soon as the air became warm and continued to cross the hospital site until some time on the 2nd October. Their speed of flight was apparently about ten miles per hour and steady with a following breeze. Several specimens were attracted down to a melon placed in full sunlight and these insects became easy victims from the combined effects of inebriation and the killing bottle. A selection of the specimens was later sent to the British Museum (Natural History) at South Kensington with full data. The remainder are in my own collection. At a later date, at Biskra, on the edge of the Sahara, I compared notes with Captain Wilson, R.A.M.C., who had observed the same migration flying in from the desert about the 23rd September 1943. They entered the Algeria-Tunisia coastal fertile strip at Djelli and appeared to be heading for Tunis. This information made it possible to plot their line of flight.

On 5th October, I had occasion to visit the coastal town of La Goulette in the course of my duties. There we saw great clouds of the butterflies over the town, in the streets and feeding on flowers and shrubs in the gardens. The town was alive with *cardui*. No further advance was made by the swarm. The butterflies appeared to have reached their destination.

At Berine traces of the swarm having passed over were apparent for some days as a good number of very worn specimens had dropped out from the advancing army and spent their last days among the vineyards of the area.—S. C. WINCOTT, R.A.M.C., F.Z.S.

DESTRUCTION OF *MACULINEA ARION* LINN.—*Maculinea arion* Linn. does require some protection, though in places where it is plentiful collectors can take short series for themselves without doing it any harm. I was shocked when I read the catalogue of the Bostock collection sold on 28th October 1953. There were 10½ rows of *arion* and in addition to these

9½ rows, nearly 200, taken recently by C. W. W. Hulse in N. Cornwall, probably an error for N. Devon. In this one private collection there were about 400 *arion*, nearly 200 of which were taken quite recently in one locality!—E. A. C.

COLORATION CHANGE IN THE MANTIDAE.—Dr. Saadet Ergene is continuing her experiments upon the change of coloration in growing Orthoptera in various environments. This time she is working with *Mantis religiosa*. As is well known to most who have done any collecting in southern Europe, there are two common forms of this interesting creature, a green and a brown, which are often referred to colloquially as dry and wet season forms. It has been suggested that these are genetic forms. But Dr. Ergene finds that yellow larvae on a green background turn green and green ones on a yellow background turn yellow. That is to say, they show the same results as the experiments with *Acrida*.—M. BURR, Istanbul. 6.xii.53.

DIPTERA

THE GALL-GNAT SYNDIPLOSION PETIOLI KIEFF. IN THE ISLE OF HARRIS.—In 1937 I recorded this species as occurring abundantly on the aspens (*Populus tremula*) growing on the rocks above the more westerly of the two lochs on the Isle of South Rona, Inner Hebrides. Moreover, I found it sparingly on the same tree in northern Raasay, although it was totally absent in the adjacent Isles of Scalpay and Longay and in southern Raasay. In addition, I discovered the allied species *Harmandia tremulae* Winn. on the same plant, also on South Rona. Quite unexpectedly, the same gnat was observed galling *Populus tremula* in a gorge on Mullach Mor, Isle of Rhum. Although the aspen is quite plentiful in the Outer Hebrides, until the present season diligent searches there for both species have always ended with failure. This year, in working the Harris mountain ravines, I detected small numbers of *Syndiplosis petioli* on aspens jutting out from the sides of a little gorge just above Loch Langavat, South Harris.—J. W. HESLOP HARRISON, King's College, Newcastle upon Tyne. 16.xi.53.

THE GALL-GNAT RHABDOPHAGA PSEUDOCOCCUS RÜBS. IN STAFFORDSHIRE.—Almost 40 years ago, Bagnall and I recorded this strange gall-gnat from Co. Durham. There we found it on *Salix caprea* leaves in Ryhope and Hesleden Denes. In the genus *Rhabdophaga*, the larvae usually feed in definite and characteristic galls. In this species, however, they form a scale-like covering in the angles between the midrib and the principal veins of the undersides of the leaves. Under this scale the broad orange larvae feed. This season after a long period during which I had failed to find the insect, I discovered its scale-covered larvae on the undersides of the leaves of *Salix atrocinnerea* in Hollinsclough just on the borders of Staffordshire and Derbyshire.—J. W. HESLOP HARRISON, King's College, Newcastle upon Tyne. 16.xi.53.

CORRECTION.—On page 30 of the *Record* for January 1953 it is recorded that I bred specimens of the dipteran *Winthemia variegata* Mg. from a larva of *Sphinx ligustri* L. from Boxhill, Surrey. This host

being hitherto unrecorded for this fly, Dr. van Emdem queried the matter, so I forwarded the flies for him to see. The verdict was that they were the more common *W. quadripustulata* F. I was not responsible for the wrong determination in the first place, and hope those interested will correct the error.—S. WAKELY, 26 Finsen Road, Ruskin Park, London, S.E.5.

HYMENOPTERA

MORE ABOUT ADLERIA KOLLARI HARTIG. (HYM. CYNIPIDAE).—In the Transactions of the Royal Entomological Society, Vol. 104, Part 7, pp. 195-222, Marsden-Jones returns once again to the problem of alternating generations in *Adleria kollari*, and proves that, under certain conditions, the alternate host plants of the species are *Quercus petraea* and *Q. cerris*. Nevertheless, there is very strong evidence that this cannot always be the case. In researches conducted on the Isle of Lewis, Outer Hebrides, I found an abundance of galls of *A. kollari* on the oak *Q. petraea*, at several points in the Lews Castle woods where no *Q. cerris* occurred. Later, however, I discovered the latter oak flourishing some distance away. Further, in 1952 I detected another colony of *A. kollari* in the same woods attached to *Q. petraea* growing intermingled with *Q. cerris*. Clearly, these facts are not at variance with Marsden-Jones' hypothesis. However, in the Isles of Eigg and Rhum, especially on the latter island, *Adleria kollari* is to be found freely on *Quercus petraea* in stations where no *Q. cerris* exists. In particular, I should like to emphasize the colony on the Rudha Camas Pliasgaig, Isle of Rhum, where *Q. petraea* grows spreadeagled against the towering cliffs. It is absolutely certain that no *Q. cerris* exists on the cliffs or elsewhere in the island. *Adleria kollari*, therefore, can omit the alternate generation facultatively, or both generations can be supported by *Q. petraea*.—J. W. HESLOP HARRISON, King's College, Newcastle-upon-Tyne. 16.xi.53.

Fifty Years Ago

(From *The Entomologist's Record* of 1904)

THE POOR SEASON.—The season, generally, has been a very bad one for lepidoptera, and one could hardly expect anything else from the execrable weather that has prevailed throughout the summer. I spent a few days in the Norfolk Broads at the end of June last, when fine weather prevailed, but the collecting of insects generally was a failure, neither light nor sugar proving at all attractive, and, with the exception of a few *Spilosoma urticae*, I took none of the special fen insects I wanted, nor did I succeed in finding larvae of *Tapinostola neurica*, *Nonagria cannae*, &c., but I have no doubt that it will take more than one odd visit to get into the way of finding these reed-feeding larvae . . . Sugar proved attractive enough at Middlesborough in July, but, as the only insect in numbers was *Triphaena pronuba*, which appeared in hundreds and was in grand variety, it could not be accounted satisfactory. However, I sugared in the garden throughout the autumn, with the result that, although autumn moths were very scarce, I captured on September

26th a large Noctuid, which has proved to be *Xylophasia zollikoferi*, particularly worthy of note as being taken at the time that large numbers of *Pyrameis cardui* were noticed all along the coast here from Redcar to Sunderland. This last species was particularly abundant at Redcar and Hartlepool, specimens also occurring in my garden, where I first noticed them on September 20th, it was also observed commonly at Redcar on September 21st, and at Ingleby Greenhow on the 28th.—T. A. LOFTHOUSE, Middlesborough.

BAD NEWS FROM BOSCOMBE.—I must add my wail to that of the majority and complain of the badness of the season, especially the unattractiveness of sugar. I have put on dozens of pounds of treacle, and have not set more than a score of moths taken by that means. Larvae were fairly common at intervals, but I found nothing like the numbers taken last year, which was also bad. The most noticeable larvae, fairly common in some years, were almost entirely absent . . . Moths which are common at sugar most years, such as *Anchoscelis lunosa*, *Epunda nigra*, *Agriopsis aprilina*, etc., never put in an appearance at all . . . Sallow was no good at all, only a few *Taeniocampa stabilis* and *T. cruda* being taken . . . The river was too full to really work for larvae of *Nonagria geminipuncta*, and most of the pupae I did get were ichneumonid . . . A spot where I used to get fine confluent *Anthrocera trifolii* was entirely wiped out this year owing to the flood.—R. B. ROBERTSON, Boscombe.

THE FLIGHT OF APAMEA OPHIOGRAMMA ESP.—Until this season I had always been under the impression that each insect had its own particular method of flight and that it always flew in the same manner. This year I found out that such was not the case, but that the weather appeared to bear a direct influence on the motions of some insects. On July 28th I went to a favourite hunting-ground of mine for *Apamea ophiogramma*. I arrived at dusk, and found the insect buzzing about in the usual way. The night was warm, still and cloudy. On July 29th I again went; this time it was a cold night, and a very bright moon shed its light upon the herbage. I found *A. ophiogramma* sitting quietly on the flower-heads of the betony, sucking the nectar. On July 31st I again visited the hunting-ground; this time it was warm, but very windy, and I found *A. ophiogramma* flying at a height of about nine feet, sometimes quite out of reach, dashing along with great rapidity, and looking very much like *Leucania pallens*. I found the season an exceptionally good one for *A. ophiogramma*, my take in a week was over seventy.—E. CRISP, Cambridge.

AUTUMN IMMIGRATION OF VANESSA CARDUI L.—The only observation of importance I made this autumn has been the number of *Pyrameis cardui* that occurred in Essex, during the latter part of September. There is little doubt that they were immigrants, as the specimens were all more or less worn. I saw a large number at Barking, in Essex, about September 26th, and they were to be seen in fewer numbers in my own neighbourhood. I believe the first immigrants were seen about September 19th over south-east Essex.—A. W. MERA, Forest Gate, London.

Current Literature

THE ENTOMOLOGIST'S MONTHLY MAGAZINE for November 1953 (Vol. 89, No. 1074) contains, among others, the following papers: P. 271, *Immigrant Lepidoptera observed in Wales during 1952* by P. M. Miles, which records the appearances last year of *Vanessa cardui* L., *V. atalanta* L., *Macroglossum stellatarum* L., *Plusia gamma* L., *Lophygma exigua* Hüb., *Heliothis peltigera* Schiff. and *Nomophila noctuella* Schiff. P. 273, a paper by E. J. Pearce on the supposed British status of the Pselaphids *Tychus ibericus* Mots and *Bryaxis clavicornis* Panz. P. 275, *The Sawfly Tenthredo temula of British Authors is an undescribed species* by R. B. Benson. P. 281, *Some Diptera bred from Cow Dung* by B. R. Laurence. P. 284, Part II of the Fauna of the district around Juniper Hall, Surrey, by J. L. Cloudsley-Thompson and J. H. P. Sankey. There is also a paper by Lt.-Col. F. C. Fraser on the Indian leaf-butterfly, which we mention on another page.

NATURE for 31st October 1953 (Vol. 172, No. 4383) has a paper on Phase Coloration in Lepidopterous larvae. K. M. Doull of the Entomology Dept., Canterbury Agricultural College, Lincoln College, New Zealand, reports that following on field observations on *Persectania ewingi*, the New Zealand armyworm, larvae exhibiting darker colouration were produced in the laboratory by rearing them under crowded conditions.

A theory is tentatively suggested in explanation of this phenomenon that under crowded conditions the increased activity leads to an increased metabolic rate and the production of waste products in excess of the amounts which can be excreted, the resulting accumulation of waste products in the body being responsible for the colouration.

If it is assumed that the accumulated waste products contain the pigments contained in the food, the theory is supported by the fact that when crowded larvae were fed an artificial food containing no pigment, no darkening of the larvae was observed. Experiments on feeding crowded larvae on pigmented artificial foods are to follow.

HANDBOOKS FOR THE IDENTIFICATION OF BRITISH INSECTS: COLEOPTERA.

Published by the Royal Entomological Society of London. 1953.

Vol. V, Part 15: SCOLYTIDAE & PLATYPODIDAE. By E. A. J. Duffy. 20 pp., 40 figs. Price 3s. 6d.

This economically important group (the Bark Beetles) was monographed, as regards its British members, by Prof. J. W. Munro in 1926 (*For. Com. Bull.*, No. 8). Since then, however, a number of additional species have been found more or less established here; and some of our once rare natives are now far less rare, owing to increased felling which favours internal spread and sometimes to reinforcement by continental stock. Within the compact limits set by these Handbooks, the present contribution meets the need for a new revision. The author acknowledges a debt to Balachowsky's work (1949) in the *Faune de France* series. He gives the Platypodines family rank but they can hardly be considered other than a subfamily of Scolytidae—the more so as the

latter, according to Crowson (*Ent. mon. Mag.*, 1953, **89**: 238) are barely separable from Curculionidae. Though the biological information is usually adequate, the author excuses himself for the scantiness of the data on distribution and incidence on the ground that the transportability of these insects consequent upon their habits renders such data of little use. As a result, there is nothing (for instance) to indicate that of the two species of *Leperesinus* (p. 12) one is a very common indigene and the other a very rare alien; or that *Trypophloeus granulatus*—still presumably unique as British—is any scarcer than the widespread *T. asperatus* (pp. 13-14). One wonders why some species and genera hitherto always considered adventive are treated as native (*L. orni*, *Phloeosinus*, *Hylurgus*, *Crypturgus*)—see bottom of p. 3, where, perhaps, some such phrase as 'unless established' may have been left out after 'All imported species'. (The exotic, now cosmopolitan, *H. eruditus*—mentioned in the key as imported—is marked as *doubtfully* indigenous, we are glad to see!) *Hylastes brunneus* (p. 12) and *Pityogenes trepanatus* (p. 15) are given as northern, but both occur also in the south; *Pityophthorus lichtensteini*, however (p. 14) might well have been indicated as northern. We should like to know on what evidence *Taphrorychus villifrons* (p. 14) is reinstated as British (cf. *Ent. mon. Mag.*, 1940, **76**: 6, 40); a reference would have clarified this, if it be not an error. These are intended only as minor criticisms of a generally excellent production. A useful note on palaeartic or world extension, etc., is given for most genera with more than one species. It seems absurd that the unfortunate misspelling *Onthotomicus*, which suggests something to do with dung, should have to be perpetuated; most Continental authors write *Orthotomicus*, which no-one can doubt was what Ferrari intended. The principal name-change is *Blastophagus* Eich. in place of the long familiar *Myelophilus* Eich. The figures are very good and there are 7 drawings of whole beetles beautifully executed by Mrs. C. A. O'Brien.

A. A. A.



EXCHANGES AND WANTS

Wanted.—I would be grateful for the loan of any photograph or coloured drawing of specimens of *Lysandra coridon* of the various forms of ab. *extrema* as illustrated and described in 'Bright & Leeds' Monograph of the Chalk Hill Blue Butterfly, pl. 10 and 18.—S. G. Castle Russell, 5 Bridge Road, Cranleigh, Surrey.

Wanted.—Volume XV (1903) of *The Entomologist's Record*, in parts as issued. £1 offered.—F. W. Byers, 59 Gurney Court Road, St. Albans, Herts.

Wanted.—Set or unset, *Zygaena exulans*, Scotch Burnet, *Zygaena purpuralis*, Transparent Burnet, *Zygaena Meliloti*, New Forest Burnet, *Zygaena lonicerae*, Narrow bordered 5 Spot Burnet, and any of their vars. Also *Adopoea lineola*, The Essex Skipper. Can give almost any species of British Lepidoptera in exchange, or cash. If you have any of the above to offer, please send long list of desiderata.—Chas. B. Antram, "Heathside", Latchmoor, Brockenhurst, Hants.

Wanted.—Owing to the occurrence of virus disease amongst the Laboratory stock of *Biston betularia*, it will be necessary to breed from fresh material next year. Would anyone willing to supply either *typical*, *carbonaria*, or *insularia* pupae (either exchange or cash) please notify:—The Secretary, Genetics Laboratory, Department of Zoology, University Museum, Oxford.—Dr. H. B. D. Kettlewell, Department of Zoology, Capetown University, Rondebosch, South Africa.

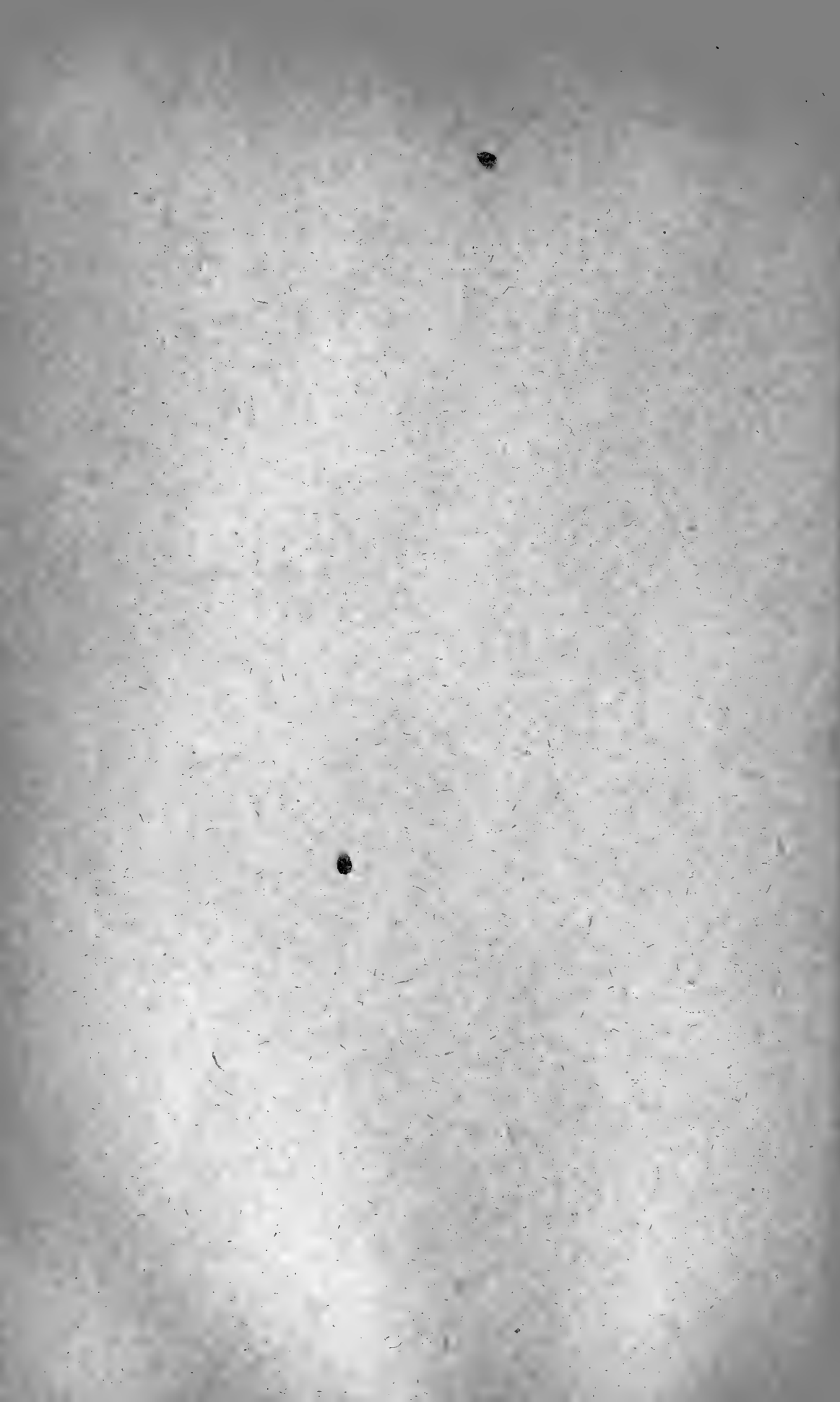
Wanted.—Pupae of *L. sinapis* and pupae of *C. tullia*, for cash.—W. Morris, 66 Wells Road, Penn, Wolverhampton, Staffs.

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EDITED BY
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The 'Hippocrepis Colias'

By B. J. LEMPKE.

Some months ago Dr. E. A. Cockayne published an article on the specific nomenclature of the 'Hippocrepis Colias' (*Ent. Rec.*, 64: 166-168, June 1952). His conclusion that the correct name is not *Colias australis* Verity, the name to which we were already completely accustomed, but *Colias calida* Verity, is in my opinion well founded. It is, however, a pity that Dr. Cockayne did not try to settle the nomenclature definitely by examining the question of the type specimens of Verity's *australis*. For there might always remain the difficulty that these really belonged to the Hippocrepis species notwithstanding the fact that the description suits the other species. In order to obtain for myself a solution of this problem I wrote to Dr. Verity, asking him if he would examine his types of *australis* and tell me his opinion. He most kindly answered me as follows:—

"I am sorry in this case I cannot carry you to the end of your query, because my description of *australis* was made in England, when I had before me a series of that butterfly. I do not even remember if it was in the British Museum or at Tring. You will therefore have to ask some competent person in England to look it up and give us a judgment as to which '*hyale*' it belongs."

(For a good understanding of the last sentence I must add that Dr. Verity does not consider both units as species but as 'exerges'.)

After this answer it will be clear that there is no objection to consider the material from Andalusia in the Tring Museum as the series from which Verity described his *australis*. It was collected before 1901, so that it is pretty certain that the specimens formed part of the Rothschild collection when the description of *australis* was made.

As it is in this particular case of great importance to have *australis* definitely fixed, I hope that Dr. Cockayne will add the last part to his study on the name of the Hippocrepis species by fixing types from the Tring series and, if possible, by having them photographed for one of the splendid plates which make *The Entomologist's Record* such an excellent journal at present.

A few words as to Dr. Verity's suggestion that *hyale* and *calida* are 'exerges', not species. There is of course no sharp distinction between 'still subspecies' and 'already species' and cases in which different opinions are possible will always remain. I need only mention *napi* and *bryoniae*, *venata* and '*sylvanus*', *malvae* and *malvaeoides*, etc. But in the case of *hyale* and *calida* I do not believe that there can be a doubt about the specific status of the latter. The last few years both have repeatedly been bred in different countries, and all authors agree that there is no difficulty in separating them in the caterpillar state. After the often cited articles of Berger and Fontaine (1947), and Vallins, Dewick and Harbottle (1950), a third was published by Beuret (1951), "*Colias australis* Vrt., bona species", *Mitt. ent. Ges. Basel*, 1 (N.F.): 2-6, 17-20, 24-27, with figures. The Swiss author found the same differences as his predecessors (he did not know the English article) and gives good illustrations of them. None of the breeders found a segregation in the markings of the *hyale* or *calida* caterpillars. the differences are

constant. This would be an impossibility if we had to deal with two 'subspecies', flying together in a large part of their territory, and constantly exchanging genes (for otherwise they would not belong to the same specific unit!). Add to this the differences in eggs and chrysalis, and it will be clear that we must be in the presence of two good species.

But, Dr. Verity writes in his answer to my query, "I have a large series from Piedmont with both mixed together and perfect transition in its individual variation. Most of them in fact I am quite incapable of assigning to one or to the other". It is indeed a fact that, though many specimens can be determined at once, there are others which are absolutely indeterminable. But are they really transitions, the result of a crossing in nature of *hyale* and *calida*? I do not believe so. In my opinion we have an example here of parallel development in colour and markings, in which both species overlap. Let us remember the case of some *Anopheles* species which are absolutely identical to the taxonomist but which are without any doubt good species for the biologist!

I may also refer to an excellent article of Warren, published in 1951 ("Speciation in the Genus *Colias*: with special reference to *C. hyale* and *C. australis*," *Lambill*, 50: 90-97), in which he studies the ♂ genitalia of *hyale* and *calida*. Though the differences are rather slight, they are of the same degree as those between *C. phicomone* Esp. and *C. palaeno* L., two units of which nobody would deny the specific distinctness. Beuret, who could not know Warren's article, studied the ♂ genitalia too, and found differences which more or less agree with those of Warren. The Swiss author also detected important statistical differences in some kinds of scales, though they cannot be used for absolutely reliable determination because they overlap.

There are no publications about the ♀ genitalia. I could make only a few slides, because of lack of time and material. The lamina dentata (or signum), which so often furnishes excellent differences, is of no use in these species. The bursa of *hyale* was only slightly darker than that of *calida*, a difference which would correspond with the stronger sclerotization of the *hyale* ♂ stated by Warren. But I do not know if this difference is reliable in the ♀.

Warren arrives at the conclusion that the specific isolation of *hyale* and *calida* "is of considerable antiquity" (*l.c.*, p. 95). The excellent Belgian taxonomist S. G. Kiriakoff also discusses the problem of these species in a recent article (August 1952, "Notes systématiques VI, Sur la taxonomie de quelques Lépidoptères", *Lambill*, 52: 41-46). His opinion is that both are without any doubt good species, but very near to each other. One species has not evolved from the other, but both have a common ancestor. Though he does not use the term, he considers them as 'sibling species', a term introduced by Mayr (1942, *Systematics and the Origin of Species*, p. 151) to replace the term 'twin species' which gives a wrong idea of the relation between such species. Kiriakoff expresses their relation by saying that they are two true species, forming one 'ultra-species'.

This short survey of the literature of the two *Colias* species proves that they form a problem of the greatest interest, and we may be sure that the last word has not yet been said about them.

The Lectotype of *Colias australis* Verity (Lep. Pieridae)

By N. D. RILEY, C.B.E., F.R.E.S.

Dr. Cockayne's recent article (1952, *Ent. Record*, **64**: 166) on '*Colias calida* Verity: the correct name for the butterfly lately added to the British list' has called attention to the desirability of fixing the name *australis* to a specimen.

Verity published the name in 1911 (*Rhop. Pal.*: 347) in the following words, under a general reference to *Colias hyale*:—"En Andalousie (Espagne) vole une belle race bien distincte, par la teinte jaune du ♂ excessivement vive, par le revers, et en ce qu'une grande proportion des ♀♀ sont jaunes; les dessins noirs sont plutôt réduits en étendue [*australis*]."

This description is freely but accurately translated by Dr. Cockayne except in respect of two points. Verity does not say that the underside is especially bright, but that the insect is distinguished by the excessively bright yellow of the male, [and] by the underside. As to the black markings, 'plutôt réduits' means 'rather reduced' not 'a very great reduction.' However, that is beside the point of this note.

Verity did not state where the material was on which he based his name, or give any details of its extent. However, it is known that, as he himself stated in the preface (p. x) to his *Rhopalocera Palaearctica*, the Supplement to that work, in which the name *australis* was published, was based 'en grande partie' on the material he examined in 1910 in the British Museum and at Tring.

The only Andalusian material of '*Colias hyale*' now in the Tring Museum was not received until long after Dr. Verity's visit. In the British Museum (Natural History) there were in 1910 certainly the seven specimens (4♂ 3♀), lettered *d'* to *j'*, listed in South's Catalogue of the Leech collection of Palaearctic Butterflies, and all labelled simply 'Andalusia.' These specimens, judging by their labels, formed part of the Mützell collection which had been bought by Leech through Kricheldorf, who was a dealer. The data labels are very unreliable. Richard South warned me against them and said that the specimens when they reached London had no data labels. When this was pointed out to Kricheldorf he came at once to London armed with locality labels which he thereupon attached to the specimens as fast as he could go. He assured South that he knew the exact locality of every specimen! However, that again is beside the point of this note.

Inquiry of Dr. Verity as to whether he could remember or had details of the specimens on which he based the name '*australis*' elicited a reply (16.4.53) from which the following are extracts: '... the typical specimens are in England. It is so long ago I saw them that I cannot quite remember if they were in London or at Tring. I thought there were more than six . . . but that might quite well be a "lapsus" . . . I am sorry to learn that they are from the Leech collection . . . because there are many dreadful blunders in the locality labels of western specimens . . . If you find that . . . the six specimens of the B.M. must be syntypes, I let you judge as to whether a lectotype is necessary.' Dr. Verity then expresses doubt as to the desirability of doing

this because a single specimen cannot possibly show all the 'racial characters.' In my view it is all the more necessary in such cases to select a single specimen to which the *name* can attach, and I therefore select as lectotype of Verity's *Colias hyale australis* (1911), the male in the General Collection of the British Museum (Natural History) bearing the following data labels: (1) Andalusia; (2) Leech Coll. 1901-173, *Colias hyale*. g', (3) Dissected. Slide No. 1733. B. C. S. Warren; (4) [in Warren's handwriting] *C. mer. australis*; (5) *Colias hyale australis* Verity 1911 ♂ Lectotype selected by N. D. Riley 27.x.53. A reference to the publication of this note will be added later.

The lectotype is illustrated on plate I, both surfaces and genitalia. For the latter I am indebted to B. C. S. Warren.

Dr. Verity's reference to 'six⁴ specimens' is due to the fact that only six are now present in the General Collection. There is no record of what has happened to the seventh, lettered *e'*. Probably it has at some time been transferred thoughtlessly to the duplicates, and so given away in exchange.

A Note on the Genitalia of *Colias australis* Verity

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

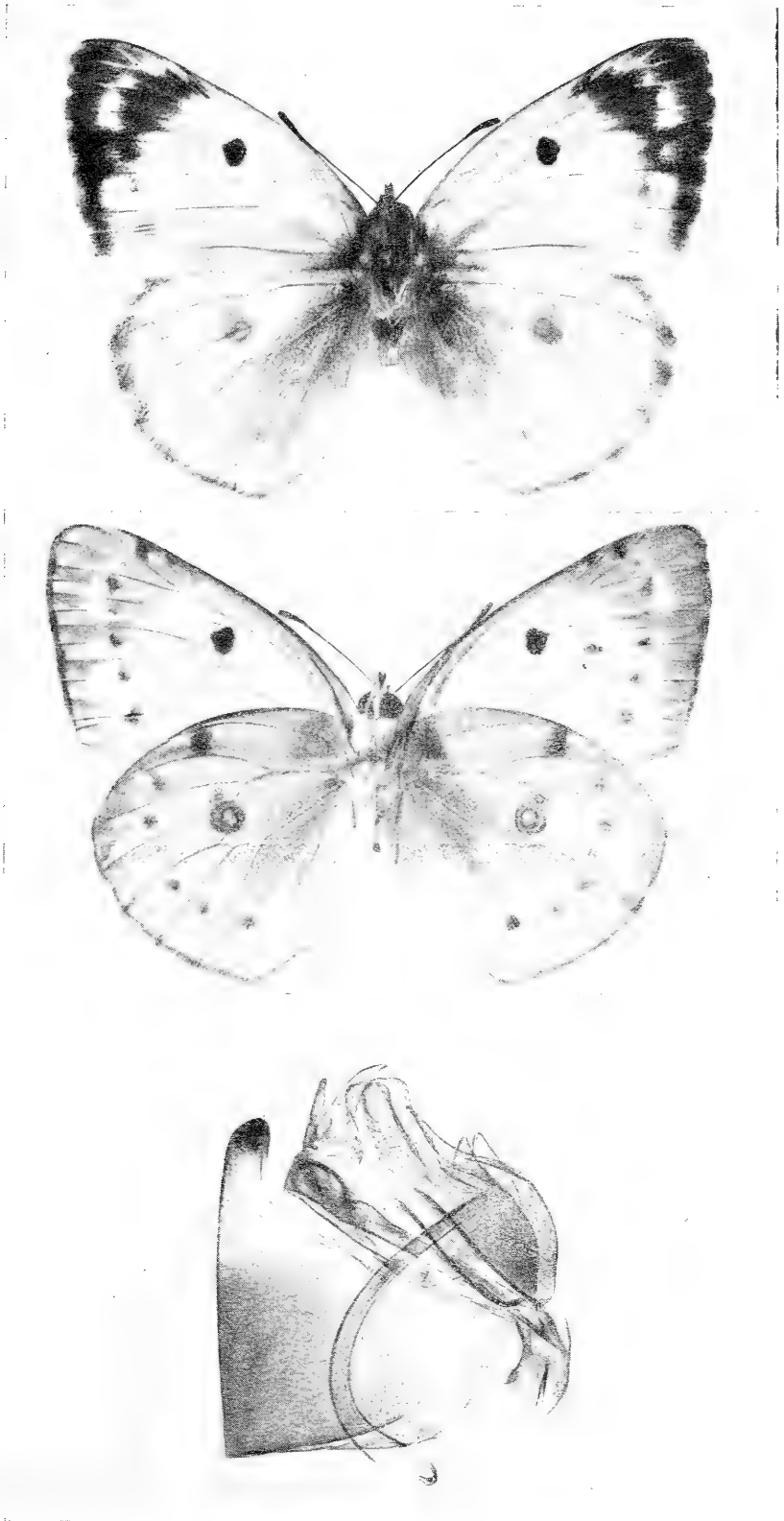
I understand that the specimen of *Colias australis* Verity which Mr. Riley has chosen as the type of this species is the best specimen which the British Museum possesses; but in my opinion the genitalia of this specimen (reproduced on Plate I) may be abnormal. In *Colias* the genitalia are often very similar between species. I have established that *calida* and *hyale* can be distinguished by certain slight characters, but as these characters are of the same nature as those that separate *edusa* and *phicomone* they must be of more value than would be thought. The photograph I have made of *australis* shows the tegumen to be as in *calida* and the claspers as *hyale*. I was unable to obtain another specimen. If it is proved to be normal, I can only think that *australis* is a third species! I do not think it is a hybrid, for the formations of the two parts that give the characters would then not be typical, but intermediate to some extent. I have proved this in other cases.

The genitalia are difficult to mount in *Colias*, and the type in this photograph might cause workers who were not very skilled to assume that specimens of *hyale* or *calida* were *australis*. Mr. Riley seems inclined to assume that the specimen is normal and leave it to the future to establish what it is. But as it stands I do not see how one can say this *australis* is conspecific with one rather than the other of *hyale* and *calida*. It was unfortunate that no other specimens were available of this deep yellow type.

In the photograph the 'false uncus' is off the true profile and so looks too deep. It is not quite characteristic of either of the others.

Aberrations of *Diacrisia sannio* Linn.

Gerherdinger (*Z. wien Ent., Ges.*, 1953, 38, 289-308) has written a monograph on *Diacrisia sannio* Linn. with a coloured plate. He gives descriptions of a number of subspecies and says that ab. *karelica* Bryk



Colias australis Verity: Lectotype. ♂. Upper and Under sides. $\times 1\frac{1}{2}$.
Below: Genitalia (B. C. S. Warren).

is stated by Bryk in a private letter to be a subspecies, but he cannot treat it as such on the strength of a private letter.

Ab. ♂ *bohmanni* Bryk (*Ent. Tidskr.*, 1923, **44**, 113) has on the hind wing a matt brown indented discoidal spot with a more or less diffuse brown marginal band leaving between this and the rosy fringe the shining pale ground of the wing. The under side of the fore wing is rust coloured, brighter round the dark discoidal spot and further out ochre yellow. The cream yellow ground of the under side of the hind wing is unicolorous. If a dark discoidal spot is present it is *bohmanni*.

Ab. ♂ *latevittata* Bryk (*ibid.*, 114) has a very broad marginal band and strong discoidal spot in the hind wing.

Ab. ♂ *krejai* Closs (*Int. Ent. Z.*, 1914/1915, **8**, 37) has a unicolorous black-brown discoidal spot with no red and a very broad border on the hind wing.

Ab. ♂ *deroseata* Closs (*Int. Ent. Z.*, 1916/1917, **10**, 39). Red in discoidal spot and in all markings absent. Berlin.

Ab. ♂ *nebulosa* Bryk (*Ent. Tidskr.*, 1923, **44**, 115) Seitz Suppl. is incorrect. The hind wing is uniform ash grey-brown without any special discoidal spot and little light ground colour between it and the broad border. The fore wing is normal but the discoidal spot is invaded by red. Sweden.

Ab. ♂ *schawerdae* Anger (*Z. Oest. Ent.-Ver.*, 1919, **4**, 5). The hind wing is thickly sprinkled with rose red. Fore wing normal. Austria. Ab. *rosea* Cockayne (*Ent. Record*, 1951, 63, 262) is probably a synonym.

Ab. ♂ *roseivenata* Bryk (*Arkiv. f. Zool.*, 1948, **41**, Al.45). Antennae with some red scaling; the smoky yellow abdomen is black-brown with red scaling on the ventral surface; nervures on hind wing red. Korea. The author says he has this form from Austria and it appeared in the second generation.

Ab. ♂ *frezzii* Rocci (*Atti. Soc. Ligust.*, 1914, **24**, 187). Very pale yellow with light red markings; hind wing nearly white; the dark sub marginal band and discoidal spot absent.

Ab. *decolorata* Cockayne (*Ent. Record*, 1951, **62**, 262) is omitted by the author.

Ab. ♂, ♀ *moerens* Strand (*Arkiv. Math. og Naturvidensk, Kristiania*, 1903, **25**, 23) syn. *pseudomoerens* Strand. The hind wing of ♀ is entirely black with the exception of two rust-red flecks on costa; the ♂ hind wing is black except for an area in the middle and the pale nervures. Norway.

Ab. ♂, ♀ *montana* Gian. Like *moerens* but only the female sex is affected. Zermatt.

Ab. ♂ *hilaris* Spuler. Yellow with no red and a weak grey band on the hind wing. Turkestan.

Ab. ♂, ♀ *flavida* Oberthür (*Et. Léop. Comp.*, 1911, **5**, 84). Parts red normally are replaced by pale yellow. Cauterets and E. Turkestan.

Ab. ♀ *flava* Hoerhammer (*Int. Ent. Z.*, 1934, **28**, 86). Differs from ab. *flavida* Obert. in being more albinistic; the ground colour more like that of a ♂; nervures are brown. Berlin.

Ab. ♂ *immaculata* Oberthür (*Et. Léop. Comp.*, 1911, **5**, 84). The band on the hind wing is nearly obsolete.

Ab. ♂ *immarginata* Niepelt (*Int. Ent. Z.*, 1908/1909, **2**, 352). The

black band on the hind wing is completely absent. Coloured plate 19, f. 3.

Ab. ♂, ♀ *krausmanni* Gerherdinger, p. 304, Pl. 19, f. 4. Antennae black-brown, fore wing and thorax unicolorous chestnut brown, no markings, no red. Hind wing and abdomen dirty grey, discoidal spot and band indistinct. Rohrwald near Vienna. A perfect ♂ was bred in the third generation, a ♀ equally melanic was found dead in the pupa case. This is a recessive melanic.

Ab. ♂ *flarescens* Gerherdinger, p. 305, Pl. 19, f. 5. Ground colour ochre yellow, nervures and red discoidal spot only a little darker; fringes bright yellow. Salzburg. This is a brighter form of ab. *flava* Hoerhammer.

Ab. ♂ *rubescens* Gerherdinger, p. 305. Antennae shining red much darker than those of ssp. *rubroventralis* Bryk; fore wing discoidal red with no black, fringes bright brick-red, not rosy, inner margin increased red dusting and reduction of black scales. Rohrwald near Vienna. Bred in third generation.

Ab. ♂ *melaina* Gerherdinger, p. 306. Under side of fore wing uniformly black with no marking, a yellow streak runs along subcostal nervure to discoidal spot. Vent and Bisamberg.

gen. *aestiva* Cost. Second generation in Apennines. Smaller, the hind wings of the female are hardly brown at all, but entirely yellow.

The Occurrence of *Blastobasis decolorella* Wollaston in S.E. Kent

By S. WAKELY.

The first record of the occurrence of this species in Britain was of a single specimen taken at Herne Hill, London, on 11th June 1946. Later, it was found to be fairly common in the district—Village Way, Dulwich, appearing to be its headquarters. Odd specimens have been found nearly a mile away—in Huntslip Road—and Canon T. G. Edwards has taken it recently in his garden at Alleyn Park, Dulwich. It is double-brooded, occurring in June and October, and I took 13 specimens in June last year (1953) in less than half an hour from one fence in Dulwich. This gives a rough idea of how numerous it is. The moths have a habit of resting on oak fences, which enables anyone with keen eyesight to spot them.

It did not seem to me at all likely that this was the only colony of this species in the country, as the larvae feed on almost any form of withered vegetation such as fallen leaves, berries, etc. However, it was not until 1953 that I heard of its occurrence elsewhere. In June, Mr. A. M. Morley showed me several specimens which he had recently taken at a m.v. lamp in his garden at Folkestone, Kent, and which were easily recognisable as this species. A few more were taken in the autumn of the second brood and a single specimen was found among some species taken in the autumn of 1952. From these records it seems certain that the moth is breeding in the vicinity.

It is to be hoped that more entomologists who regularly use m.v. lamps will get interested in the micro-lepidoptera and thus add to our knowledge of the distribution of such species as this.

Strangely enough, there appear to be no records of the occurrence of this insect from Europe, previous records coming from the Madeira Islands only.

A paper on the occurrence of *Blastobasis decolorella* appeared in the *Proceedings of the South London Entom. & N.H. Society* for 1947-8, pp. 205-8; and there are coloured illustrations of both imagines and larvae on Plate VIII of the issue for 1948-9.

Eumenis semele clarensis de Lattin; An Aberration, Not a Subspecies

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

Mr. H. C. Huggins, after he had read Dr. de Lattin's description of ssp. *clarensis* (*Ent. Record*, 1952, **64**: 335), wrote to me and said there was no such subspecies and that many of the *semele* on the Burren, in Co. Clare, Ireland, were dark brown. I asked him to collect a series taken at random, when he went to the Burren in 1953, and he very kindly did so. The weather was very unfavourable, but he took a series of which he sent 14 males and 6 females unset. Two males appear to me to match Sabine's and to agree with Dr. de Lattin's description, others are transitional to the two darkest, which are unusually dark brown. None of the females is *clarensis*, two are rather light brown and the others are clearly marked dark brown insects without the bright red-brown coloration found in *semele* from some Irish localities.

Thus *clarensis* is not a subspecies and must be degraded to infra-subspecific rank. It is not even a sharply defined aberration, but is merely the palest and greyist of a graded series. Sabine made his living by collecting and selling Lepidoptera and naturally chose those likely to attract his clients and did not bother to set those unlikely to repay him for his trouble. The *semele* from the Burren which Dr. de Lattin and others possess were carefully selected by Sabine. I have not seen specimens like them from any other locality, and the only one in Donovan's long series of Irish *semele* is also from Co. Clare.

The Decline of *Lysandra bellargus* Rott.

By S. R. BOWDEN.

An enquiry from Mr. K. E. West of Bedford sent me back this year (1953) to the *L. bellargus* locality west of Hitchin, where in 1943 and following years I found the species in thousands. On 6th September I took a few hours off from *Pieris napi* and walked backwards and forwards over the hills, but without seeing a single Adonis. The weather was good enough, for as well as other butterflies some *L. coridon* of both sexes were still flying, though for the most part in poor condition. A few years back, the invading *bellargus* here vastly outnumbered the long-established *coridon*, which had been in eclipse. Indeed at this time (c.f. *Entomologist*, **82**: 250 (1949)), *bellargus* spread north-eastwards, whether naturally or otherwise, as far as Royston and Fleam Dyke. In recent years *coridon* has been increasing again.

In 1951 and 1952 unfortunately I did not visit the local *bellargus* colonies, but it appears probable that a marked drop in numbers oc-

curred in 1951. The spring of that year was wet, May being cooler and less sunny than for ten years past. August also was wetter than usual, with little sun and no really warm spell, and in early September there were only one or two good days. Mr. B. B. West remarked that in 1952 "unfortunately the Adonis Blue (*Lysandra bellargus*) was conspicuous by its absence. The summer brood did not appear and in consequence there was not an autumn emergence" (*Beds. Naturalist*, 7: 24).

The decline seems to have been general. It may be that similar weather conditions prevailed in other localities, but weather alone seems too simple an explanation. Mr. A. Valentine remarks (*in litt.*) that the thousands that he used to find at a place in the south Chilterns were reduced already in 1950 to "penny numbers." Mr. H. E. Webb tells me that the species has gradually declined almost to extinction in his favourite localities in the mid-Chilterns. Apparently it has thinned out even at Folkestone, where it used to be very abundant. News from Wiltshire is not reassuring: though apparently still plentiful near Heytesbury *bellargus* has disappeared from a place near Westbury. Mr. F. M. B. Carr reported (*Ent. Rec.*, 65: 40) a sad falling off at Hod Hill over 3 years to June 1952 with no sign of recovery. Mr. H. G. Short tells me that in September it appeared to be plentiful near Swanage over a fair area, though the position in Surrey on the North Downs was not so good when he was there in June.

It is known that *bellargus* does persist, though in meagre numbers, on the hills west of Hitchin. If it is not molested unduly it may well recover, though probably it will never again reach the vast numbers that exploited new territory in the years following 1943.

Notes on the Larva of *Apatura iris* Linn.

By H. SYMES, M.A.

The Purple Emperor has, I suppose, more glamour attached to it than any other English butterfly. Every schoolboy collector longs to catch one, and not many do. *A. iris* has always had a good press. One of the Victorian writers on Entomology—I think it was the Rev. F. O. Morris—quotes Virgil's line about the goddess of that name—

"Mille trahens varios adverso sole colores" (*Aen.*, iv, 701)

and in our own days the Poet Laureate has two fine lines about this butterfly in *King Cole*:—

"And that dark prince, the oakwood haunting thing
Dyed with blue burnish like the mallard's wing."

Nor has the more sordid side of the picture by any means been neglected, for the earlier writers all seem to have taken delight in making facetious allusions to the depraved tastes of the male. On the other hand, they said little or nothing about the refined habits of the larva, until the very full account of the Life Story of *Apatura iris*, by Stanley Morris, was published in the *Entomologist* in 1938.

Between the years 1931 and 1947 I spent many hours searching for larvae of *iris* after hibernation in one of the woods near Oxford. During this period I found 26 larvae and one pupa. The only year in which I failed to find at least one larva was 1932, but I did not visit the locality in 1938-40, or in 1943-6. One of the most striking characteristics of the insect in this wood was its attachment to two particular willow bushes.

On one of these, a *Salix caprea* with very large coarse leaves, I found a larva in six of the ten years that I visited the wood, always a single individual except in 1947, when there were two. On the other bush, a *Salix cinerea* with leaves of medium size, I found nine larvae in four years, four of them in 1936 and three in 1942. Alas! when I last visited the wood, in 1950, both these favoured bushes had disappeared, and the oaks that sheltered them had been felled.

This partiality of *iris* for a particular bush is, I believe, fairly well known. I remember being shown a very ancient willow near Brockenhurst, in the New Forest, on which larvae had been found year after year about the turn of the century. In South Wilts I have found the larva on the same bush in two successive years, and on no other in the locality. It was a very old, tall willow, but the larvae were not more than four feet from the ground. Most of the larvae in the Oxford wood were about this height from the ground, but two or three were eight or ten feet up the tree. I have never found a larva on a very small bush, but always on one of mature growth, at least ten years old, or even of much greater age.

The year 1936 was far and away the most productive year, as I found eleven larvae and one pupa: this last find I have always regarded as rather a triumph. On 22nd June, when it was too late in the season to expect to find another larva to complete my dozen, I made a determined search for a pupa, and in time I came across a willow bush with only one main stem, about twelve feet high. While examining this I found unmistakable evidence that an *iris* larva had been feeding there: a silk pad on the upper surface of a leaf, and several well-chewed leaves near by. I started a systematic search of the undersides of the leaves, and eventually found the pupa suspended in the normal way. It harmonised so perfectly with its surroundings that it was not at all easy to see, in the middle of the bush.

I have already mentioned that sixteen of the twenty-six larvae I found over a period of years in a comparatively small wood came from two bushes. The remaining ten were spread over eight different willows, well distributed throughout the wood: the two favoured bushes were on opposite sides of the wood and close to its edge. The larvae always rest on the upper surface of a leaf, even when preparing for a moult. I have a very strong idea that a larva which is to produce a male imago has larger 'horns' in the final instar than a prospective female. I do not know if anyone else has noticed this, or if it is always the case, but I have certainly made more than one correct prognosis of sex based on no other evidence than the size of the horns.

Searching for the larvae is much better than beating, at any rate after hibernation. When resting with a firm hold on its silken pad a larva is not easily dislodged by the beating-stick. I certainly obtained my first larva, on 30th May 1931, by beating, but three weeks later I was taught a lesson when I dislodged a larva that had already made its arrangements for pupating. The change took place that night, and as the natural conditions could not be reproduced, the pupa was not perfectly formed and the imago emerged as a partial cripple. Since then I have never beaten for *iris* larvae.

None of my larvae has ever proved to have been 'stung' by a parasite, and they have all been perfectly healthy in captivity. In dry weather

I have usually sprayed the foodplant with rain water towards evening, and have often noticed a larva gratefully absorbing a drop or two. This treatment was suggested to me by the late Claude Rippon, who introduced me to the Oxford wood and pointed out that as the soil was very damp, the willows were drenched with dew nearly every night.

In 1936 I studied the habits of the larva in some detail. One trait that particularly appealed to me was its custom of spinning a silk pad on the upper surface of a leaf and using this as a kind of sitting-room: occasionally, when feeling lazy, I suppose, it would eat the edges of this leaf all round until it had scarcely room to sit on, but generally it walked slowly to another leaf for its meal. It laid a slight silken track as it went there for the first time, to guide it on its way back to its sitting-room. This laying of a silken track resembles the practice of the larva of the Pine Processionary Moth (*Thaumetopoea pityocampa* Schiff.) described in great detail by Henri Fabre. The larva often returned to the same leaf and continued to eat it until it was almost or entirely consumed. Then it would wander about and look for a fresh leaf to eat: it was very particular about selecting the right one, and often took some time in making its choice. On returning to its sitting-room leaf it would crawl up the mid-rib to the tip of the leaf, do an about turn, and then rest with its head raised, facing towards the stalk of the leaf, so that it was ready to start off for its next meal.

Even in their last skin my larvae fed slowly and did not eat more than about two large willow leaves in twentyfour hours. They generally fed for about forty minutes and then rested for hours, and were always very methodical in their habits. I timed some of their meals. On 6th June one larva had a feed about 6 p.m., rested for more than three hours, began to feed again at 9.40 p.m., and stopped suddenly at 10.20. It then felt its way very cautiously back to its sitting-room, the leaf next below the one it had been eating, and took six and a half minutes before settling down to rest. During the forty minutes that it was feeding, it ate about one-third of a rather large leaf of *Salix caprea*. Next day, this larva fed from 8.40 p.m. to 9.20 p.m., and started again at 10.48 p.m. On 8th June it fed from 4.50 p.m. till 5.2 p.m., an unusually short meal.

When feeding, the larvae showed distinct signs of nervousness. Sometimes they would stop eating at the sound of a voice near them, or the jarring of the table on which the cage was resting, or the slamming of a door at the other end of the house. Exposure to the sun seemed to excite them and make them feed much more rapidly. I found it advisable to keep not more than two larvae, when nearly full grown, in the same cage, as when crawling about in search of a fresh leaf to eat, they might collide with one another, which always seemed to have an irritating and disturbing effect, or if two picked upon the same leaf, serious trouble was likely to arise, although I never saw an actual fight or any bloodshed. Still, I feared that their regular feeding habits might be interrupted, and that this might eventually result in undersized specimens. Moreover, any interruption during the four days' rest before pupation would almost certainly be detrimental to the larva's well-being.

Preparations for pupating are a very serious business. The first sign is that the larva carefully fastens the stalk of the leaf under which

it is to pupate to the twig with several strands of silk. Then it retires to the under side of the leaf and rests there, head upwards, for about two days, during which time it spins a silk pad from which the pupa will hang. On the third day it reverses its position and then hangs head downwards for two days before changing into a pupa. In one case that I timed, this operation began at 6.35 p.m. and was completed at 7.15 p.m.; another took less than half an hour.

The pupa is very lively, jerking itself about vigorously if disturbed. Sometimes I heard these jerking movements when, as far as I could tell, nothing was happening to disturb it. Of my dozen pupae, two remained in that state for sixteen days, two for seventeen, four for eighteen, and three for nineteen, while from the pupa that I found, the imago emerged seventeen days later.

The imago seems to emerge at almost any time in the twenty-four hours. My earliest specimen appeared shortly before 4.15 a.m., and the latest at 10.30 p.m. I bred eleven males and sixteen females from the Oxford locality, the preponderance of females being rather unexpected.

I have seldom seen *iris* on the wing. Once or twice I saw one flying round the top of an oak tree—and as I watched it, I could not imagine how our forebears ever managed to catch one in a net at the end of a forty-foot pole—but it refused to be lured down by the bait of a very ripe hedgehog, which I had transported for twenty-six miles in the back of my car, driving my companion to smoke furiously throughout the journey. On another occasion, I was talking to Mr. A. M. Morley outside the wood, when an Emperor appeared, and circled swiftly round the bonnet of my car, attracted presumably by the fumes of petrol.

It is strange that *iris* should have vanished from the New Forest, where, despite much timber felling, there are still plenty of suitable habitats for it. I have heard rumours that it has been seen occasionally in the northern part of the Forest, but invariably by a non-entomologist. One story of its appearance in close proximity to some pig-sties may well have been true. Two or three years ago I heard Mr. Brian Vesey-Fitzgerald, answering questions at the end of a lecture he had been giving, say that he believed *iris* still survived in one of the large enclosures, which he mentioned by name. But the last specimen of whose capture I have positive knowledge was taken on an August bank holiday a year or two after the 1914-18 war by a Bournemouth collector who was having a picnic lunch just outside Queen's Bower. It was a hot day, and an *iris* came down and settled on his boot. He managed to get his net over it, but the insect had presumably been on the wing for two or three weeks, and looks like it.

Moths at a Light-Trap in Somerset

By A. H. TURNER.

During the past year (1953) the light-trap has been used only intermittently; nevertheless, a few interesting species have turned up. The names and order of the 'macros' are those given in Mr. Tams's List.

Harpyia bicuspis Bork. A newly emerged male arrived on 5th June. Has anyone heard of previous captures in Somerset? It is not included in the county lists.

Drymonia ruficornis Hufn. Much less in evidence than in previous years—one in April and one in May.

Pheosia gnoma Fab. Two only, in August.

Pheosia tremula Clerck. Much commoner than usual, especially the second brood in August.

Notodonta anceps Goeze. A fresh male in mid-May and a worn specimen in June. I have not seen the moth in previous years.

Lymantria monacha L. Two males only; one in July, one in August.

Trichiura crataegi L. Always common in this area, and in August and September it was abundant.

Poecilocampa populi L. An early one on 7th November; subsequently common.

Drepana binaria Hufn. This species was abundant between 20th May and 25th August, sometimes 20 or 30 on the sheet at one time.

Mitochrista miniata Forst. Common in July and August.

Eilema griseola Hüb. Extremely abundant during August and September.

Eilema sororcula Hufn. Several in May and June. I have not seen the moth here before.

Amathes triangulum Schiff. One only, in June.

Xylomiges conspicillaris L. Much less common than in other years, but several were arriving in May.

Dasycampa rubiginea Schiff. One in April and one in October.

Atethmia xerampelina Esp. A few in September, but less frequent than in previous years.

Apatele leporina L. A moth which is generally fairly common; only a single record this year, June.

Procus versicolor Bork. Several in May and June.

Procus literosa Haw. One or two in August. The first record here since 1948.

Cosmia diffinis L. Several turned up in August; I have not seen the species here in previous years.

Bena fagana Fab. One on 5th June, my first record for this district.

Colocasia coryli L. Very common in May, and the second brood in August was abundant.

Lygephila pastinum Treits. A few in June and July.

Luspeyria flexula Schiff. Fairly common throughout July.

Pseudoterpna pruinata Hufn. Another new record hereabouts—two in July.

Comibaena pustulata Hufn. Several in July and August, including an aberration with all the green replaced with yellowish-brown.

Euphyia cuculata Hufn. One in July.

Plemyria bicolorata Hufn. One only, on 3rd July.

Eupithecia irriguata Hüb. Two were taken in May. I have not seen this 'Pug' since 1949.

Plagodis dolabraria L. Once in May, and two more in June.

Semiothisa notata L. One on 5th June—a new record for Bickenhall.

Phigalia pedaria Fab. Two only, in January.

Lycia hirtaria Clerck. As usual, a solitary male in April.

Zeuzera pyrina L. One or two males in July and August.

Euzophera pinguis Haw. One or two in August. I see a few odd specimens each year, but it is never common.

Myelois cribrumella Hüb. A single male in July.

Crambus pinellus L. Two on 12th August.

Phlyctaenia ferrugalis Hüb. Odd specimens arrived between 13th November and 11th December.

Nomophila noctuella Schiff. A very early specimen arrived on 23rd May; then throughout the summer none was seen. However, another small batch arrived in December.

Pyrausta olivalis Schiff. Common in June and July.

Mecyna asinalis Hüb. Very common throughout August.

Hypsopygia glaucinalis L. Surprisingly enough I have not seen this moth until this year—several in June and July.

Oidaematophorus lithodactylus Treits. I took this 'Plume' in 1946 and have failed to find it again until a single specimen came to the trap on 2nd August.

Exapate congelatella Clerck. The first was taken on 15th December, and it has continued to be common.

Peronea literana L. A beautiful pale green specimen, with black peppering, was taken in September.

Anthophila pariana Clerck. I took this moth freely in 1948 on tansy heads: until September this year (1953) I have been unable to find it again; but on 16th September it started to come to the light, and I found it again quite commonly, together with its commoner relative *A. fabriciana* L.

Yponomeuta evonymella L. Several were taken in July and August. According to the county lists the last record for Somerset was in 1913.

Ypsolophus xylostellus L. Has anyone noticed the regularity in the appearance of this little moth?—come the 20th July, and there is the first one, freshly emerged. This year he did not fail.

Bickenhall, 31.xii.53.

British Lepidoptera Collecting, 1953

II. July to the end of the Year

By C. G. M. DE WORMS, M.A., Ph.D., F.R.E.S.

The fine spell continued into July and was still prevailing when Major-General G. Johnson and I ventured on the afternoon of the 4th to some of the woods near Petworth. *Argynnis paphia* and *Limenitis camilla* were now well out together with *Aphantopus hyperanthus*. *Ab. seminigrina* of *L. camilla* was seen, but not captured. That evening our first port of call was Havant Thicket, sadly devastated since pre-War days. Gone were the fine oak woods that used to harbour so many choice species. A long round of sugaring yielded only a single *Mythimna turca*, worn at that, also *Tethea duplaris* and *Parastichtis suspecta*. We proceeded to West Wittering, arriving at 11.30 p.m. A number of *Apamea oblonga* (*abjecta*) were on old sugar from my visit of the previous week-end. At light and on the marram heads we saw several *Agrotis ripae*. *Leucania littoralis* and *Sterrhia emutaria*. We went on from Chichester the next morning to the New Forest in brilliant weather. The heath-

land was alive with *Plebeius argus*. *Limenitis camilla* was about in good numbers. During the afternoon we took the first f. *valesina* of *A. paphia*, just out, while *Argynnis cydippe* was also well on the wing. We found a single *Boarmia ribeata (abietaria)* emerging at the foot of an old yew and flushed many male *Diacrisia sannio* on the heaths. In the evening we visited Titchfield Haven, but had rather a disappointing time owing to mist. Sugar was fairly well patronised by common species, mainly *Leucania pallens* and *L. impura*. We also saw a few *Apamea dissimilis* and one *Cosmia affinis*. A week later, on 11th July, I accompanied Dr. N. Birkett to the Petworth area where we got a fleeting glimpse of an *Apatura iris*. I caught sight of another during a brief interval of sun the next day in Alice Holt Forest.

On 14th July I set out by car on a tour of the North, reaching Penmaenmawr that evening. Sugaring and light in the Sychnant Pass drew a blank owing to a high wind. Little was flying there next morning, so I continued to the Great Orme Head where a few fresh *Plebeius argus* ssp. *caernensis* were still about together with quite a lot of *Eumenis semele* ssp. *thyone*. In the afternoon I travelled a further 150 miles to Witherslack. Dusking among yews near Grange-over-Sands only produced a large number of *Hydriomena furcata*, and *Sterrha biselata*. The next day Dr. N. Birkett joined me in the area. A very thorough survey of the local mosses, including a favourable part of Holker Moss, failed to reveal any sign of *Plebeius argus* f. *masseyi* which was prevalent in this region up to about 1940. *Argynnis cydippe* was locally plentiful.

On the morning of 17th July I set out for Scotland, covering the 285 miles to Aviemore by the evening. The following day I devoted to searching the local moors which yielded a lot of *Entephria caesiata*, a few *Ortholitha plumbaria*, while *Carsia paludata* was just freshly out. Several female *Boarmia repandata* were seen and I found a single larva of *Trichiura crataegi* which eventually pupated. *Coenonympha tullia* was still on the wing. In the evening I went over to Newtonmore to join Commander Harper on a nearby moor, but sugaring a long fence provided only a few black *Apamea monoglypha*, some *A. rurea* and *Noctua festiva*. It was practically a blank at m.v. light. Working Granish Moor on the 19th produced some *Perizoma minorata* and several very dark *Ortholitha limitata (chenopodiata)*. At dusk I stood sentry over a small bed of the melancholy thistle near Aviemore. It was well attended by many *Plusia*, most of which were *P. bractea* in very fresh condition. There were many visitors to sugar that night along the golf course fence, including fresh *Eurois occulta*, *Polia hepatica (Hadena tinctoria)*, *Parastichtis suspecta*, *Diarsia brunnea* and *Colostygia olivata*.

The next morning, 20th July, I set out northwards again, via Inverness and Garve, reaching Ullapool in heavy rain during the afternoon. I then continued my journey along the wild Sutherland coast among glorious scenery arriving at Inchnadamph in the early evening in time to run a further 12 miles to Lochinver, a most enchanting spot on the rugged coast. I sugared a fence across a bleak piece of moorland, but almost the only visitor was a remarkable white form of *Apamea crenata (rurea)*. The next day I pushed still further northwards again amid very wild and desolate regions via Kylesku Ferry on to Scourie and Laxford Bridge. The road is single track with frequent passing places. The scenery was again superb with innumerable small lochs and islets

along the coast. The only butterfly I saw in this land of endless peatbogs was a worn *Maniola jurtina* of a very brilliant form. I continued via Lochmore to the Hotel at Loch Shin, 35 miles from the nearest inn to the west. Travelling south via Lairg, I halted near Bonar Bridge where on the moors I flushed a good many *Entephria caesiata*, *Dysstroma citrata*, *Thera obeliscata* and *Ellopija prosapiaria*. I was back at Aviemore that evening when I revisited the thistle patch which once more yielded several fine *Plusia bractea* and a very fresh *Apamea furva* with another example at sugar along the golf course fence. I left on the afternoon of the 22nd in very bad weather to stay overnight at Dalwhinnie, but a long line of sugared posts on which I laid high hopes were deluged with rain and resulted in a blank.

Turning south again early on 23rd July I broke my journey at the well-known quarry on the Aberfeldy road leading from Rannoch. Here I was pleased to find *Entephria flavicinctata* after an interval of 14 years together with a lot of *E. caesiata*. I covered the route to the Lake District by evening travelling over the Kirkstone Pass. I spent the next two days in this area under very moist conditions. The two evenings I went to a very restricted spot where I was delighted to find *Eustroma reticulata* flying freely at dusk near its foodplant. A few came to light about 10 p.m. and I also spotted some at rest. Nearly all those captured were in very good condition. Owing to the very indifferant weather I cut short my trip and travelled the 300 miles back home on 25th July.

The following afternoon I accompanied Mr. J. Messenger to the downs near Salisbury where *Lysandra coridon* was now well out and plentiful, but producing few abnormalities. We took several *Adopaea lineola*. We proceeded to the New Forest, collecting at dusk in Rhinefields enclosure but little came to sugar or light, only one *Lymantria monacha*. My next trip on 29th July took me to Dungeness. Here again sugaring was disappointing. At light there were a few *Euproctis chryssorrhoea* and *Eilema pygmaeola*. The next day I surveyed the Folkestone area with little success owing to very rainy conditions. On 31st July I left for Denmark to attend the International Zoological Congress in Copenhagen, returning to England on 13th August.

The next day I travelled with Major-General Johnson to Ashford, revisiting Dungeness in the evening, but we saw only a few *Hadena carpophaga* (*lepida*). Working in the Ham Street woods yielded plenty of full-fed larvae of *Cucullia asteris* and some *Tethea or.* In the afternoon we went on to Folkestone where in a lucerne field in the process of being cut we took several *Colias hyale* and one *C. croceus* f. *helice*. We made our way westwards later, breaking our journey in Sussex where in a special locality *Nonagria algae* (*cannae*) was even more numerous than in 1952, especially at dusk when the males were flying in great numbers, but not so many came to our lamps. We took 25 males and 5 females, also one *N. sparganii* and a good many *Coenobia rufa* in the dusking.

The next week-end I motored to Dorset on 22nd August and accompanied Dr. King to the Cranbourne Chase area, but little was on the wing except *Aglais urticae*, which was soon to be seen in such profusion. Extremely wet weather prevented any collecting the next day in the New Forest. Back in Surrey a search of yellow loosestrife along the

Basingstoke Canal at Woking on the 27th produced quite a lot of larvae of *Collix sparsata* of all sizes.

I revisited Kent on 28th August and struck a very propitious night in the Ham Street woods. The first few sugar patches yielded a couple of *Catocala sponsa*, both females, one quite fresh, from which a number of ova were eventually obtained. *C. nupta* was quite plentiful with many *Amphipyra pyramidea*, *Amathes xanthographa*, *Lampra fimbriata* and *Cosmia trapezina*. The following evening I joined Dr. E. Scott in another wood in the Ashford area. We were quite a party with Mr. L. C. Bushby and Mr J. Lester of the Zoo, Mr. Cue of Ashford, all keeping watch on the m.v. lamp brought over from Wye by Mr W. Rudland. Soon after 10 p.m. we had a run of *Atethmia xerampelina* with a single *Amathes glareosa*, several *Pheosia tremula*, *Notodonta dromedarius*, *Ennomos alniaria*, *Deuteronomos fuscantaria* and some worn *Amathes stigmatica (rhomboidea)*. On the 30th I visited Dr. Scott at Westwell. In a clover field quite close we saw several *Colias croceus* and a couple of *C. hyale*. That night I was again in the Ham Street woods, where I met Messrs. D. Marsh and G. Youden. One of the first insects I took on the sugar round at 9 p.m. was a worn *Catocala promissa*, while on the very last patch was a perfect male *C. fraxini*, the first of the season. Many common insects were on the patches as well as one *Leucania albipuncta*. About midnight another *C. fraxini* came to Mr. Marsh's m.v. lamp. Several *Eilema complana* were also seen. On the last day of the month I made a tour of North Kent and Thanet in ideal weather, but found little lucerne in bloom and only saw one *C. hyale*. On the way back I visited a restricted spot where I was fortunate enough to take some female *Euphyia luctuata* which laid well (vide *Ent. Rec.*, 65: 326). At Ham Street once more I was joined by Mr. Frank Ellison and Mr. J. Langmaid, who had bicycled over from Dungeness. I do not think I have ever seen so many *C. nupta* at sugar. We must have recorded nearly thirty. About half way round our patches Mr. Langmaid suddenly spotted a *C. fraxini* which, although it flitted off, was at once attracted to my Vidor lamp and successfully captured. Little else was observed that night.

September opened with a glorious day which heralded a spell of some of the best weather of the year. I found a lucerne field near Lympne, just in its prime. A number of *Colias croceus* were careering around and I also caught one *C. hyale*. I saw two *Vanessa cardui*, the only ones I noted the whole season, while *Aglais urticae* was in plenty and was to be the great feature of the late summer months. At Folkestone I was disappointed to find a very poor showing of *Lysandra bellargus*. A final night at Ham Street produced very little compared with the previous visits.

The next week-end I travelled once more to the south-west, to Swanage. En route I stopped at Winchester and was surprised to find *L. bellargus* already over. Later in superb weather I joined Dr. H. King in Rhinefields enclosure, where an hour's beating of oaks only brought us half a dozen larvae of *Atolmis rubricollis*. We then proceeded to some small sallow bushes on a nearby heath which yielded a fine lot of larvae of *Cosymbia orbicularia* and one *Harpyia furcula*. Later at Swanage *Leucochlaena hispida* and *Aporophylla australis* were at Mr. Russell's trap. Beating at Studland the next morning, 6th

September, provided further larvae of *C. orbicularia*. I went on to stay overnight with Mr. P. J. Burton near Godshill. Further beating of oak the next day under very warm conditions produced some more *A. rubricollis*, many *Bena fagana* (*prasinana*) and a full-fed *Moma alpium* (*orion*). I continued my journey to stay with Captain R. A. Jackson at Codford St. Mary. The weather was again glorious and I have seldom seen so many butterflies on the downs. *Aglais urticae* was in prodigious numbers with many minor varieties, particularly with the two spots on the fore wings reduced to pinpoints. *Lysandra bellargus* was in plenty, some *L. coridon* were still quite fresh, while *Polyommatus icarus* and *Aricia agestis* were also much in evidence. Sugaring along the river that evening produced some fresh *Tiliacea citrigo* and *Citria lutea*. We took a good *Plusia festucae* at m.v. light. We went on another *A. rubricollis* hunt in the local woods on the morning of the 8th, obtaining nearly a dozen larvae. In the afternoon we met Sir Robert Saundby and Brigadier Lipscomb on Heytesbury Down, where *Aglais urticae* was again in great plenty on the flowers of the devil's bit scabious. *L. bellargus* was once more very numerous. At sugar we saw some more *T. citrigo* and one *Cirrhia gilrigo*. My next outing was on 15th September in the evening to Tilgate Forest, where a couple of hours' beating only yielded a few larvae of *Notodonta dromedarius*, *Pheosia gnoma* and *Tethea fluctuosa*.

On 18th September I was again in the Ham Street area in very mild conditions. I was in the act of sugaring an aspen, the last tree of the round, when a huge moth fluttered to the ground. I at once recognised it as *C. fraxini*, which I conveyed with difficulty to a large hat box, where it was deposited, but it turned out to be a male after wrecking itself (vide *Ent. Rec.*, 1953, 65: 328). The only other insects at the patches were *Asphalia diluta* and *Graptolitha ornitopus*. The next morning I located a garden near Lyminge which was alive with *A. urticae* together with a few *Vanessa atalanta* and *Polygonia c-album*. Mr. R. Bretherton joined me in the afternoon when we headed for Lydd. Dungeness was our seat of operations after dark. As sugar was almost a blank we turned our attention to the *Senecio viscosa* on which we found a number of larvae of *Heliothis peltigera*. The following morning of the 20th we set to in search of toadflax on the shingle and about midday we had the satisfaction of finding a larva of *Calophasia lunula* spotted by Mr. Bretherton feeding high up on the plant (*Ent. Rec.*, 1953, 65: 324). Later we made a fruitless attempt to find some more in the Camber area. That night our best visitor to sugar was *Calocampa vetusta*. We found some more *H. peltigera* larvae and a *Eumichtis lichenea* in a telephone box. Our m.v. trap, which we had plugged in at the Pilot Inn, attracted only a few *Plusia gamma* and *Amathes c-nigrum*.

The next week-end, 26th September, saw me at Eastbourne under quite summerlike conditions. In the afternoon Mr. R. Ellison and I made our way to the Crumbles. After a fruitless search of one large patch of toadflax, we came across some small plants near a bank on which I at once spotted two larvae of *C. lunula*, by no means easy to see at first. A thorough hunt soon brought to light several more quite close, and half an hour later we found another clump which was quite covered with the bright-coloured larvae in all stages, some still quite small

(*Ent. Rec.*, 1953, **65**: 323). I had brought my m.v. trap which I fixed up at Mr. Ellison's house on the edge of the downs, but only a few *E. lichenea* were attracted. However, after prolonged rain on the 27th there were over 100 visitors from 17 species, including more very well-marked *E. lichenea* and many *Phlogophora meticulosa*, *Agrochola lychnidis* and *Plusia gamma*.

The fine weather continued into October. On the 1st Mr. Bretherton and I went to Chertsey Meads where *Rhizedra lutosa* and *Hydraecia micacea* were in plenty on reed heads. I was once more at Folkestone on the 3rd with 72° in the shade. Mr. A. M. Morley kindly conducted me to a locality where larvae of *Eupithecia millefoliata* were very numerous in the dead heads of yarrow (*Ent. Rec.*, 1953, **65**: 328). The next evening I went to Wye where with Mr. C. Duffield I searched ivy, but we found only three *Tiliacea aurago* and a few *A. lychnidis*. On 10th October I accompanied Mr. Bretherton to Ranmore Common. *Oporinia* were in great profusion at dusk. Almost all our captures turned out to be *O. christyi*. At light we saw *Anchoscelis helvola* and one *Episema caeruleocephala*.

On 16th October I motored to Minchinhampton. Later in the day Mr. Austin Richardson and I travelled to the Forest of Dean. We set up to m.v. lights in the May Hill area. By far the commonest visitor was *E. caeruleocephala* of which we noted quite twenty, together with a few *A. helvola*, *A. lychnidis* and one *Gripesia aprilina*. *Chesias legatella* (*spartiata*) was numerous at rest on the broom. We proceeded about 9 p.m. to Queen's Wood where we were fortunate to find a number of larvae of *Ortholitha umbrifera* on the broom. They had all pupated by mid-December. Back at Beaudesert Park several *Brachionycha sphinx* had come to light, an early date for this species. On the 17th I proceeded to Burnham-on-Sea to stay with Mr. Ian Heslop. *Heodes phlaeas*, *Polyommatus icarus* and many Pierids were still on the wing in his garden, but we saw little later that day at Shapwick. We spent the 18th in a tour of the Blackdown Hills, but again there was little to be seen except *Aglais urticae* and *Pieris rapae*. The mild and warm conditions continued for the rest of the month, but I did not carry out any further expeditions till 8th November when I was in Kent once more. That evening I went over to Mr. Duffield at Wye, but in spite of a very mild spell little came to light and it was only when we were about to come away at 8 p.m. that two *Ptilophora plumigera* arrived. This insect proved to be very plentiful in its few restricted localities. My last outing of the season was with Mr. Bretherton on 14th November to the downs near Clandon. At rest after dark I have seldom seen so many *Operophtera fagata* (*boreata*), *Colotois pennaria* and *Erannis aurantiaria*.

In conclusion, 1953 was in many ways a remarkable year of which the highlight was doubtless the unprecedented invasion of *Eublemma parva* at the end of May. After a very fickle period in the middle of the season, the later months of the summer were some of the best experienced in recent times and brought with them many good insects and some species in plenty as for instance *Oria musculosa* which was once more seen in great numbers in early August. Although many of the normal migrants, such as the *Colias* and *Vanessa cardui* were notably scarce, the year proved to be a record one for *Daphnis nerii*. The late summer will also

be memorable for the finding of larvae of *Calophasia lunula* and for the amazing numbers of *Aglais urticae*, while the autumn, one of the mildest on record, produced moths in profusion, especially *Poecilocampa populi* and *Brachionycha sphinx*, and butterflies into December. Altogether it was a very fruitful season.

On 'Collecting' Notes

By THE ASSISTANT EDITOR.

As the member of the staff who is responsible for making up the pages of this magazine I am a little disquieted by the decline in the number of 'Collecting Notes' as compared with 'Notes and Observations' which is reaching us. These accounts of species taken and seen in the ordinary course of field work inform readers about the incidence, range and distribution of certain Orders of insects throughout the country today, and they will be valuable to succeeding generations. They were a prominent feature—one might almost say the principal feature—of the *Record* in Tutt's day, and to my mind they constitute the most attractive reading of our early volumes.

Last year we printed valuable papers on the season's work and on collecting expeditons by Messrs. Birkett, G. F. Johnson, Carr, Dewick, Harner, Wakely, Marcon, J. H. Johnson, Michaelis, Leech, Owen, Barton White, Ferry, Muschamp, Andrews, Hunter, Fincher, Peacey, Burr, Allen and the Baron de Worms. All these are of the first importance to present, and will be to future, entomologists. But of shorter Notes on Collecting in small areas and little-visited localities, the list was a sorry one:—in January, none; in February, 1; in March, 2 (one foreign); in April, none; in May, none; in June, none; in July/August, 4 (three of them consisting of paragraphs containing less than a dozen lines); in September, none; in October, 2; in November, 2; and in December, none.

What is the reason for this shortage of what should be an integral part of the magazine? Doubtless 1952 and 1953 were 'poor' years for insects; but the poorer the season, the more important are the records of species. The information that in a year which was beneficial to insects all over the country certain usually rare species were caught in greater numbers than usual is not comparable in scientific value with notes to the effect that in a universally "bad" season certain common species were unusually abundant in certain places.

It was suggested in these pages some time ago that the mere accumulating of specimens is "horribly prevalent" today and doubtless some collectors are apt to esteem rarities more than common species, therefore they are not interested in reading or writing about insects which are generally distributed. Such an attitude is of course misconceived from the entomological point of view and I doubt if it is taken up by more than a very few of our readers. Moreover the percentage of entomologists today who claim to be "only collectors" is probably no higher than it was fifty years ago, and in the 'nineties Tutt never had reason to complain of a shortage of Collecting Notes.

I am certainly not one of those who disparage the "mere collector", for when all is said and done it is the collector who provides the systematist with material. For my part—and I do not collect, being in-

interested only in the living insect—I have never been able to understand why a man should not be a “mere collector” if he wants to, provided of course that he is moderate in his requirements and not one of those who collect solely in order to increase their bank balances or to accumulate a good stock of “swops”. It is absurd to suggest that the ten or twenty specimens of a local species which he takes can have any appreciable effect on the well-being of that species in the country. And it is not possible for any man to form a collection without accumulating in the course of his collecting a vast amount of information about the species he catches or breeds. But I do suggest that if we collect insects we ought to help our fellow workers in the field of Entomology, especially those who come after us, by recording our experiences in the magazines from time to time.

In any case, if the science of Entomology is to advance we *must* collect. Said Tillyard many years ago: “A good collection is absolutely necessary as the basis for systematic and morphological work on any group of insects; yet it must be borne in mind at the same time that the knowledge gained in the course of accumulating such a collection, *i.e.* by observation in the field of Nature herself, is equally important to the student. The careful observer will attempt to put on record, in the form of entomological notes or a natural history diary, all the more important details of each day's field work.” At the same time he will value his collection “sufficiently highly to give it that amount of care and preparation which will make it most suitable as material for useful scientific work on those lines along which his own personal researches may be directed”. These are words with which every thoughtful man will agree and the only comment I will make is that if “the more important details of each day's field work” are “put on record” *in a magazine* they become of value to the science of Entomology and thereby benefit our fellow men.

Perhaps the chief reason for this dearth of Collecting Notes is that to most of us writing is a bore (My goodness, don't I know it!). There is so much to do in the evenings—personal letters to answer, the wireless to listen to, television to be looked at, the cinema to visit, a meeting to attend, an exciting ‘whodunnit?’ to read—and an easy chair after the day's work is more inviting than sitting at a table with pen and ink writing out extracts from one's diary. But magazines have died before now for want of an effort to support them, and those who have read *Dombey and Son* will remember that Mrs. Dombey did actually die because she failed to obey her sister-in-law's command to “make an effort”. Indeed, I cannot round off this appeal better than by quoting Mrs. Chick's very words: “It is necessary for you to make an effort, and perhaps a very great and painful effort which you are not disposed to make; but this is a world of effort, you know, and we must never yield, when so much depends on us. Come! Try!”.

Current Notes

The coloration of the common praying mantis, *Mantis religiosa*, is due to the same pigment, or very closely related pigment, as the colour of grasshoppers. Dr. Saadet Ergene's experiments with the Mantid larvae show that green and yellow ones retain their colours on a green

or yellow background, whereas if transferred to the contrary background, after the necessary interval, they change their colour to match the surroundings. The results correspond with those obtained in experiments on grasshoppers. *Mantis* and *Acrida* are both neutral to a blue ground, which is of rare occurrence in nature. The young Mantids are capable of changing their colour more than once in the course of their larval career. Dr. Ergene's paper is printed in the *Zeitschr. f. vergl. Physiologie*, Bd. 35, 1953.

M. B.

The latest of Dr. Ergene's experiments on the coloration of Orthoptera and the influence of the environment has been with the two common South European grasshoppers *Acrida turrita* and *Oedipoda*, which present several colour variations. She put a number of larvae into a big cage with the floor of two colours, in squares arranged in a chequer pattern. Into the cage with them she put that queer looking bird *Geronticus eremita* that looks like a hybrid between a crow and an ibis and makes short work of any grasshoppers that come within its vision. Her careful experiments show the protective value of the coloration, as the number of heterochromous grasshoppers consumed by the bird was considerably greater than of the homochromous ones. In fact out of 91 experiments with the *Acrida* larvae, on a green ground 95 per cent of the heterochromous and only 5 per cent of the homochromous were eaten. On yellow ground the figures were respectively 86 per cent and 14 per cent. With *Oedipoda* larvae in 57 experiments, on grey ground 93 per cent of the heterochromous were eaten and only 7 per cent of the homochromous; on red-brown ground, 92 per cent and 8 per cent. This interesting paper is published in the *Mitt. Zool. Mus. Berlin*, Bd. 29, Oct. 1953.

M. B.

In *Ent. mon. Mag.* for December 1953 (89: 297) a correspondent relates that "The Jersey Tiger (*Euplagia quadripunctaria* Poda) in South Devon has had a very good year" throughout the area from South Brent in the west to East Devon beyond the Exe in the east and has been noticed, apparently in some numbers, in Totnes, Newton Abbot and Exeter. "Even the Rock Walk, Torquay, with palms, mimosa and other less hardy shrubs garnished with coloured 'floods' at night, has very often been made more exotic with the flight of the moth". Have any of our Devonshire readers noticed this very unusual plentitude?

Next month we shall print, with a Plate, a further instalment of Dr. Cockayne's "Aberrations of British Macrolepidoptera". The species dealt with include *Arctia villica*, *Agrotis ipsilon*, *Caradrina blanda*, *Brachionycha sphinx*, with several Geometers and an interesting form of *Selidosema brunnearia*. Five new aberrations of the *Zygaenidae* also are described.

We hope to issue the Special Index for 1953 early in March. As mentioned in our Editorial last December a charge of Two Shillings will be made for this and it will be sent only to those of our subscribers who order it. Will those who require this Index but have not yet ordered it please do so at once? Owing to the cost of production we shall print very few more than the actual number ordered, and it is likely to go out of print before very long. Orders for it, with remittance, should be sent to our Treasurer.

Notes on Microlepidoptera

By H. C. HUGGINS, F.R.E.S.

Crambus verellus Zinck. is another moth ripe for re-discovery, in fact I have little doubt that it has been found already in m.v. traps by non-collectors of micros, and ignominiously thrown out. It is one of those insects, like *Pyralis lienigialis* Zell., whose status in this country is uncertain. Several of these excessively rare micros, such as *Diasemia ramburialis* Dup. and *Euchromius ocellus* Haw., are obviously stray immigrants, whilst *Pyrausta repandalis* Schiff. is one of the same category that established itself for a year or so. Were it not for the 'Cambridge' examples I should place *C. verellus* in this position, as the other four undoubted captures, all at Folkestone or Bognor, suggest a seaside visitor. The 'Cambridge' specimens, however, though all four I believe taken in one year, are a bit of a stumbling block and give rise to the idea that it may be a scarce and obscure native species. It must be remembered that this is a small and dirty-looking insect, the scruffiest in appearance of all our Crambids, and no one except a keen 'micro' man would look at it twice, so that it may quite often have been seen and neglected.

The 'Cambridge' locality is misleading, as the late Sir John Fryer told me when we were motoring near Haverhill in Suffolk. The actual locality was just outside Haverhill and in the county of Suffolk, where A. F. Griffiths was spending the summer vacation in a country cottage. The four specimens he took all came in to his light whilst he was reading at night. Fryer had looked at the place and said there were old fruit-trees and mossy roofs near (the larva is said to feed on moss on fruit-trees) and several times we discussed having a try there; but it was fifty years, or nearly so, after the captures and we put it off till the War, and his untimely death put an end to the idea. No doubt the locality 'Cambridge' arose as Griffiths was resident there at the time.

C. verellus in general and the Griffiths *verellus* in particular possess, like many other insects, especially Burnt Wood *bicoloria*, a remarkable power of posthumous multiplication. Apart from the quite frequent unlabelled examples I have seen, there were at Nevinson's Sale two specimens described as "Griffiths". I put quite a high limit on them with Bernard Harwood, who used to bid for micros for me, but did not get them, to my great disappointment. However, a year or so afterwards Griffiths wrote to the *Entomologist* and amongst other information stated that he had taken only 4 *verellus* and gave their present whereabouts (3 in the National Museum of Wales), which showed that Nevinson could not possibly have had any of them. I wonder who palmed these off on Nevinson, who was himself quite above suspicion. I am glad now I did not get them myself!

Let no one be misled by the English name "Noble Grass-Veneer" (Heslop, 1970). Nothing could look much less noble than *verellus*, which is like a small dusky *falsellus*.

Dasycera oliviella Fabr. The larva of this pretty Oecophorid may be found at the end of February and beginning of March under the bark on much decayed oak stumps and trunks. It is transparent and

looks grey from the food in the alimentary canal. I cannot tell the difference between this larva and that of *D. sulphurella* Fabr., which is found in similar places; but if a trunk round which *oliviella* is flying in June be marked the larvae will almost certainly be there the following spring as it sticks to a favourite log or trunk for some time. *D. oliviella* is decidedly local but usually fairly common where it occurs, in old woods such as Blean in Kent. It does not as a rule begin on a stump or trunk until this has become too rotten for *Aegeria respiformis* Linn.

Heterographis oblitella Zell. I shall be greatly obliged if anyone can inform me of the whereabouts of the two or possibly three British specimens taken in the 'seventies, and to which form they belong. They are: one taken by Blackburn in 1876 and one or possibly two by Warren in 1874/5.

Notes and Observations

LATE SUMMER IMMIGRATION OF *AGLAIS URTICAE* LINN.—In *Ent. Rec.*, 65: 295-6, Mr. C. S. H. Blathwayt recorded a considerable influx of this species at Weston-super-Mare during the first week of September 1953. I had a similar experience at Shanklin, Isle of Wight, at the end of August last year. For a period of four days from 24th August the gardens at Shanklin were visited by such a swarm of *A. urticae* as I have not seen in the past thirty-five years. They literally tumbled over themselves to feed at every available flower-head and were so engrossed upon their refreshment that I was able easily to pick up with my fingers a selection for closer examination. They were almost everywhere in the area and hundreds were seen to be patrolling the beach below the cliffs, many putting out to sea and flying strongly towards England. The peak of concentration was reached on the 26th August, on which day I counted no less than 57 feeding at one time in a flower-bed facing the sea. By the 28th August nearly all had disappeared. The weather was calm and warm throughout this period of immigration. No doubt this was part of a very large immigration from the Continent to England.—N. T. EASTON, 92 Connaught Road, Reading. 5.i.54.

LATE APPEARANCE OF *PIERIS RAPAE* LINN. LARVAE.—Happening to read in an entomological publication the other day of several larvae of *Pieris brassicae* being found in November I searched the broccoli in my garden here on 6th December and found two nearly full-grown larvae of *Pieris rapae*. Prior to that date the thermometer on several occasions had registered two or three degrees of frost, though in general the weather had been exceptionally mild. I took the larvae and kept them indoors in glass-topped tins. One pupated on 8th December and the other on the 12th. It is possible that these larvae were the progeny of third brood parents.—N. T. EASTON, 92 Connaught Road, Reading.

EUPHYIA CUCULATA HUFN. AND OTHER CHALK-LOVING SPECIES AT WOKING, SURREY.—I was much surprised to find in my m.v. trap here on 6th July 1953 a fairly fresh specimen of *Euphyia cuculata*, far from its normal habitat on the downs in the Box Hill area. Two other species associated with traveller's joy on chalk also appeared in the trap last summer, *Horisme vitalbata* Hübn. on 25th August, and *Eupithecia*

haworthiata Dbl. on 23rd June. The nearest patch of the foodplant is quite three miles away, but of course they may feed on garden Clematis.—C. G. M. DE WORMS, Three Oaks, Shore's Road, Woking. 7.i.54.

MAMESTRA ALBICOLON HÜBN. AT WOKING, SURREY.—This insect, usually associated with coastal sandhills and marshes, appeared in my light-trap here on 24th June 1953. I gather that other examples have been taken in the district and that it has even been seen on the outskirts of London of late. Is it increasing its range?—C. G. M. DE WORMS, Three Oaks, Shore's Road, Woking. 7.i.54.

LEUCANIA ALBIPUNCTA SCHIFFERMÜLLER IN DEVON.—Until I read Mr. Frank Lees' recent Note (*Ent. Rec.*, 66: 5) I was not aware that there were so few records of this species in Devon. On 3rd September 1902 at 9.25 p.m., on a sugared post at the edge of the marble quarry on Petit Tor, St. Marychurch, near Torquay, I took a small male *L. albipuncta* in very fresh condition, but scratched on one fore wing and chipped on the hind wing.—E. A. COCKAYNE, Tring.

A FUNGICIDE OF ENTOMOLOGICAL INTEREST.—A new method of sending specimens through the post in a relaxed condition has recently been tried by Mr. M. W. F. Tweedie, of the Raffles Museum, Singapore, and has been found to be very effective in the case of papered butterflies. The substance used was a proprietary disinfectant solution called Merthiolate (Thiomersalate), solution No. 45, 1 in 1000—stainless, manufactured by Eli Lilly & Co., Ltd., Basingstoke, England. When papering the insects to be sent, the inside of each envelope is first swabbed or sprayed with the solution and allowed to dry to a state of limp dampness. If the paper is used too wet the butterfly will stick to it. When all the insects have been papered the envelopes are packed into a fairly airtight tin and humidity maintained by inserting a piece of blotting-paper damped with the Merthiolate solution. Care should be taken to see that the contents are merely humid and not wet, otherwise the specimens may disintegrate. The tin should then be sealed with adhesive tape. Merthiolate does not protect against ants before the box is filled and closed. Butterflies sent from Singapore to London in this way arrived in perfect condition two months later and were in a fresh state, allowing immediate setting after a preliminary airing. The method is, of course, entirely experimental and it is not known what effect, if any, the disinfectant has on the future preservation of the specimens. Merthiolate like most disinfectants is poisonous and care should be taken in its use. When setting the specimens the operator should work in a draught of air so that the fumes are not inhaled.—N. D. RILEY.

A HABIT OF THE LARVA OF *THALERA FIMBRIALIS* SCOP.—Dr. Kettlewell (*Ent. Record*, 1953, 65: 364) says that he did not observe that the larva of this species in the wild sometimes partially cuts through the stem of the last inch or more of a leaf of yarrow so that it hangs down slightly withered. Both Mr. Robin Mere and Mr. H. S. Robinson noticed this habit and called Mr. A. L. Goodson's attention to it. Several of the leaves of a potted plant kept in my room were cut in this way showing that the larvae in captivity may behave like the wild ones.—E. A. COCKAYNE.

Fifty Years Ago

(From *The Entomologist's Record* of 1904)

HABITS OF EUPITHECIA PYGMAEATA.—This species is very local in Lincolnshire, but plentiful where it does occur. It flies along the tops of hedges about four feet from the ground in company with *Heliaca tenebrata*. Time of flight, 4.45 p.m.-6 p.m., but most numerous between 5 p.m.-5.30 p.m. I have only found it along hedges bordering two fields, although the foodplant grows all over the neighbourhood. In 1900 I took 63 between June 7th and June 20th; in 1901, 79 between May 23rd and June 5th. I have only taken two specimens at mid-day flying in sunshine and settling on low flowers.—R. CASSAL, M.D.

DISTASTEFULNESS OF OIL BEETLES.—Having captured *Meloe violaceus* in some numbers this month, at Richmond, I took specimens to the Zoological Gardens on April 27th, to offer to insectivorous creatures. I first dropped a specimen into a cage which contained two lizards, when an Australian lizard at once seized the beetle by the body but quickly rejected it. He again attacked it, this time at the head but promptly let go. Froth was seen round his mouth and he wiped it many times on the pebbles which formed the ground of the cage. All the time the beetle "feigned death", exuding the oil from its joints. The keeper thought the lizard had killed it, but this was not the case, as before I left the gardens I went to have another look at it and the beetle was crawling unhurt up the side of the cage. The keeper told me the green lizard had also attacked it twice, but neither would have anything more to do with it. A specimen thrown into the aviary which contained a plover and other birds was unhurt, and escaped, as the other birds would not go near it. A missel-thrush pecked the beetle several times, but eventually rejected it and would not touch it again. Two marmosets were afraid of the beetles and would not touch them, but a Capuchin monkey seized one greedily and endeavoured to eat it, throwing it down, however, in evident disgust. A grand Galago also seized a beetle, and made several attempts to eat it, looking in evident surprise at his keeper for giving him so nasty a morsel; he also threw it down and would not touch it again. I put two specimens into my observation nest of *Formica rufa*, and, although slightly attacked, the ants soon left them alone, and being left in the nest all day and night, they were alive and unhurt next day when I removed them. Finally, I painted an ant with some of the oil caught on a paint-brush, when the ant died in a few minutes.—HORACE DONISTHORPE.

CALLIMORPHA DOMINULA AT HERTFORD.—On March 28th we found numbers of larvae of *Callimorpha dominula* on a sunny bank under a hedge, with a ditch full of water below. The larvae were feeding on all sorts of low plants, chiefly dandelion, groundsel, etc. Later on they fed voraciously on prickly comfrey, which grows there, but which, at this time, had not yet appeared. Those we took did very poorly in confinement; many died, possibly because of the change from wet food to dry.—M. E. COWL, Hertford.

The Macrolepidoptera of Inverness-shire— Newtonmore District

By Commander G. W. HARPER, R.N. (Retd.), F.R.E.S.

When I came to live at Newtonmore in 1952 I enquired of the County Museum, Inverness, and of several fellow-collectors and naturalists whether a list of my local Lepidoptera existed. These enquiries failed to reveal any list, ancient or modern, and I therefore submit the following list as a humble beginning of a record which may establish the distribution of some species in this interesting area, known locally as Badenoch.

The area chosen is a circle of radius approximately twenty miles, centred at Newtonmore, except where an extension is specifically mentioned. This is the area of my own collecting activities and embraces the well-known Aviemore district to the North, the high ground on the Perthshire border to the South, the Laggan valley to the South-West, the glens and high ground of the Grampian and Cairngorm hills to the East, and the Monadhliath hills to the West. The heart of the district is the Spey valley, well wooded, marshy, the cultivation being comparatively light, of the 'marginal' type. Cattle and sheep are reared, the latter in very large numbers extending their grazing through the heather well up to the high ground, where the Red Deer are abundant. Much of the area has probably never been worked at all systematically, and parts of it only for the well-known specialities which it contains.

I have had the valuable help of the following gentlemen, to whom I gratefully acknowledge my thanks. Dr. W. Waller, K. Tod, Esq., C. Craufurd, Esq., Baron de Worms, W. Quibell, Esq., M. J. Leech, Esq., P. Harwood, Esq., F. W. Smith, Esq., Austin Richardson, Esq., and V. A. Firsoff, Esq.

The scope for future enlargement by additions to this list should be considerable.

The order and nomenclature are that of Mr. W. H. T. Tams as printed in Allan's *Larval Foodplants*.

RHOPALOCERA

SATYRIDÆ

Erebia epiphron Knoch. Common very locally, breeding on boggy patches in the hills between Dalwhinnie and the Perthshire border at Drumochter on both sides of the railway. It extends down to heights as low as 1,000 feet, and breeds there.

Erebia aethiops Esp. Locally abundant in damp boggy places near woods throughout the area.

Maniola jurtina L. Locally common in damp grassy places, especially near and on moors throughout the area. Nowhere is it abundant.

Coenonympha pamphilus L. Common everywhere, particularly on the moors and hills right up to 3,000 feet.

Coenonympha tullia Müll. Widespread and not uncommon on boggy moorlands throughout the area, but seldom abundant. The form is race *scotica* Stgr., variable in ground colour from palest straw to dark brown.

NYMPHALIDAE

Argynnis selene Schiff. Common and widespread especially near watercourses up to 2,500 feet in the hills. It is far less concentrated in colonies than in southern England and is not confined to woods.

Argynnis euphrosyne L. Rather local, but not uncommon near woods on lower ground.

Argynnis aglaia L. Widely distributed, but not very common anywhere, both in the glens and also up to 2,500 feet in the hills.

Vanessa atalanta L. This handsome immigrant reaches us in small numbers in the early summer of most years, producing a small summer brood later.

Vanessa cardui L. An immigrant of uncertain appearance, reaching the Highlands only in good migrant years, when its progeny are to be seen in August and September when weather is good.

Aglaia urticae L. Abundant everywhere in early August, up to 2,500 feet. It enters into hibernation soon after emergence, reappearing in the spring. The race is definitely large and of very bright colouration.

Nymphalis io L. Rare. Larvae on nettles at Aviemore in 1947 and 1951; one imago seen in 1946 by Mr. Craufurd. Larvae seen by Mr. Harwood at Kincaig in 1950. A fresh male imago at Newtonmore on 8th September 1953.

Nymphalis antiopa L. A female of this rare immigrant was taken by Mr. Harwood on the railway bank three miles south of Aviemore on 31st March 1946. A specimen was seen on two occasions in bright sunshine in a wood in Glen Feshie in February 1942 by Mr. V. A. Firsoff.

LYCAENIDAE

Cupido minimus Fuess. Very rare. A single specimen was taken by Dr. Waller at Boat of Garten on the banks of the Spey in July 1946.

Aricia agestis Schiff. Small colonies occur on rock rose near Aviemore, Kingussie, and Newtonmore. It is of race *artaxerxes* Fab. and rather variable on both surfaces of the wings. It is single brooded.

Polyommatus icarus Rott. Abundant everywhere: a large race with very blue females. It is single brooded.

Lycaena phlaeas L. Very local, and colonies are small. The number of broods requires to be established. A fine ab. *schmidtii* was taken by Mr. Harwood near Aviemore on 1st September 1945.

Callophrys rubi L. Abundant everywhere on the moors up to at least 1,500 feet. Not common in woodland districts.

PIERIDAE

Pieris brassicae L. Rare. This butterfly seems to appear only in small numbers in August, probably the offspring of immigrants; but I found a living pupa in December 1953 before cold weather set in.

Pieris rapae L. Uncommon, and it also seems to appear in August as the offspring of immigrants, although a small spring brood does occur.

Pieris napi L. Abundant everywhere, up to at least 1,400 feet. Double brooded, the second brood being the more plentiful.

Anthocharis cardamines L. Usually very rare, particularly since the turn of the 20th century. Last recorded in Strathspey 1860, until May 1953 when I took several males at Boat of Garten, Aviemore, and Kingussie.

HESPERIIDAE

Erynnis tages L. Apparently very rare in this part of Scotland. A specimen taken by Baron de Worms at Aviemore on 24th May 1942 is the only record I have.

HETEROCERA

SPHINGIDAE

Herse convolvuli L. This fine migrant was seen at honeysuckle bloom in some numbers throughout the area in 1950, and doubtless also in other good *convolvuli* years.

Laothoe populi L. Abundant throughout the area up to at least 1,500 feet, where it feeds on aspen and sallow equally. The red-spotted form of the larva is of frequent occurrence.

Hemaris tityus L. Not uncommon on the lower ground, but fluctuates in numbers from year to year. Twelve were seen at bugle flowers near Aviemore in 1922 by Mr. Harwood. Larvae have been taken at Aviemore.

Daphnis nerii L. A specimen of this rare immigrant was found resting on heather on the Feshie moors in August 1951 by Mr. Davidson, identification being confirmed by Mr. Tams.

Macroglossum stellatarum L. This immigrant is sometimes seen in good migrant years.

NOTODONTIDAE

Harpypia furcula Cl. Moderately common everywhere up to 1,400 feet.

Cerura vinula L. Common everywhere up to 1,400 feet, on aspen and sallow.

Pheosia tremula Cl. Rather uncommon, but can be found wherever there is plenty of aspen. It is double brooded as in England.

Pheosia gnoma Fab. Abundant everywhere on birch; it has a prolonged single brood from May to July.

Notodonta ziczac L. Common everywhere on sallows and aspen. It is partially double brooded.

Notodonta dromedarius L. Common throughout the area on birch and also alder. It has a prolonged single brood, May to July.

Lophopteryx capucina L. Common everywhere, particularly in birch woods. Single brooded in June and July.

Odontosia carmelita Esp. Common in well grown old birch woods, including stunted trees up to 1,500 feet on hillsides. It has a single brood of very short duration, end of April to mid-May.

Clostera pigra Hufn. Rather uncommon among *Salix repens* and stunted sallows in Strathspey.

THYATIRIDAE

Thyatira batis L. Not uncommon at Newtonmore on wild raspberry; bramble does not occur in the district.

Tethea or Schiff. Abundant on aspen everywhere, up to 2,000 feet in the hill corries.

Tethea duplaris L. Abundant everywhere on birch.

Achlya flavicornis L. Abundant everywhere on birch. A distinct grey Scottish race, very variable.

LYMANTRIIDAE

Dasychira fascelina L. Widely distributed on the moorlands, but fluctuates in numbers and not often common.

LASIOCAMPIDAE

Trichiura crataegi L. Common throughout the area up to 2,000 feet. The form is dark grey, ab. *ariae* Hüb., and has a two-year life-cycle, similar to ssp. *callunae* of *L. quercus*.

Poecilocampa populi L. Common among oaks near Kincaig. The males are large and well marked. Also at Newtonmore some distance from oak.

Lasiocampa quercus L. ssp. *callunae* Palmer. Common throughout the moorlands and hills of the area. It has a two-year life-cycle, and the imagines appear to be commoner in odd-numbered years. In general it does not seem to be as common as it used to be, probably due to excessive burning of heather.

Macrothylacia rubi L. Rather uncommon, but larvae and imagines are to be found on the slopes of the Cairngorms in the East of the area, and on the Monadhliath hills to the West. It is limited in numbers by heather burning.

Philudoria potatoaria L. Not yet found in the area, but I have taken the larva near Fort William, 20 miles outside to the South-West.

ENDROMIDAE

Endromis versicolora L. Locally common in birch woods at Aviemore and Kincaig.

SATURNIIDAE

Saturnia pavonia L. Common on all moors and hills up to at least 3,000 feet. It is limited rather severely by heather burning.

DREPANIDAE

Drepana falcataria L. Common throughout all birch woods. A very pale form.

Drepana lacertinaria L. Common throughout all birch woods in the area.

ARCTIIDAE

ARCTINAE

Phragmatobia fuliginosa L. Common on all moorlands in the area, and also down to the cultivated land of the glens. Fluctuates in numbers from year to year, probably due to heather burning.

Parasemia plantaginis L. Common throughout the area. Ab. *hospita* is very local. Suffers badly from heather burning.

Arctia caja L. Uncommon. I took one in my m.v. lamp trap in 1952 and one in 1953, both at Newtonmore, and have also seen it at Aviemore. Young larvae are sometimes not uncommon in the autumn.

AGROTIDAE

AGROTINAE

Euxoa nigricans L. Abundant throughout the area at ragwort blossom and light.

Euxoa tritici L. Common, particularly on the moorlands. A dark

form, not so variable as those in the South of England, but ab. *aquilina* occurs occasionally.

Agrotis segetum Schiff. Uncommon as a rule. It is probably reinforced in good immigrant years.

Agrotis vestigialis Hufn. Common at Dalwhinnie (1,200 feet), Newtonmore, Kincaig, and Aviemore.

Agrotis exclamationis L. Found not uncommonly at sugar at Aviemore in 1951 and 1952 by Mr. Craufurd. Not noted elsewhere.

Agrotis ipsilon Hufn. A few immigrants appeared at Newtonmore in the summer of 1952, and fresh locally bred individuals in September.

Lycophotia varia Vill. Abundant everywhere on the moorlands.

Ammogrotis lucerneae L. Apparently uncommon. One was taken at sugar in 1946 at 2,300 feet near Aviemore by Mr. Craufurd.

Rhyacia simulans Hufn. Apparently uncommon. One was taken at sugar in 1946 near Aviemore by Mr. Craufurd.

Graphiphora augur Fab. Abundant everywhere at all levels up to 2,000 feet. The predominant form is very dark in colour.

Diarsia brunnea Schiff. Abundant in the glens at sugar and light. Larvae on bog myrtle in May.

Diarsia festiva Schiff. Abundant everywhere at all levels, and exceedingly variable. A second brood of very small individuals occurs in August.

Diarsia dahlia Hübn. Common everywhere in the glens at ragwort, sugar and light.

Diarsia rubi View. Abundant in May and common in July, at sugar and light.

Diarsia florida Schmidt. Common in June, so that this species and the last appear continuously from May to July.

Ochropleura plecta L. Common everywhere up to 1,500 feet at sugar and light.

Amathes alpicola Zett. The imago has been taken and bred only in the even-numbered years. It is to be found among *Empetrum nigrum* (crowberry), always above the heather line at 2,500 feet approximately on many of the mountain tops of the Monadhliath and Cairngorm ranges. It was common in 1946, but appears to be decreasing in numbers at present.

Amathes glareosa Esp. An abundant moorland and woodland species.

Amathes castanea Esp. A not uncommon moorland species, but fluctuates considerably in numbers from year to year. The red form predominates over the grey, with intermediates.

Amathes baja Schiff. Abundant everywhere at sugar and light.

Amathes depuncta L. Common in 1952 and 1953 at Newtonmore, Kincaig, and Aviemore, at ragwort blossom, sugar and light. It probably fluctuates considerably in numbers from year to year.

Amathes c-nigrum L. Moderately common at light and sugar in 1952. It is probably reinforced in good immigrant years.

Amathes ditrapezium Schiff. Not common. Two specimens at m.v. light at Newtonmore in 1952.

Amathes triangulum Schiff. Common throughout the glens and hill-sides up to 1,500 feet.

Amathes sexstrigata Haw. Rather uncommon at m.v. light at Newtonmore in 1952, but found commonly on marshy ground there in 1953.

Amathes xanthographa Schiff. Abundant at sugar and light everywhere up to 1,500 feet. Very variable, dark forms predominating.

Anaplectoides prasina Schiff. Common at sugar and light throughout the glens everywhere.

Eurois occulta T. Locally abundant at Aviemore, Kincaig, Laggan, and Dalwhinnie. Proportions of the grey and black forms vary in the different localities, the black form appearing to predominate on higher ground.

Triphaena sobrina Bdv. Widely distributed on the moorlands throughout the area, but seldom common.

Triphaena comes Hübn. Widely distributed throughout the woodlands of the area, but not common.

Triphaena orbona Hufn. One taken at sugar in 1950 near Aviemore by Mr. Craufurd. It appears to be rather rare in the district.

Triphaena pronuba L. Abundant everywhere and very variable.

Triphaena ianthina Schiff. Common through all the glens and woodlands up to 1,500 feet.

Triphaena interjecta Hübn. Two specimens were taken at sugar near Aviemore in 1950 by Mr. Craufurd. Appears to be uncommon.

Cerastis rubricosa Schiff. Abundant everywhere, varying evenly from dark grey to reddish grey, the former predominating on open moorland, the latter in woodlands.

Phalaena typica L. Rather uncommon. Occasional specimens taken at m.v. light at Dalwhinnie, Newtonmore, and Aviemore.

Anarta myrtilli L. Widely distributed through the moors of the area, but seldom seen in any numbers, perhaps owing to a prolonged single brood.

Anarta cordigera Thun. Abundant on all moors where *Arctostaphylos uva-ursi* (bearberry) grows, at heights from 600 to 2,000 feet.

Anarta melanopa Thun. Abundant on the hill-tops above 2,500 feet where *Empetrum nigrum* (crowberry) and *Vaccinium myrtillus* (bilberry) grow in profusion.

Mamestra brassicae L. Common everywhere, but not a pest.

Polia hepatica Cl. Abundant everywhere in marshy spots abounding in *Myrica gale* (bog-myrtle), especially in the larval stage in the spring.

Polia nebulosa Hufn. Uncommon. Taken at sugar at Aviemore and Kincaig near woods, the form being very pale in colour.

Diataraxia oleracea L. Common everywhere.

Ceramica pisi L. Abundant everywhere.

Ilada nana Hufn. Abundant everywhere; the melanic form does not occur.

Hadena trifolii Hufn. Rather uncommon at m.v. light, Newtonmore.

Hadena thalassina Hufn. Abundant everywhere at sugar and light.

Hadena contigua Schiff. Common everywhere in the glens and woods.

Hadena bombycina Hufn. Abundant everywhere up to a height of at least 1,500 feet.

Hadena serena Schiff. Not uncommon at Aviemore. Imago at rest 1946. Larvae found on hawkweed 4.viii.46 at Aviemore by Mr. Craufurd.

Hadena conspersa Schiff. Rare. A male taken at dusk in a garden.

Kincraig, 23.vi.50, by Mr. Harwood. One found at Aviemore at rest on a wall 9.vii.52 by Mr. Craufurd. The food-plants are uncommon in the area.

Hadena bicruris Hufn. A few at m.v. light in 1952 and 1953 at Newtonmore.

Orthosia gothica L. Exceedingly abundant everywhere, in very great variety.

Orthosia stabilis Schiff. Common everywhere.

Orthosia populeti Fab. Abundant in the neighbourhood of aspen groves throughout the Spey valley.

Orthosia incerta Hufn. Abundant everywhere.

Orthosia gracilis Schiff. Common at Newtonmore, varying evenly from grey to pinkish red forms.

Panolis flammea Schiff. Common in all pine and spruce woods.

Cerapteryx graminis L. Abundant everywhere, up to 1,800 feet.

Leucania pallens L. Moderately common at Laggan, Newtonmore, Kincraig, and Aviemore.

Leucania impura Hübn. Moderately common everywhere, especially in marshy meadows in the glens.

Leucania comma L. Common everywhere at sugar and light.

Leucania lithargyria Esp. Locally common. A very few at m.v. light at Newtonmore in 1952. It concentrates in marshy lowlands in the glens.

Leucania conigera Schiff. Abundant at Newtonmore; common at Kincraig and Aviemore. It has the same marshy habitats as the last species.

CUCULLINAE

Cucullia umbratica L. Common everywhere in the Badenoch district on fence posts in June and July. It also comes to flowers at dusk and m.v. light.

Brachionycha nubeculosa Esp. Common in the larger birch woods throughout the Spey valley in March. It also occurs less frequently in the stunted higher woods up to 1,200 feet altitude. Comes freely to m.v. light.

Bombycia viminalis Fab. Apparently rare. An occasional specimen at m.v. light at Newtonmore. Only the pale grey form has been seen so far.

Aporophyla lutulenta Schiff. Very common everywhere, considerably smaller in size than the southern English race. It is very variable in both directions, to ab. *sedii* Dupon. in one direction and ab. *lunenburgensis* Frey. in the other.

Aporophyla nigra Haw. Abundant everywhere; one of the commonest autumn species.

Lithomoia solidaginis Hübn. Common everywhere up to 1,500 feet altitude on the moors, but especially so where *Vaccinium* and *Myrica* grow freely.

(To be continued)

EXCHANGES AND WANTS

- Wanted*.—I would be grateful for the loan of any photograph or coloured drawing of specimens of *Lysandra coridon* of the various forms of ab. *extrema* as illustrated and described in Bright & Leeds' Monograph of the Chalk Hill Blue Butterfly, pl. 10 and 18.—S. G. Castle Russell, 5 Bridge Road, Cranleigh, Surrey.
- Wanted*.—Volume XV (1903) of *The Entomologist's Record*, in parts as issued. £1 offered.—F. W. Byers, 59 Gurney Court Road, St. Albans, Herts.
- Wanted*.—Set or unset, *Zygaena exulans*, Scotch Burnet, *Zygaena purpuralis*, Transparent Burnet, *Zygaena Meliloti*, New Forest Burnet, *Zygaena loniceræ*, Narrow bordered 5 Spot Burnet, and any of their vars. Also *Adopoea lineola*, The Essex Skipper. Can give almost any species of British Lepidoptera in exchange, or cash. If you have any of the above to offer, please send long list of desiderata.—Chas. B. Antram, "Heathside", Latchmoor, Brockenhurst, Hants.
- Wanted*.—At a reasonable price: Volume 9 of Seitz Macrolepidoptera of the World. *English Edition*, i.e. "The Indo-Australian Rhopalocera."—Capt. A. W. H. Row, 18 Macaulay, Widcombe Hill, Bath, Somerset (Telephone Bath 61336).
- Wanted*.—Owing to the occurrence of virus disease amongst the Laboratory stock of *Biston betularia*, it will be necessary to breed from fresh material next year. Would anyone willing to supply either *typical*, *carbonaria*, or *insularia* pupae (either exchange or cash) please notify:—The Secretary, Genetics Laboratory, Department of Zoology, University Museum, Oxford.—Dr. H. B. D. Kettlewell, Department of Zoology, Capetown University, Rondebosch, South Africa.
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THE HISTORY OF THE UNITED STATES

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 THE EARLY YEARS
 The early years of the United States were marked by the struggle for independence from Great Britain. The American Revolution began in 1775 and ended in 1783. The Declaration of Independence was signed on July 4, 1776. The new nation was founded on the principles of liberty, justice, and equality.

CHAPTER III
 THE CONSTITUTION
 The Constitution of the United States was drafted in 1787 and ratified in 1789. It established the framework of the federal government and the rights of the states. The Constitution is the supreme law of the land and has guided the nation through its history.

CHAPTER IV
 THE WESTERN EXPANSION
 The western expansion of the United States was a major theme in its history. The Louisiana Purchase of 1803 doubled the size of the nation. The Texas Revolution and the Mexican-American War of 1846-1848 resulted in the acquisition of vast territories in the west.

CHAPTER V
 THE CIVIL WAR
 The Civil War, fought from 1861 to 1865, was a pivotal moment in American history. It was a struggle over the issue of slavery and the preservation of the Union. The war resulted in the abolition of slavery and the strengthening of the federal government.

CHAPTER VI
 THE RECONSTRUCTION
 The Reconstruction era, from 1865 to 1877, was a period of rebuilding the South and integrating African Americans into the nation. The Reconstruction Acts of 1867 established military districts in the South and required the ratification of the 14th Amendment.

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 The Gilded Age, from the 1870s to the 1900s, was a period of rapid industrialization and economic growth. It was characterized by the rise of powerful industrialists and the emergence of a new social class.

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 THE PROGRESSIVE ERA
 The Progressive Era, from the 1890s to the 1920s, was a period of social and political reform. Progressives sought to address the problems of industrialization, such as child labor and monopolies. The Progressive Era led to significant changes in government and society.

CHAPTER IX
 THE GREAT DEPRESSION
 The Great Depression, which began in 1929, was a period of severe economic hardship. It led to the New Deal, a series of programs and policies designed to provide relief, recovery, and reform. The New Deal fundamentally changed the role of the federal government.

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 THE SECOND WORLD WAR
 The Second World War, from 1939 to 1945, was a global conflict that reshaped the world. The United States entered the war in 1941. The war resulted in the defeat of the Axis powers and the emergence of the United States as a superpower.

CHAPTER XI
 THE COLD WAR
 The Cold War, from 1945 to 1991, was a period of tension between the United States and the Soviet Union. It was a struggle for global influence and the containment of communism. The Cold War ended with the collapse of the Soviet Union in 1991.

CHAPTER XII
 THE POST-WAR PERIOD
 The post-war period, from 1945 to the present, has been a time of significant change and progress. The United States has led the world in economic growth, technological innovation, and social progress. The challenges of the future remain, but the United States continues to strive for a better world.

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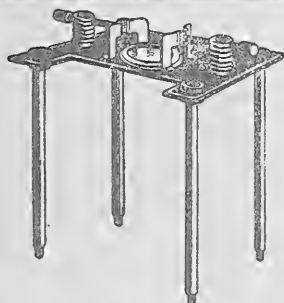
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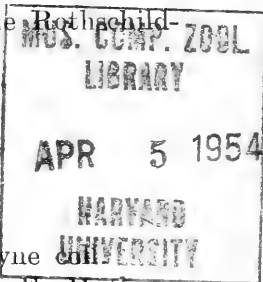
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Aberrations of British Macrolepidoptera

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

PLATE II.

The aberrations mentioned in this paper are all in the Rothschild-Cockayne-Kettlewell Collection in the British Museum.



ARCTIIDAE

ARCTIINAE

Arctia villica Linnaeus ab. **spoliata** ab. nov.

Spot 4 is missing on the fore wing; otherwise normal.

Type ♀: Cornwall, 11.vii.1902. (Massey coll.), Cockayne coll.

Paratypes 2 ♀: 1 ♀ Harwich district, 1899, Gervase F. Mathew.

Rothschild coll.: 1 ♀ Totland Bay, I. of Wight, bred vi.1888. Cockayne coll.

Schultz names all specimens with a spot or spots missing on the fore wing ab. *strandii*, but these are different both genetically and in appearance. I restrict *strandii* to the commonest form with a spot missing, which is the cream spot at the discoidal.

NOLINAE

Nola cucullatella Linnaeus ab. **nigrofasciata** ab. nov. (Fig. 6).

The basal and marginal areas of the fore wing are of the same pale brown, but the whole of the median area is black. Thus the area at the base, which is usually black, is pale and the median area, which is usually pale, is black.

Type ♂: Berkhamsted, Herts., 14.vii.1949, taken at light by Peter Bell.

AGROTIDAE

Agrotis ipsilon Hufnagel ab. **nigrostriata** ab. nov. (Fig. 1).

On the fore wing below the reniform and orbicular stigmata there is a small oval mark touching the antemedian line where it crosses the claviform; from the upper side of this a black streak runs obliquely to the postmedian line.

Type ♀: N. Kent, 1.ix.1926, L. W. Newman (Sale Debenham Storr Ltd., 29.i.1953, lot 240 A). Cockayne coll.

This aberration is exactly parallel to *Diarsia festiva* ab. *nigrostriata* Bytinski-Salz described from Shetland. There is a Shetland example and a much more striking English one on a pale ground in the Rothschild-Cockayne-Kettlewell Collection.

Caradrina blanda Schiffermüller ab. **albescens** ab. nov.

The head, thorax, legs, and fore wing are whitish brown; the abdomen is even paler, and the hind wing is almost white. It is an albino.

Type ♂: Ashridge, Herts., 21.vii.1953, taken in m.v. light-trap by A. L. Goodson.

A second specimen was taken shortly afterwards in the same trap, but was imperfectly expanded on the left side and was not kept. Mr. Frank Lees also caught a male at Maidencombe the same year.

Brachionycha sphinx Hufnagel ab. **fusca** ab. nov. (Fig. 4).

The fore wing, thorax, and abdomen are blackish brown; on the fore wing the usual black markings are visible and external to and below the black mark near the anal angle lies the normal white mark and other whitish marks lie between the black ones and the termen; the fringe is brown. The hind wing is dark brown, a little paler than the fore wing; the discoidal mark is faint; the fringe is brown. The paratype has some light hairs mixed with the dark ones on the thorax, and the abdomen and hind wing are not so dark.

Type ♂: Tring, Herts., 17.x.1953. A. L. Goodson.

Paratype ♂: Tring, 1.xi.1953. A. L. Goodson. Both at m.v. light.

A figure of a normal specimen from the same place is given for comparison (Fig. 2).

Plusia gamma Linnaeus ab. *gartneri* Skala, *Ent. Z.*, 1929, **42**: 317 (Fig. 3).

I think the specimen figured is *gartneri* Skala, but I shall be glad if my Continental readers will correct me if I am wrong. This, the only

EXPLANATION OF PLATE II

- Fig. 1. *Agrotis ipsilon* ab. *nigrostriata*. ♀ Type.
 Fig. 2. *Brachionycha sphinx*. ♂ nominotypical.
 Fig. 3. *Plusia gamma* ab. *gartneri* Skala.
 Fig. 4. *Brachionycha sphinx* ab. *fusca*. ♂ Type.
 Fig. 5. *Eupithecia venosata* ab. *basinigrata*. ♂ Type.
 Fig. 6. *Nola cucullatella* ab. *nigrofasciata*. ♂ Type.
 Fig. 7. *Zygaena trifolii* ab. *pygmaea*. ♂ Type.
 Fig. 8. *Euphyia luctuata* ab.
 Fig. 9. *Zygaena filipendulae* ab. *nigrolimbata*. ♀ Allotype.
 Fig. 10. *Colotois pennaria* ab. *cuneata* Rudolph.
 Fig. 11. *Selidosema brunnearia* ssp. *scandinaviaria* ab. *bettaria*.
 ♂ Type.

British example of which I have any knowledge, was taken at Mortehoe, N. Devon, viii.1928, by J. H. Bell. A parallel aberration is *Plusia pulchrina* ab. *gloriosa* Cockayne (*Ent. Record*, 1951, **63**: 163). An account of its capture in Gloucestershire with a figure is given by G. Clutterbuck (*Entomologist*, 1920, **53**: 1).

GEOMETRIDAE

Euphyia luctuata Schiffermüller, aberration (Fig. 8).

This was bred viii.1953 by Mr. H. S. Robinson from an egg laid by a female taken at Ham Street, Kent. I have not seen another like it.

Eupithecia venosata Fabricius ab. **basinigrata** ab. nov. (Fig. 5).

On the fore wing the basal area is of the normal pale colour, but the area between the black basal line and the antemedian is smoky giving it the appearance of having a blackish base; the rest of the wing is normal. Hind wing normal.

Type ♂: Tring, Herts., 29.v.1953, A. L. Goodson.

Colotois pennaria Linnaeus ab. *cuneata* Rudolph. *Notul. ent. Helsingf.*, 1925, **15**: 47, Pl. 1, fig. 11 (Fig. 10).

Taken near Aldbury, Herts., 22.x.1953, by A. L. Goodson.

Selidosema brunnearia de Villers ssp. *scandinaviaria* Staudinger ab. **bellaria** ab. nov. (Fig. 11).

The ground colour is normal. On the fore wing the dark basal line is thick and the costa is dark from the extreme base to the basal line; the median shade is absent, but the discoidal spot is distinct; a short distance external to the discoidal spot there is a broad blackish brown band running right across the wing from the costa to the inner margin; the outer aspect of the band is slightly dentate owing to a projection at each nervure; the nervures themselves are darkened; the border instead of being dark is of the normal ground colour. On the hind wing the broad blackish brown band is continued, but is broader and touches the enlarged discoidal spot; as on the fore wing the outer aspect is slightly dentate and the nervures are darkened. At first sight the band appears to have no relation to any normal markings, but on closer examination it is seen that it is limited by transverse lines faintly visible in the normal moth.

Type ♂: New Forest, viii.1936, taken by J. H. Bell, after whom I have named it.

This aberration and the *Plusia gamma* ab. *gartneri* were generously presented by his son Mr. Peter Bell, who also gave the remarkable aberration of *Nola cucullatella*.

ZYGAENIDAE

Zygaena trifolii Esper ab. **pygmaea** ab. nov. (Fig. 7).

Both fore and hind wings are about half the normal length and width, but the markings are normal.

Type ♂: Watergate, Emsworth, Hants., 9.vi.1895, W. M. Christy.

Allotype ♀: Same data.

Paratypes 2 ♂♂: Same data.

This aberration was bred from the colony at Emsworth, and is almost certainly genetic.

Zygaena lonicerae Scheven ab. **grisescens** ab. nov.

All the parts which are normally glossy dark green or black are silvery grey, including the margin of the hind wing and the abdomen. The thorax and abdomen are slightly darker grey. The red parts of the wings are normal. This albino is even paler than *Z. filipendulae* L. ab. *grisescens* Oberthür.

Type ♂: Loc. incog. (S. Webb coll., Gregson coll.) R. Adkin coll.

Allotype ♀: Loc. incog. (Harper coll., 1884) R. Adkin coll.

Paratypes 5 ♂♂: 1 ♂ Loc. incog. (Mason coll.) Bankes coll.; 1 ♂ Loc. incog. Rothschild coll.; 1 ♂ Loc. incog. (Hodgkinson coll., Vipan coll.) Cockayne coll.; 1 ♂ Loc. incog. (Harper coll., 1885) R. Adkin coll.; 1 ♂ Sandburn, Yorks., bred 15.vii.1901 by S. Walker. Cockayne coll. The type is figured by Barrett, Pl. 59, fig. 3 c.

The aberration differs from ab. *eboracae* Prest. I have compared it with specimens of ab. *eboracae* sent by Prest to Tutt, and these have the green and black parts a darker grey than *grisescens* and the red parts are paler red.

Zygaena filipendulae Linnaeus ab. **spoliata** ab. nov.

On the fore wing spot 4, the spot of the middle row nearer to the inner margin, is absent.

Type ♂ : near Tring, Herts., 7.viii.1941, A. L. Goodson. Cockayne coll.

Allotype ♀ : Loc. incog. (F. Bond coll.) R. Adkin coll.

The allotype is figured by Barrett, Pl. 60, fig. 1 h.

Zygaena filipendulae Linnaeus ab. **griseorosea** ab. nov.

The parts which are red normally are dull pink and slightly smoky in appearance.

Type ♂ : Pont-llan-fraith, 7.vii.1906, W. Rait-Smith. Cockayne coll.

Allotype ♀ : Bristol, 4.vi.1908. Rothschild coll.

Zygaena filipendulae Linnaeus ab. **nigrolimbata** ab. nov. (Fig. 9).

There is a broad black band along the margin of the hind wing which widens to cover the whole apical region and extends along the inner margin, where the black margin is very wide.

Type ♂ : Loc. incog. (Harper coll., sold Stevens 1884). Oberthür coll.

Allotype ♀ : Same data.

A Note on the Larva of *Coleophora vitisella* Gregson

By H. N. MICHAELIS.

Meyrick in *A Revised Handbook of British Lepidoptera* and L. T. Ford in *A Guide to the Smaller British Lepidoptera* give the occurrence of the larva as " 9-4 " (Sept.-Apl.), indicating that the larva completes its growth in one span of seven months. Examination of the specimens and larval cases in the Sidebotham Collection at the Manchester Museum showed a small larval case marked " first year " and a larger marked " second year."

I then decided to trace accounts of the life history in works published earlier than those mentioned above. The first reference was found in the *Entomologists Annual*, 1857, which showed that C. S. Gregson found the larva on *Vaccinium vitis-idaea* at Staley Brushes near Stalybridge, Cheshire, on 16th April 1856, and described the species in the *Zoologist*, 1856, p. 5167. The note in the *Entomologists Annual* led to a perusal of Stainton's *Natural History of the Tineina*, vol. V, 1860. On pages 101/102 is a clear account of the life history showing the larva needs a little less than two years to reach the pupa stage. The second year case and larva are figured on Plate XII.

A visit to Staley Brushes in mid-April 1953 produced a number of large and small cases from the underside of the leaves of *Vaccinium vitis-idaea* which were placed on a growing plant kept outside. A brownish blotch seen on the upperside of a leaf betrays the proximity of a larva. By May 7th the larvae in the larger cases had all settled on the upperside of the leaves where they normally pupate. These were removed indoors and the imagines emerged from 25th May to 5th June. At the beginning of May the larvae in the smaller cases

began to wander and eventually settled on the debris at the base of the plant, and on the sides and rim of the plant pot. About the same time the old leaves of the *Vaccinium* began to fall and new shoots and leaves to appear. By mid-June some of the leaves were full grown and on 15th June several larvae had left their resting places and were seen feeding on the underside of the more mature leaves; by 20th June all larvae were feeding. It would appear that the first year larvae have a spring diapause of about five weeks until the new growth of leaves becomes sufficiently mature to provide food. Throughout the summer no signs of feeding were observed on the young leaves towards the tip of the shoot. The larvae continued to build up their cases by adding pieces of the underside of the leaves to the mouth of the case. By October the cases were as large as those of the second year taken in April and the larvae are still feeding at the present time (25th November). The first year case, taken in April, is about 4 mm. from tip to mouth and is curved so that the tip almost touches the leaf on which it is feeding. The second year case at the time of pupation is 6-7 mm. in length, stands erect and is almost pistol-shaped. In both stages, the cases are grey-brown in colour with the tip darker. Moths were "smoked" from the *Vaccinium* in numbers at Staley Brushes on 4.vii.1953. (My bred specimens had been forced out earlier by being kept indoors as pupae).

Observation in their habitat indicates the duration of the larval stage as mid-July to early May twenty-two months later. As regards local distribution, the moth has been observed in Cheshire, Derbyshire and north Staffordshire and probably inhabits other parts of the country where the food plant is established. I am uncertain if this species has been previously recorded from Scotland. In September 1950 I found an empty case of *C. vitisella* Gregson at Aviemore, Inverness-shire (and no doubt overlooked others) while collecting cases of *Coleophora glit-zella* Hofm.

Inverness-shire in 1953

By Commander G. W. HARPER, R.N. (Retd.), F.R.E.S.

The 1952-53 winter started very early, with snow and frost continuously through November and December, a very unusual happening. Consequently the first mild weather of 1953, which began in the second week of January, produced a most remarkably early emergence of *Phigalia pedaria* Fab. on the 15th, when males were flying round the street lamps.

February began with the appalling flood disaster in the Eastern English counties, while in Scotland an even fiercer gale than in 1952 did indescribable damage to forests. Here in Badenoch we escaped much more lightly than in Eastern Scotland; we lost only some 20,000 trees blown down! This gale was followed by the return of snow and frost, but mild weather set in on the 15th and early emergences of moths continued unchecked, *Colostygia multistrigaria* Haw. appearing on the 26th, *Achlya flavicornis* L. and *Orthosia incerta* Hufn. on 28th, and *O. gothica* L. on 1st March.

March was an astonishing month—dry, warm and sunny, day after day, with only occasional early morning frosts. On the 10th my m.v.

light-trap recorded 177 insects of ten species, including *Lycia hirtaria* Cl., the earliest I have ever known it. This total was not exceeded until August, and even then not often. *Brachionycha nubeculosa* Esp. appeared on 12th March, and *Poecilopsis lapponaria* Bdv. on 14th; deliberate search for the latter was rewarded with the successful finding of it in four Inverness-shire localities for the first time.

March went out and April came with cold winds, snow and frost, but early emergences continued, *Saturnia pavonia* L. and *Isturgia carbonaria* Cl. flying freely on 19th April, and *Endromis versicolora* L. on 20th together with *Anarta cordigera* Thun. were sitting on fences and rocks. The month ended as it began—with snow and frost.

May, as is often the case, was warm and sunny in the second and third weeks, when indications of a really good season for butterflies became evident. *Callophrys rubi* L. was astonishingly abundant in certain moorland spots, some hundreds of individuals being noted flying together in a small area. I also had the great pleasure of taking no less than six specimens of *Anthocharis cardamines* L. between Newtonmore and Boat of Garten, an area where it has not, I believe, been previously recorded.

The last few days of May and early June were bitterly cold with a snow and sleet storm on Coronation Day, and for three successive nights not one moth came to my m.v. lamp! I was away for most of June, returning on the 27th in warm sunny weather. On the 30th near Dalwhinnie *Erebia epiphron* Kn. was already well out, the males being a little worn but plentiful. Butterflies continued through the rest of the summer to be unusually abundant; *Coenonympha tullia* Müll., *C. pamphilus* L. and *Maniola jurtina* L. were everywhere in good numbers, and later, in August, *Argynnis aglaia* L. and *Aglais urticae* L. were also abundant. I also had the pleasure of seeing my first *Nymphalis io* L. at Newtonmore, still a rarity in the central Highlands.

The sunny spell in June, however, was short-lived and the rest of the year was unrelievedly cloudy and cool, some rain also falling on every single day between 2nd July and 3rd September, with an early morning frost on 1st August for good measure! However, the numbers of moths seemed to be well up to average, and one remarkable fact was that a number of species succeeded in producing a partial summer second brood, including *Drepana lacertinaria* L., *Apatele euphorbiae* Schf. ssp. *myricae* Guen., *Bupalus piniaria* L., *Xanthorhoe designata* Hufn., and *Ematurga atomaria* L., none of which have I personally known to do so before. *Apamea exulis* Lef. ssp. *assimilis* Dbld. was not quite so uncommon this year as last, while a great pleasure was the discovery, in very small numbers, of *Coenocalpe lapidata* Hüb. in September high up on a hillside near Newtonmore.

Immigrants were better represented than in recent years; one *Vanessa cardui* L. was seen in September, when *Plusia gamma* L. became unusually common both as adults and larvae, emergence continuing into November. *Vanessa atalanta* L. also was not uncommon, as was *Agrotis ipsilon* Hufn., while a solitary *Peridroma porphyrea* Schf. (*saucia* Hüb.) came to my m.v. light on 7th October. September and October were so mild, dry, and free from frost that all the usual species were in good numbers, and the season closed before the

middle of October with the last worn *Poecilocampa populi* L. coming to m.v. light.

To sum up:—1953 in Inverness-shire was remarkable for a very early warm spring, mild autumn, and cold wet summer. Butterflies generally were in unusual profusion, migrant insects better represented than recently, and moths generally in good numbers, with several partial second broods. A memorable year.

Notes on Moths attracted to M.V. Light at Camberwell

By S. WAKELY.

Last August (1953) I decided to try out a M.V. light in my small garden at Camberwell. The house faces Ruskin Park, and not to attract too much attention from passers-by the light was used in the back garden. I used a small table lampstand placed on a white sheet, the illuminant being a 160-watt blended bulb requiring no choke.

Knowing that the local *Euzophera pinguis* Haw. occurred in the Park—I had taken one on an ash trunk in 1951—it seemed likely that this would appear, and I was not disappointed. However, although the numbers of insects which appeared was not startling, some of the species were very unexpected for such an area. The following is a list of the more interesting species noted:—

<i>Notodonta dromedarius</i> L.	<i>Pyralis farinalis</i> L.
<i>Pseudoips bicolorana</i> Fuessl.	<i>Dioryctria fusca</i> Haw.
<i>Cosmia diffinis</i> L.	<i>Euzophera pinguis</i> Haw.
<i>Cosmia affinis</i> L.	<i>Crambus contaminellus</i> Hb.
<i>Leucania conigera</i> F.	<i>Phalonia smeathmanniana</i> F.
<i>Atethmia xerampelina</i> Hb.	<i>Evetria purdeyi</i> Durr.
<i>Eupithecia absinthiata</i> Clerck	<i>Eucosma nigromaculana</i> Haw.
<i>Eupithecia succenturiata</i> L.	<i>Pammene juliana</i> Curt.
<i>Eupithecia icterata</i> Vil.	<i>Laspeyresia splendana</i> Hb.
(<i>subfulvata</i> Haw.)	<i>Phthorimaea maculiferella</i> Dougl.
<i>Eupithecia sobrinata</i> Hb.	<i>Prays curtisellus</i> Don.
<i>Deuteronomos fuscantaria</i> Haw.	(var. <i>rustica</i> Haw.)
<i>Acentropus niveus</i> Ol.	<i>Ypsolophus alpellus</i> Schiff.
<i>Eurrhypara hortulata</i> L.	<i>Bucculatrix cristatella</i> Zell.

The light was used most nights during August and for the first fortnight in September only, and no doubt with a trap a great many more insects would have been taken. It was switched on at dusk and on very few occasions did I use it after midnight.

I append a few more details about some of the species taken.

There are a few birch trees across the park, so the single *Notodonta dromedarius* L. may have come from these (on the 11th August).

Pseudoips bicolorana Fuessl. breeds freely here, the small larvae being often seen during September ascending the huge trunks of several old Turkey oaks. One can be sure of finding them after a strong wind, although how they find their way back to the main trunk is a mystery to me. I have only found them on this species of oak here, which is rather strange, as it is very unusual to find any larvae at all on Turkey oak in woodlands, as I think most entomologists will agree.

No larvae have been found after hibernation, and one cannot use a beating tray in such a locality—in any case I should not care to try. One specimen only appeared—very ragged and rubbed.

The *Cosmia diffinis* L. was quite a surprise, as it is a species I had not taken before in any locality. It was captured on the 7th August, two *C. affinis* having been taken on the 5th, but the latter, of course, is a much more common insect. Both species probably feed as larvae on a row of small-leaved elms in the park.

A large portion of the park is ringed with robust ash trees, which no doubt accounted for the single specimen of *Atethmia xerampelina* Hb. which was taken on the 4th September. I was surprised to take it in such a built-up area, although I have previously come across it a few miles away at South Norwood.

Deuteronomos fuscantaria Haw. was rather common, occurring from 5th August to 5th September. Only males appeared but I bred a fine dark female from a larva found on a tree trunk.

Of the Pugs taken *Eupithecia sobrinata* Hb. (13th August) was the most surprising, and I know of no junipers in this district.

Acentropus niveus Ol.—a single male—was taken on the 5th August. This species, very like a small whitish caddis fly, was boxed with difficulty as it fluttered round in circles among garden plants. This peculiar moth has a way of fluttering round and round in circles and not rising from the ground. It occurs in numbers on one of the ponds much frequented by model yacht enthusiasts on Clapham Common.

The two most common moths in my garden are *Pyrausta aurata* Scop., which spoils my bed of garden mint regularly each year; and *Eurrhypara hortulata* L., the larvae of which swarm on some plants of *Marrubium vulgare*, and may also be found feeding on mint, *Artemisia absinthium*, *Solidago virgaurea*, Michaelmas daisy, etc. A striking variety of *E. hortulata* L. with wide black borders was taken on the 12th September.

The occurrence of *Dioryctria fusca* Haw. in London is a complete mystery, as it is a very local moth and found only on our larger heathlands. The specimen was in fresh condition.

Euzophera pinguis Haw. appeared from 6th to 10th August, a nice series of this local species being taken. The larvae feed in the bark of ash trees.

A pair of *Crambus contaminellus* Hb. were taken on the 1st of August. I have previously recorded this insect from Herne Hill, which is less than a mile away. This moth is probably often mistaken for one of the more common Crambids, but it has a characteristic habit of resting on the sheet with the head down and body and wings canted slightly upwards.

On both the 7th and 13th of August I took a single *Evetria purdeyi* Durr. As far as I know there are no fir trees in our park and the presence of this small tortrix is a mystery. However, it has previously been recorded from unlikely places, and one must presume it is rather a wanderer by nature. This wandering habit probably exists in individuals of many of our local small species and gives rise to fresh colonies, but the possibility of migration cannot be ruled out in the two specimens taken here.

Pammene juliana Curt., rather a handsome species in my opinion, is much more local than the other acorn feeder—*Laspeyresia splendana* Hb. A single specimen of *P. juliana* came to the light on the 10th August, but it was not a surprise as the previous year I found the larvae quite common in the early mornings (7-8 a.m.) during September on the trunks of the Turkey oaks. They pupate in crevices in the deeply-ridged bark, but seem to spend a lot of time exploring to find the ideal site. This is usually found from 4 ft. down to ground level, and the house-sparrows must take a heavy toll of them here judging from my observations. The larva is a pale grey or whitish with minute rust-coloured dots. The word "measles" came to my mind when I examined the first one, and these spots ruled out the possibility of their being *splendana*, which at first I felt they must be. The moths emerge in the mornings, and can often be taken in July on the oak trunks when drying their wings, but they disappear by noon, when no doubt they have walked further up the tree trunks. They are numerous in Brockwell Park, Herne Hill.

Ash trees being so numerous nearby, it was no surprise to find *Prays curtisellus* Don. from the 3rd to the 13th August. A strange thing was that I saw no typical specimens—only the dusky variety *rustica* Haw. I must confess this "variety" puzzles me and I should not be surprised if it is discovered to be a distinct species. The typical *P. curtisellus* is a handsome black and white species, but the variety is a rusty, dingy looking moth with no signs of the white markings. It seems strange that the variety has an orange or ochreous head, while the type is white in this respect. One would expect the head to be black or grey in the variety. Again, I have never seen any intermediate specimens. Also the dark ones are often much smaller than the normal coloured moths. The larvae feed internally in ash shoots, so are not easy to rear. I should like to know if a mixed pair have ever been taken *in cop.* or if the type and variety have been bred from one batch of eggs. One can breed both forms from ash shoots, but this proves nothing except that they have a common foodplant.

The appearance of a single *Ypsolophus alpellus* Schiff. pleased me, as it was a species I seldom see. Last year I found several characteristic long cocoons of this genus on an oak tree in the park and they were removed carefully and kept for observation. Much to my surprise the moths that emerged were *Ypsolophus xylostella* L.—a species attached to honeysuckle and nothing to do with oak. There appeared to be no honeysuckle anywhere near, but later I noticed that near the trees were several bushes of snowberry (*Symphoricarpos*), a well-known garden shrub which is botanically near *Lonicera*, and often used as a substitute foodplant by entomologists.

In conclusion I should like to say that the M. V. light can certainly add a lot to our knowledge of the distribution of insects—even in a neighbourhood not rich in entomological rarities.

ERRATUM.—It has just been pointed out to me that there is an unfortunate error in my Note on the Genitalia of *Colias australis* Verity in the February number (*Ent. Rec.*, 66: 36). This reads: "these characters . . . that separate *edusa* and *phicomone* . . ." This of course should be "*palaeno* and *phicomone*", as Lempke correctly puts in his article on p. 34.—B. C. S. WARREN.

Notes on the Macrolepidoptera of the Fylde Coastal Area of West Lancashire

By K. BEVAN.

The Fylde district of Lancashire is a flat, low-lying windswept area devoid of natural woodland but possessing an intermittent sea-board skirting of sand dunes stretching from Lytham in the South to Starr Gate. It is from this coastal district that I have recorded the following observations of the macrolepidoptera to be found there.

The sand dunes, which until recently was one of the strongholds of *Nyssia zonaria* Schiff. and stretched for many miles, is now reduced to a few dozen acres in extent and will soon be eclipsed by a building programme. As this locality is the only remaining one of entomological interest, it may well be that a knowledge of its Lepidoptera will be of use for future reference.

RHOPALOCERA

Pararge megera L. Fairly common. Males have a preference for the tops of sand dunes.

Eumenis semele L. Very common. I know of no other place in the Fylde where this species is found.

Maniola tithonus L. I have taken only a single specimen of this species, in 1939.

Maniola jurtina L. Common.

Coenonympha pamphilus L. Common.

Argynnis aglaia L. According to an observation by J. B. Hodgkinson in Newman's *Nat. Hist. Br. Butterflies*, this insect was formerly common, but I have never seen nor heard of it being taken in recent years.

Polyommatus icarus Rott. Abundant. The females are frequently very blue and the species here is not so heavily spotted on the underside as the specimens I take on the banks of the Ribble—a distance of about six miles to the South.

Celastrina argiolus L. Although I took a specimen in the town (Blackpool) in 1952, this is not strictly from this area (see *Entomologist* 85: 41).

Lycaena phlaeas L. Common. I have not seen a single specimen of ab. *caerulea-punctata* from the area although it is of frequent occurrence inland. I took a fine female ab. *obsoleta* in 1949 and last year (1953) I caught a very unusual form with the right fore wing ab. *schmidtii* the rest normal.

Pieris brassicae L. Common.

Pieris rapae L. Common.

Pieris napi L. Common.

Anthocharis cardamines L. This butterfly is strangely rare over the whole of the Fylde area although the foodplant is abundant.

Colias croceus Fourc. Along the banks of the Ribble I found this butterfly common in 1947.

None of the HESPERIIDAE is to be found in the area.

HETEROCERA

Smerinthus ocellata L. Rare. I have taken the larva feeding on *Salix repens*. I record this as this foodplant is not given in Allan's *Larval Foodplants*.

Herse convolvuli L. I took a specimen on the promenade at Black-pool in 1951.

Cerura vinula L. Although not common, I have taken the cocoons from the railway posts, an indication that the larval foodplant is *Salix repens*—the only sp. of *Salix* in the immediate vicinity.

Dasychira fascelina L. I usually find one or two larvae each year.

Leucoma salicis L. An abundant species. Again the larvae are to be found only on *Salix repens*.

Lasiocampa quercus L. f. *callunae* Palm. The larvae are to be found at night in April browsing on the catkins of *Salix repens*.

Macrothylacia rubi L. I have found only a single larva, which I failed to rear.

Spilosoma lutea Hufn. Fairly common.

Phragmatobia fuliginosa L. One or two each year.

Callimorpha jacobaeae L. Common by day and night.

Apatele rumicis L. Common at sugar.

Euxoa cursoria Hufn. This species is taken at marram flower rather than sugar.

Euxoa tritici L. Common. Only the reddish brown and darker forms occur in this locality; the slate and grey forms according to Tutt's *Br. Noct. and their Vars.* are not represented.

Agrotis exclamationis L. Common. My specimens approximate to *costata* Tutt, *rufescens* Tutt, and *brunnea* Tutt.

Agrotis ipsilon Hufn. Common at sugar most years.

Agrotis segetum Schf. Very common.

Agrotis vestigialis Hufn. Common. I have taken the following varieties:—*vestigialis* Rott., *brunnea-obsoleta* Tutt, and *valligera* Bork.

Amathes c-nigrum L. Quite common at sugar.

Amathes xanthographa Schf. Very common.

Amathes sexstrigata Haw. Common.

Ochropleura plecta L. Not common, but I take one or two each year at sugar.

Triphaena comes Hub. Common.

Triphaena pronuba L. Usually very common.

Mamestra brassicae L. Common.

Melanchra persicariae L. Rare in this locality.

Heliophobus albicolon Hub. Not very common but may be taken at sugar.

Diataraxia oleracea L. Very common.

Ceramica pisi L. Common.

Hada nana Hufn. Not common at *Silene* flowers.

Hadena trifolii Hufn. A single specimen in 1952.

Hadena bicurris Hufn. This moth may be taken with the preceding species but is more common.

Hadena serena Schf. I took a single specimen in 1950.

Luperina testacea Schf. Commonly taken at rest on the railway fencing posts towards the end of August.

Thalpophila matura Hufn. Very common and seems to prefer sugar to the attractions of the marram.

Apamea sordens Hufn. Very common.

Apamea secalis L. Very common. I have taken ten forms according to Tutt's *Brit. Noct.*

Procus strigilis Cl. Very common, especially the darker forms.

Procus fasciuncula Haw. Comes to sugar occasionally.

Procus literosa Haw. Common.

Apamea crenata Hufn. Not common on the dunes but very common inland.

Apamea lithoxylea Schf. Common at sugar.

Apamea monoglypha Hufn. Very common, especially the darker forms *infuscata* and occasionally *aethiops*.

Eumichtis lichenea Hüb. A single specimen in 1952.

Phlogophora meticulosa L. Common.

Phalaena typica L. Not common.

Celaena leucostigma Hüb. I took a single specimen at sugar in 1949.

Hydraecia oculea L. Common at sugar, where an occasional *ab. erythrostigma* Haw. appears.

Hydraecia micacea Esp. Quite common and shows a marked preference for marram rather than my sugar.

Leucania pallens L. Common.

Leucania impura Hüb. Very common.

Leucania litoralis Curt. This moth occurs infrequently at sugar and marram.

Leucania comma L. Not common.

Leucania lithargyria Esp. Common in all districts of the Fylde.

Leucania conigera Schf. Very infrequent: I have taken only a single specimen.

Meristis trigrammica Hufn. Common at light and sugar in June.

Caradrina morpheus Hufn. Common at sugar.

Caradrina clavipalpis Scop. Common.

Rusina umbratica Göze. Common in June.

Amphipyra tragopoginis Cl. Common at sugar.

Orthosia gothica L. Not common in April.

Orthosia gracilis Schf. Commoner than the above and flies in late April and early May.

Omphaloscelis lunosa Haw. Usually one or two each night at sugar in the autumn.

Agrochola lota Cl. This moth appears with the above species.

Agrochola lychnidis Schf. A single specimen in 1950.

Cirrhia icteritia Hufn. Not common.

Pyrhia umbra Hufn. Not common at sugar. My specimens appear to be *ab. marginata* Fab.

Heliothis armigera Hub. A single specimen at light in 1950 (see *Entomologist*, 84: 101).

Plusia gamma L. Common. I took a specimen on 18th May in 1952.

GEOMETRIDAE

Ortholitha chenopodiata L. Rather common at dusk.

Lygris testata L. Very common on the Starr hills.

Xanthorhoe spadicearia Schf. Common.

Perizoma albulata Schf. Very common.

Euphyia bilineata L. Common. Dark specimens sometimes turn up.

Eupithecia centaureata Schf. I have taken only two specimens, at Starr Gate.

Nyssia zonaria Schf. I have never taken this species in the district and believe that it is now extinct here.

ZYGAENIDAE

Zygaena filipendulae L. Very common, but not very variable.

HEPIALIDAE

Hepialus humuli L. Common.

Hepialus sylvina L. This species occurs at Starr Gate, but I have come across only a pair *in cop*.

Hepialus lupulina L. Very common everywhere.

An Entomologist in Argentina

V. Collecting in Misiones

BY KENNETH J. HAYWARD, D.Sc. (Hon.), F.R.E.S.

More than twenty years have passed since my first introduction to Misiones, but even now when I think of those first days collecting in the verdant forests or along the red roads of Puerto Bemberg, I still recapture something of the thrill it gave me.

The small wooden hotel in which I had been accommodated lay on the edge of the cleared area that contained the village, and being built on a slope, the back ran into the hillside whilst the front was raised some three or four feet above the level of the ground. It was under this raised part of the hotel that I caught my first butterflies, for many *Hamadryas* (*Ageronia*) and other shade loving species had taken advantage of the cave-like darkness thus provided to escape the noonday heat, and any movement on the verandah disturbed them and they would fly across the road to the forest on the other side.

Puerto Bemberg was not large and appeared still smaller than it really was as most of the houses were hidden amongst the exuberant vegetation. In a cleared space in the centre of the village lay the Company's whitewashed offices and stores, illumined at night by several powerful electric arc lamps which undoubtedly contributed more than anything else to the success of my trip. A wide red road ran through the village, winding up the steep river bank and continuing on through the undulating plantations where the *yerba* bushes stretched out in endless serried rows. These plantations were separated at intervals by strips of forest that had been left as an experiment in biological control, as it was hoped that they would shelter enough birds and beneficial insects to take care of any agricultural pests that might appear. In this they had however failed, perhaps the strips were too narrow or too widely separated, as during my stay the planted *yerba* (of which the leaf is the essential crop) was being defoliated by the larva of several Lepidoptera whilst I never saw a damaged leaf on the wild *Ilex* that grew everywhere in the forest.

The method employed in Misiones for clearing land may be described

as it explains some of the difficulty experienced in collecting over recently cleared ground. All valuable timber is first removed and the remaining forest cut down and allowed to dry. When a suitable moment arrives and the ground has been thoroughly soaked by heavy rainfall, this is fired, after which any small timber remaining is heaped up and burnt and the tree trunks are pulled round into parallel rows, the crop being sown amongst the stumps between these rows of tree-trunks. Only when they interfere with correct spacing are the stumps pulled out, otherwise together with the trunks they are left for time and dampness and insect borers to bring them to decay, a process that takes about six years except in the case of a few hardwoods which take a little longer. In order to conserve the humidity and at the same time add nitrogen to the soil, a green leguminous cover-crop is planted amongst the *yerba* and as this grows nearly waist high it hides the rotting stumps and trunks beneath its trailing vines making it almost impossible to move about. I soon found, however, that little was to be gained by collecting amongst the *yerba* unless I needed specimens of the large cicadas or the Cerambycid *yerba*-borer *Hadyathes betulinus* (Klug) which is sometimes a serious pest.

In a few days I had settled into a steady routine. I rose, though not without effort, at daybreak, since it was necessary to paper the moths and pack the other insects I had taken the previous evening, a task that often took me several hours. The mornings were spent in the forest and after lunch I dealt with any insects I had collected, before going out again till dusk. After supper I collected round the big arc lamps which even on moonlight nights attracted large quantities of insects that settled on the white walls of the buildings. On really good nights I had sometimes to return several times to the hotel to empty my killing bottles. On such evenings I would remain till the light was cut off at one o'clock, but generally I called it a day at midnight and allowed myself five hours for sleep.

So much land had been cleared that my walks never lacked for variety as would have been the case had I been confined to the forest paths; furthermore I was able to start collecting the moment I left the hotel. In several places in the village the roadside had been decorated with beds of flowers, especially Zinnias which had a great attraction for the swallowtails and I have seen a dozen species at their blooms in about as many minutes. In the forest blue *Morphos* drifted up and down the trails and in the first hours of the morning I used to see a number of the purple Brassolid *Eryphanis reevesii*, but these were seldom in good condition. Surprisingly I only once saw any of the big *Caligo* owl-winged butterflies; they seem to prefer the impenetrable cane brakes.

Often when the sun had warmed the air one would come across large masses of butterflies assembled on wet sand or mud or at roadside puddles, forming a patchwork carpet of undescribable beauty. If only a few were present they would intermingle, but when as was often the case the assemblage numbered many thousands, they would form themselves into compact companies, each species apart, those sparingly represented scattered on the outskirts of the throng. For the most part they were swallowtails or big yellow *Phoebis* species, but a great many butterflies have this habit and all were males. When disturbed they

would rise and circle but in a few minutes would return, each group to its appointed patch of sand. With care they could be approached, and so intent are they on their drinking that it was possible with a pair of tweezers to pick up one after another, selecting them at will. This year the white diaphanous *Graphium* swallowtails were more numerous than I have ever seen them since and this was the easiest method of collecting them as I seldom found them at flowers. I think the object of this drinking is the desire to obtain salt and that probably the butterflies only assemble at those spots or on those objects that have been contaminated by man or beast. They stand with the proboscis in the sand with abdomens pulsing and every few minutes a large drop of liquid exudes from the anus. One of my favourite walks was along a short path quite near the village which led to a ford across a small stream. Here cattle came to drink and there were always many drinking butterflies, especially *Marpesia peleus*, and as I used to sit and watch them they would settle on my face and hands and I can think of nothing more delightful than the soft caress of their alighting.

Although in those days I still had much to learn about the methods of collecting what I term the "hidden insects", those that do not normally expose themselves as do the butterflies and moths, the bees and wasps and flies, I managed to form a very considerable collection of the smaller bugs and beetles and insects of the lesser orders. My night collecting round the arc lamps was undoubtedly the most successful and the most profitable that has ever fallen to my lot and insects came in such quantities that it was always necessary to pick and choose. On good nights I sometimes collected more than four hundred moths. Sphingids abounded both in species and in numbers and presented something of a problem because of their bulk, and I had to prepare especially large collecting jars into which they could be transferred once they had ceased to flutter, and there were I remember great numbers of a large Cossid. As a result of this phenomenal night collecting the percentage of Lepidoptera to other insects taken on this trip (33%) has never been even remotely approached on any of my subsequent collecting expeditions.

After just under a month spent in these delightful surroundings I proceeded up river to Puerto Aguirre that lay about half a mile back from the Alto Paraná along the river Iguazú at a point where three countries meet, the Iguazú separating Argentina from Brazil and the Alto Paraná these two countries from Paraguay. Puerto Aguirre consisted of about twenty wooden houses set atop the river bank which was even higher than at Bemberg and up which there was only a foot-path. It had at one time been the headquarters of a company exploiting the surrounding forest and was now a military zone and was also the port of disembarkation for tourists visiting the falls. The steamers after calling returned to the Paraná and continued upstream to the Brazilian port of Méndez at the foot of the Guayra falls, and as these sometimes arrived after dark an old ocean-going steamer gutted of her engines had been brought up to provide temporary sleeping quarters till visitors could be fetched and taken out to the hotel by daylight, a distance of some thirteen miles. After a few days spent aboard this hulk I found quarters in the village, occupying what had once been the office in the corner of a large empty wooden barn. This room was

lighted by two large openings cut in the walls and closed by wooden shutters, and after the first storm had shown me where the roof leaked I slung my hammock and prepared to make myself as comfortable as possible for my two and a half months' stay. Like many other places in Argentina, Puerto Aguirre has suffered change of name, firstly to Puerto Iguazú, the original Puerto Iguazú being rebaptised Iguazú-cuí or 'old Iguazú', and more recently to Puerto Eva Perón.

In consequence of the exploitation of the forests, which had ceased some twenty years previously, the woodland was more penetrable than the virgin forest at Bemberg and consisted in great part of secondary growth. Furthermore as a result of having been opened up, it was criss-crossed with paths which even if in places partly overgrown were mostly passable. Not being a privately owned estate there was little cultivation apart from some small scattered clearings where squatters grew maize or had small gardens. These clearings were seldom more than two or three acres in extent but always interesting as the insects sought them in preference to the deep shade of the forest.

At first I confined my collecting to the village and the high river bank, but as I began to find my way about I wandered further afield till soon I knew every path within about three miles of the river. I maintained my old routine but did not have to rise so early as there was no electric light and my efforts with lamp and sheet gave very poor results. To compensate for this I went dusking at flowers for the crepuscular butterflies and early moths, a mode of collecting that led to more than one unpleasant incident with snakes when returning through the forest after nightfall. During February we suffered a spell of very wet weather so that often for days on end I could do no collecting and to amuse myself I fished or gathered ferns and orchids. The rain was so persistent that during one black week my catch was less than 500 insects. This excessive dampness caused night fogs along the river so that even on fine days it was often after nine before they cleared and I could begin to collect, and on those days I walked out to some distant point so as to work slowly homewards when the mist had lifted. Although I spent most of my time in the forest I saw remarkably few animals; twice I met a jaguar (*Felis onca*) and once a giant ant-eater. I was warned to avoid a certain part of the woods as a herd of peccary was known to be present, but though I sometimes saw where they had passed I luckily never met them.

I found a far greater variety of insects here than at Bemberg: not only was there less cultivation but the season was more advanced. In addition to the big blue Morphos the pale greenish *catenarius argentinus* was quite common but difficult to catch. I eventually obtained a good series by searching for them during mid-afternoon along those forest paths where any horse had passed as they would come down and settle on the dung and were then quite easy to net. Excreta, and especially that of the cat tribe, had a great attraction for certain butterflies and I once counted nearly 150 *Anaea morvus* crowded round the droppings of a jaguar. It was a curious fact that one never saw any dung in the early mornings, beetles had removed every last trace during the night.

The earliest butterflies to appear were the skippers, and many species were on the wing at six, disappearing for the day soon after

nine. On the other hand the best hours for the scarcer *Thecla* blues was from ten till about midday and it was useless to search for them in the afternoons. There were a great many species and with the Riodinids the *Theclas* composed a large percentage of the eighty-one Rhopalocera added to the Argentine list during this trip.

Amongst the insects of interest found at Aguirre were several of the rare *Inca* beetles (Scarabaeidae, Cetonini) which I took at the sweet sap of a tree called the *guatambú*, I believe an *Aspidosperma*. I also caught many of the large *Callipogon armillatus*, some of these having a body length of four inches and measuring an inch and a quarter across the elytra. These were usually seen high up in the trees and to reach them I had to tie two or three bamboos to my net handle. The females of this Cerambycid having laid their eggs under the bark retire a short distance along the branch and then cut a deep groove round it, thus stopping the flow of sap so that when the larvae reach a certain age they have dead wood in which to continue their development. These grooves are so neatly made that they could not be bettered on a lathe. I also found a few of the big Pantophthalmid flies that I momentarily mistook for a cicada when I saw my first resting on a tree trunk. They have a wing spread of just under $2\frac{1}{2}$ inches (not 25 inches as reported by a certain London daily!). It was an unusual season for varieties of the Satyrid *Taygetis ypthima*, hardly any two undersides being exactly alike; a coloured plate of ten of the most striking of these aberrations will appear in the fourth volume of *Genera et Species Animalium Argentinorum*. Perhaps the wet weather had something to do with this variation as when I collected over the same ground in 1945, a year of drought, I did not obtain one single variety. From the flowers of a *Parkinsonia* whose curved thorns played havoc with clothes and net-bags I collected some fifty species of the small clearwing Syntomids and I was lucky enough to obtain quite a number of the always interesting *Castnia*. I also had the disagreeable experience of being twice attacked by the *Dermatobia hominis* warble-fly, one of the pests of Misiones, on the second occasion allowing the maggot to remain in my leg for about three weeks so that I could study its habits; but I finally removed it as being too much of a nuisance.

Whilst at Aguirre I paid a six day visit to the falls, staying at the hotel where the electric light was a source of joy and kept me out of bed till the early hours. The cataracts of Iguazú are perhaps the most beautiful in the world, forming as they do a sweeping arc of more than a mile and a half in length where the tranquil waters of the upper river hurl themselves 265 feet into a narrow gorge. There are forty separate falls in all, many of which are joined in time of flood, and looking out across this mass of plunging water, broken up by small green-forested islands over which there ever hangs a mist of rising spray, tinted golden rose at dawn and sunset, and where blue Morphos and brightly plumaged toucans or the flashing iridescence of passing flocks of parrots lend for a brief moment their instant of colour, one marvels that there can be so much beauty.

Early in March I returned to Puerto Bemberg for a final visit. The fact that during the four weeks I remained there my bag amounted to more than a quarter of all the insects taken gives some idea of the increase in their numbers, especially when it is remembered that I no

longer troubled to catch many of the commoner species of which I already had sufficient. One insect, *Pericopis cruenta* (Lep. Pericopidae) attracted my attention as when handled it exuded a chain of small bubbles of a bitter yellow liquid from the dorsum of the thorax. I sent specimens to Dr. Eltringham at his request but I do not think he ever traced the mechanism of this discharge. One other note of interest concerns a spider. It had taken up its abode just outside my door and so lent itself to observation. Every evening it spun a web but when I rose at dawn this web had disappeared; no trace of it remained. Perhaps this has a simple explanation but as I know little of the ways of spiders it aroused my curiosity. I collected the spider for identification but it seems to have been mislaid.

As April lengthened new insects were increasingly hard to find and all were becoming very worn. The object of my journey had been achieved and I had visited the falls of Iguazú and learned something of the forests of Misiones. It seemed time to return, so on the evening of the 12th, as the sun was setting, I embarked for the first leg of the six day river journey to Buenos Aires.

Correction: Vol. 65, p. 251, lines 13 and 14. Insert a comma after *Anartia* and for *Amalthea* read *amalthea*.

Notes on Microlepidoptera

By H. C. HUGGINS, F.R.E.S.

Agdistis bennetii Curt. The larva of this 'plume' is now to be found on leaves of sea lavender on salt marshes. Its appearance is quite unmistakable as it looks like a tiny hawk-moth caterpillar, both from its smooth skin, curious resting attitude, and the single tail 'horn'. It is usually on the large radical leaves of the plant, in which it makes conspicuous holes, and must be picked off carefully as it is apt to drop if alarmed. It is quite easy to rear in a glass-lidded metal box and will pupate on grass stems or small bits of stick, or on the leaves of the food-plant. In the last case it is as well when the pupa has hardened to clip away as much of the leaf as possible to prevent mould.

Oxyptilus pilosellae Zell. The caterpillar of this very local insect is to be obtained throughout April in the central shoot of *Hieracium pilosella*, which it stunts or kills. It is larger than that of *O. parvidactylus* Haw. and usually appears somewhat later, towards the middle of the month. *O. pilosellae* is exceedingly local, but is usually abundant where found.

To avoid the possibility of collecting all *parvidactylus* larvae it is as well to look for *pilosellae* in a place where the moth has been seen at the end of July in the previous year. So highly localised is this moth that in its Sittingbourne (Kent) locality, which I hope still exists as I have not visited it for twenty years, it was found only on one bank on the chalk downs in a space less than a hundred yards long, but there it was so common that I have seen half a dozen moths sitting on the grass in a space of two yards and on a favourable afternoon could have taken thirty or forty had I wished. As it was so local and I knew of no other place I used to restrict myself to a dozen a season.

Oxyptilus parvidactylus Haw. The larva of this moth also feeds on *Hieracium pilosella* but the moth is double-brooded and in early years is on the wing in the beginning of May. The caterpillar should therefore be sought for at the end of March or beginning of April. When full-grown it prefers the young flower-stem and usually kills it. It is not very easy to find as the injured stem soon becomes overgrown. I believe I was the first to find the larva in this country; in earlier works its food was usually given as thyme, possibly from the fondness of the perfect insect for hiding in clumps of that plant.

Proutia betulina Zell. The only locality I know in which this local Psychid may be found with certainty today is Epping Forest, where it inhabits the blackthorn thickets. The larva forms a rough tubular case tapering to a point, somewhat resembling the shell of a *Clausilia* snail in shape, particularly the stumpy *C. rolphii*. It may be beaten from the lower boughs of old lichenous blackthorns in late March and April and in captivity will feed on blackthorn leaves and also the lichens growing on the stems. It is of course a small case and liable to be overlooked in the beating-tray as it is only half the length of *Talaeporia tubulosa* Retz.

Notes and Observations

EUPROCTIS CHRYSORRHOEA L. IN BERKSHIRE.—With reference to the occurrence of *E. chrysoorrhoea* in Hampshire (*Ent. Rec.*, 65: 350 and 66: 22), on 8th October 1933 I found a male of this species at rest in a wood at Cold Ash, near Newbury, Berks. I think the date and the locality of this capture are equally noteworthy.—H. SYMES, 52 Lowther Road, Bournemouth. 24.i.54.

[I suppose Mr. Symes's Newbury *chrysoorrhoea* is not the form of *similis* which has a brown tail? This species often has a second brood.—Ed.]

LATE EMERGENCE OF NYCTEROSEA OBSTIPATA FAB.—With reference to Baron de Worms's record of *N. obstipata* on 8th December 1953, Mr. D. Down of this town recently brought me for identification a male example of this species which he found sitting on a "Keep Left" motor sign in Southend on 12th December. The moth is in perfect condition and looks newly emerged. *N. obstipata* has been in evidence in the town this year; I took a fresh male in my trap on 29th October and have heard of others.—H. C. HUGGINS, 65 Eastwood Boulevard, Westcliff-on-Sea. 26.i.54.

MANIOLA JURTINA L. ABERRATIONS.—On a South Yorkshire common on 6th July 1953 four specimens of *M. jurtina* were captured which were variously marked with white patches. The best specimen had the left hind wing wholly whitish and the other three wings quite normal. Three of the specimens were worn and were released. All were males.—T. D. FEARNEHOUGH, 13 Salisbury Road, Dronfield. 4.ii.54.

LYCAENA PHLAEAS L. AB. SCHMIDTII GERH.—On 8th August 1953 I captured a fresh male *L. phlaeas* which I suppose can be referred to

ab. *schmidtii*. The ground colour is pale shining straw and the black markings are normal. In the same spot I also captured a female which had the ground colour of the greater part of the left wings silvery white. This specimen was sacrificed for egg laying, but in the resulting brood no aberrations appeared and efforts to obtain a mating within the brood were fruitless.—T. D. FEARNEHOUGH, 13 Salisbury Road, Dronfield, Derbyshire. 4.ii.54.

[In *Ent. Record*, 1952, **64**, 23, Mr. A. L. Goodson wrote about the nomenclature of the pale forms of *L. phlaeas* and came to the conclusion that there is no name available for the creamy or pale straw coloured aberration. *Schmidtii* is white. Tutt thought it was pale straw and named the white form *alba*. *Alba* is a synonym of *schmidtii* Gerh. I expect most people will go on using *schmidtii* for the pale straw one.—ED.]

LYCAENA PHLAEAS L. AB. CAUDATA TUTT.—In early August 1953 I captured a female *L. phlaeas* which, because of its large size, I kept for egg laying. The specimen was very worn and laid only 20 eggs before it died. Fourteen pupae were eventually obtained, and these were kept in a cage indoors when I was away from home in early September. All the butterflies had emerged when I returned, and when I looked into the cage I was immediately struck by the presence of tails on the nearer resting specimens. Subsequent examination showed that all fourteen specimens had their hind wings embellished with abnormally long tails. Comparing them with the specimens in my cabinet series I found I had no previous examples with tails anything like the new specimens. I did not notice any indication of tails on the original wild female, but as it was worn it was quite possible that there had been tails and they had become abraded.—T. D. FEARNEHOUGH, 13 Salisbury Road, Dronfield, Derbyshire. 4.ii.54.

HETEROGRAPHIS OBLITELLA ZELL.: A FURTHER BRITISH SPECIMEN.—On 19th January last I visited the British Museum, Natural History section, at South Kensington to take away my female example of *H. oblitella* which I had left there for determination (see *Ent. Rec.*, **66**: 2) and whilst there Mr. Martin showed me another specimen which had been received for naming from Mr. R. Fairclough of Leigh, Surrey. I wrote to Mr. Fairclough for further particulars, which he supplied, at the same time giving me leave to record it.

The moth was taken sitting on a wall under a m.v. lamp on 18th September 1953 at Leigh, near Reigate, Surrey. It is a male and of the typical light buff ground colour, quite unlike that of my own greyish-black female.

As my own specimen was taken on 29th September it would appear that a considerable flight of this Mediterranean insect arrived here in September, and as the weather was warm it is more than possible that both insects came over in the same flight, as the female could easily have survived ten days. I wonder how many more were not captured, or turned out of light-traps as unwanted.—H. C. HUGGINS, 65 Eastwood Boulevard, Westcliff-on-Sea. 1.ii.54.

EUBLEMMA PARVA HÜBN. IN NORTHAMPTONSHIRE.—My interest in this

species began, naturally enough, when I found I had netted a specimen disturbed in the afternoon of 23rd May 1953 in a wood not far from Kettering. What I had imagined at the time to be a 'micro' was put on one side till I had more time to attend to it in the autumn. I could hardly believe the result of my more careful examination; but Mr. Goodson of Tring, to whom I showed my capture, promptly confirmed my identification.

On looking up the reports of *E. parva* over recent years I found there were records of two in June 1946 from Eastbourne and near Sheerness, whilst 1947 produced at least six, from the Isle of Sheppey, Sussex, Dorset (Swanage), Cornwall (2) and Co. Wicklow (the first Irish record). The dates of these captures ranged from the end of June to mid-September. In 1948 one was recorded on 9th October at sea 82 miles off Cape St. Vito, Sicily, and 1950 gave records of two on the 28th May, both from Cornwall. 1952 produced a solitary Somerset record. 1953, however, was outstanding, particularly in respect of Mr. Haggett's report of 11 at m.v. light at Arundel, Sussex, between the 23rd and 26th May; there were also records from Surrey and Hampshire.

In no reported cases were fertile eggs obtained, and text-books just mention *Centaurea* and *Inula* as the foodplants abroad. *Larval Food-plants* suggests that in confinement the larvae might be reared on garden fleabane, daisy or marigold (*Calendula*). More information is certainly required on this subject if the life-history is eventually to be worked out.

I am tempted to conclude that this rare immigrant is overlooked far more than any other of our numerous visitors. It seems to reach this country over a very wide front, in fact the whole of the South Coast. Being double brooded the periods in which it has been recorded range from May to September. My own record in Northamptonshire, at its earliest date in May, is also the farthest north that, as far as I can trace, it has been noted.

So far, m.v. light-traps have produced the greatest number of specimens; but the moth may also be disturbed in the daytime, since apart from my own example the Irish specimen was obtained in similar circumstances.

If any reader can add information on larval habits, foodplants, etc., I am sure we should all be most interested.—P. J. GENT, 3 Irthlingborough Road, Wellingborough, Northants. 25.i.54.

ORTHOSIA INCERTA HUFN. IN JANUARY AND OTHER EARLY RECORDS.—The remarkably mild spell has produced yet another surprising visitor to my m.v. trap, *Orthosia incerta* on 19th January. Last year, 1953, my earliest date for this insect was 21st February. I have never before heard of its appearance in January. Colonel C. W. Mackworth-Praed reports taking *O. stabilis* Schf. in the New Forest on 2nd December 1953. This is the fifth record of this species I have heard of for that month. *Erannis leucophaearia* Schf. was well out here on 20th January.—C. G. M. DE WORMS, Three Oaks, Shore's Road, Woking. 21.i.54.

PARASITES OF LIMENITIS CAMILLA L.—May I add a brief note to the discussion on the parasites of *Limenitis camilla* Linn.? I bred this insect in small numbers in 1948, 49, 50 and 51. The larvae were obtained from the New Forest, Oxford, and some local woods around Beaconsfield but

I had no trouble with parasites until 1951 (Beaconsfield larvae). On 1st June I had six pupae and three half-grown larvae; the first butterfly emerged a week later. On the 10th, one of the larvae produced four grubs which spun their cocoons on its back. The remaining larvae suffered a similar fate a few days later.

In due course the parasites emerged and I sent them to the late Mr. Claude Morley. With them I included some examples of a Braconid which had come from *Euphydryas aurinia* Rott. The two lots were very similar but the *camilla* insects were noticeably larger than those which came from the *aurinia*. Mr. Morley informed me that they were *all* the same species—*Apanteles gonopterygis* Mshll.

As a result of a note in the *Entomologist* (84: 207) I had a letter from Dr. K. G. Blair. He pointed out that the *aurinia* parasite was well known and was, almost certainly, *A. melitaeorum* Wilkinson. A *camilla* parasite was also described by Wilkinson (1930) and named *A. sybillarum*. *A. gonopterygis* is, apparently, a solitary parasite associated with *Gonepteryx rhamni* Linn.—W. A. C. CARTER, Beaconsfield, Bucks. 26.i.54.

FOODPLANT OF PSEUDOIPS BICOLORANA FUESS.—In this part of the world I find this moth and its larva on oak. In the summer of 1944 at Catterick (Yorks.), I beat a nearly full-grown larva from birch. It continued to eat birch until it pupated about a week later. The moth emerged on 25th May the following year.—W. A. C. CARTER, Beaconsfield, Bucks. 26.i.54.

AUTUMN MOTHS IN THE SELBY DISTRICT OF YORKSHIRE IN 1953.—In spite of a good deal of mild weather autumn moths were not earlier than usual in the Selby district in 1953. In fact *Erannis aurantiaria* Hüb. and *E. defoliaria* Cl. were rather late in appearing and I did not notice them until the middle of November, about a week later than usual. About the same time *Poecilocampa populi* L. was more common than usual at electric street lamps near Selby and a specimen taken by this means on 15th December was the first female of the species I had seen at light. At the same lamp, which I believe is a m.v. one, I took a specimen of *Anaitis efformata* Guen. on 16th November. This species normally occurs on railway banks here in June and Aug.-Sept., so the one taken in November must have been a specimen of a third brood.

Previous to 1953 I had taken only one specimen of *Tholera cespitis* Schf. here, but at the end of August this species was common at Barlow (4 miles from Selby) and in the same place I took one male *Dasyptolia templi* Thun., the first I have seen, on 29th September. This species, formerly common in Yorkshire, is now seldom recorded in the county. *Catocala nupta* L. was up to strength and I took a perfect one as late as 3rd October at light near Selby.

In September *Deuteronomos fuscantaria* Haw. was rather more common than usual at light, though *D. alniaria* L. was unexpectedly scarce. For the first time for several years *Omphaloscelis lunosa* Haw. and *Anchoscelis helvola* L. were noted in small numbers, the former at light and the latter at sugar in woods several miles from Selby. *Agrochola lychnidis* Schf. was as common as usual and on 1st November I took one *A. macilentata* Hüb., the first time I had seen it in the Selby

district. *Allophytes oxyacanthae* L. was scarcer than usual. On 25th October I noted a worn *Brachionycha sphinx* Hufn. on a tree trunk in its locality near Tadcaster. About the 26th October a rather cold spell set in which lasted for a fortnight and was probably the reason why some species were late in November. I saw neither of the 'Sword-grasses' in 1953 and indeed both *Xylena vetusta* and *X. exsoleta* seem to have been absent from Yorkshire in recent years, though the latter was formerly common.

Incidentally, I may mention that I bred a specimen of *Hydriomena furcata* Thun., second brood, in the autumn. I have never seen a second brood of this species mentioned before.—S. M. JACKSON, 15 Westbourne Road, Selby, Yorks. 25.i.54.

MELANIC STERRHA AVERSATA LINNAEUS.—There are two distinct melanic forms:—(1) ab. *atrata* Fuchs. *Soc. Ent.* 1904.19.18. This is uniformly black with a black head and thorax. A specimen is figured by Hoffmeyer, *De Danske Maalere*, 1952, p. 57. I have not heard of a British specimen.

(2) ab. *suffumata* Lambillion. *Rev. Soc. ent. Namur.* 1909, 62. This is a brown insect with pale antennae, head, and thorax matching the normal ground colour, and a black abdomen with pale tip, described from a single male from Dinant. This is the melanic form found occasionally in the southern counties of England.—E. A. COCKAYNE.

ERRATUM.—January issue, p. 22, line 23 (fourth paragraph) for Th. Mier read Th. Mieg.

DIPTERA

VOLUCELLA ZONARIA PODA IN MIDDLESEX.—In addition to Mr. B. L. J. Byerley's observations on *Volucella zonaria* in Middlesex (*Ent. Rec.*, 65: 365, December 1953) I have four records of this fly in the Staines Moor area, just inside the south-west Middlesex boundary:—

- 16.vii.52. On leaves of *Crataegus monogyna*. (♀)
- 19.vii.52. On flowers of the same. (♀)
- 17.vii.53. Taken on the inside of the window of a shed. (♂)
- 8.viii.53. On leaves of *Sambucus nigra*. (♀)

—R. HILL, Moor Lodge, Moor Lane, Staines, Middlesex. 26.i.54.

DIPTERA NOTES FROM KENT, 1953.—Last September Mr. J. N. Hollyer sent me a specimen of *Ornithomyia fringillina* Curt. (Hippoboscidae) which was taken from a Common Whitethroat *Sylvia communis* caught in his Heligoland trap at Sandwich on 28th August.

I have also received a female specimen of *Volucella zonaria* Poda (Syrphidae) from Mr. G. E. Manser, which he captured at Dymchurch on 19th August. While walking through Bostal Woods, near Woolwich on 19th July, I encountered a male *zonaria* at bramble flowers. On 11th August, another example of this large insect alighted on the red paintwork of a bus in which I was travelling across Blackheath, S.E.3. An attempt to box it failed owing to the movements of the vehicle.—J. F. BURTON, 2 King Edward Street, Oxford. 8.ii.54.

Fifty Years Ago

(From *The Entomologist's Record* of 1903)

TAKING APATURA IRIS L. BY HAND.—On July 12th I returned to the New Forest and tried sugar once, about the 16th, on a warm, cloudy, nice-seeming night, with a most disappointing result, the only insect that came to the sugar being one *Hydrocampa nymphæalis*—not a single Noctuid . . . One day I saw three *Apatura iris*, one of which sat on the ground within two yards of me, but when I tried to catch it, it pleaded successfully a previous engagement. It was a female, but on another day I got a nice male which an old woman had caught in her hands sitting on a flower in her garden, and which, strange to say, she had but slightly damaged.—F. C. WOODFORDE.

“ONE'S FIRST ANTIOPA”.—On July 28th we returned north, *en route* for Zermatt. After spending the night at Brique, I spent a few hours collecting under the cliffs by the Rhone; here, after two or three futile attempts at stalking, I managed to catch my first *Euvanessa antiopa*, a fine large specimen in the pink of condition. One's first *antiopa* is an event for most of us, almost as exciting as the experience must have been to the old collectors at Camberwell, and my specimen is certainly a much finer one. I obtained another new species, to me, in the fine *Enodia dryas*, almost as large as *E. antiopa*, of a rich brown hue, and with lovely blue ocelli, certainly one of the handsomest of European Rhopalocera.—W. G. SHELDON.

EUCNAEMIDOPHORUS RHODODACTYLUS AND AEGERIA SPHEGIFORMIS IN ESSEX.—I was particularly pleased to find, between June 16th and 21st, near Thorndon Park, in this county, several larvae of *Eucnaemidophorus rhododactylus*. I do not know whether my larvae were ichneumonated or whether I treated them wrongly, but I only succeeded in getting one moth. In the same neighbourhood and at the same time there was plenty of evidence of the presence of *Aegeria spheniformis* in the alders.—F. G. WHITTLE, 3 Marine Avenue, Southend. *November 13th, 1903.*

A NOTE ON ARGYROPLOCE (PAEDISCA) PROFUNDANA.—From larvae collected on apple in the same orchard as last year, on June 2nd, I bred from July 1st-13th about 20 of the curious form of *Paedisca profundana*, which I have noted before, in this magazine, as in no case approaching any other form of *P. profundana*, and, contrary to last year's experience, three or four larvae found on oak some distance from the orchard and entrusted to Mr. Bower produced ordinary forms. I do not know how many, but I think three or five larvae were all I could find on June 3rd in a whole afternoon's searching on oak, whereas I got 44 of that of the variety on apple in about half-an-hour on the 2nd. This seems curious.—E. F. STUDD, Oxtou, Exeter. *November 25th, 1903.**

[*In our next number Mr. H. C. Huggins will comment, in his “Notes on Microlepidoptera”, on these last two excerpts.—Ed.]

TUTT ON STAUDINGER.—We have not time to work out the point . . . except to say that the chances are always great against Staudinger being right in any of the genera that he has not copied direct from some authority . . .

Current Literature

PROC. R. ENT. SOC. LOND. (A). 1953, 28 pp. 160-162 contains a paper by Captain E. Bagwell Purefoy titled "An unpublished account of experiments carried out at East Farleigh, Kent, in 1915 and subsequent years on the life history of *Maculinea arion*, the Large Blue butterfly."

Although Dr. T. A. Chapman found a half grown larva of *arion* in 1915 and by examining the contents of its intestine found that it had been feeding on larvae of the black ant *Myrmica scabrinodis*, Frohawk did not hear about it and having found that *arion* larvae could eat and grow on unripe peas he still thought it fed on the root of some plant. The Hon. C. Rothschild prepared a list of 14 plants found growing with thyme on the ant heaps of *Lasius flavus*, the yellow ant. Two artificial hills were built up in the garden and these plants in groups were planted amongst thyme, after which ant heaps of *L. flavus* were established. *M. arion* laid eggs freely on the thyme and finally when the young larvae left it they were seen to be picked up by the red ant, *Myrmica laevinodis* which had made nests on the side of *flavus* hillocks.

Larvae of *arion* had been found by Rayward and Frohawk as long ago as 1906, but the fact that they were associated with *M. laevinodis* was overlooked and many *flavus* hillocks were dug up in vain. When red ants were seen to carry away larvae of *arion* Frohawk was sent for and noticed the hunched up attitude of an *arion* larva waiting to be picked up. This and larvae *in situ* in the nest later in the year were figured in Frohawk's large book. Pupae were not obtained until 1918 and a series of British *arion* bred for the first time by using half walnuts with one or two larvae in each. On one occasion a flower box 15 inches square standing on legs 2½ feet high was placed in an open greenhouse and netted over. *M. arion* laid eggs freely and these and the young larvae were removed. When the box was dug up in October it was found that red ants which had been noticed running up and down one leg of the box had nested inside it and a dozen small starved *arion* larvae were found. Most of the ant larvae had been eaten. But was not G. B. Oliver the first to find a larva?

E. A. C.

TRANS. R. ENT. SOC. LOND. 1953, 104, part 15, 543-584, 6 pl., 14 figs., contains a paper by Dr. D. B. Long, Ph.D., on "Effects of population density on larvae of Lepidoptera." Dr. Long gives a very full account of his work with *Plusia gamma* Linn. but I find it impossible to give a concise abstract of his paper, and will only deal with some of the points.

He shows clearly that increased density of the cultures is the chief cause of increased darkening of the skin and his coloured plate shows some of the grades of darkening. In the darkest the skin is almost black with clear pale lines and the head and legs are black. In all his cultures there were a few pale green larvae, which did not respond to crowding. When Dr. Kettlewell saw the experiments at Rothamsted some years ago he suggested to Dr. C. B. Williams that there was probably a genetic factor involved. With this Dr. Long agrees, but his attempted genetic analysis was frustrated by ill luck. The more

larvae interfere with one another the more active they become, the longer the time they spend in feeding, and the faster they grow. More larvae with only five instars are produced and these develop more quickly than 6-instar larvae. The food plant also has an effect; larvae feed more rapidly on dandelion than mustard especially in crowded cultures. Direct contact of one larva with another appears to be the main cause of increased activity and growth. A careful examination of hypoderm and cuticle was made and figures of the macroscopic and microscopic appearances are given.

The responses of larvae of several other species were tested. There is no doubt about the positive response of *Orthosia incerta* Hufn. I have never beaten a larva of this species covered with black speckles or rather little black rings, but Mr. A. J. Wightman and I each had a whole brood of black speckled larvae, the common factor appearing to be overcrowding. Indeed I mentioned this species to Dr. C. B. Williams.

I am much less happy about *Orthosia cruda* Schiff. Dr. Long says that green larvae and "red" larvae appear in solitary cultures, but in crowded cultures all the larvae are blackish with clear white lines. Beating oaks both in years of plenty and of relative scarcity I have always found the blackish larvae the common form and green larvae, sometimes with a bright red lateral stripe, very rare and "red" ones uncommon. Unfortunately, Dr. Long gives no evidence to back up his statement, though he gives a coloured plate of the green and the blackish larva and figures of the macroscopic and microscopic appearances of the skin.

E. A. C.

The Macrolepidoptera of Inverness-shire— Newtonmore District

By Commander G. W. HARPER, R.N. (Retd.), F.R.E.S.

(Continued from page 64)

Xylena exsoleta L. Moderately common throughout the area, but more so at the higher southern altitudes than around Aviemore. More frequently seen after hibernation at sallow and m.v. light than before.

Xylena vetusta Hübn. Very common everywhere throughout Badenoch both before and after hibernation. Larvae on *Myrica gale*.

Allophytes oxyacanthae L. Common at m.v. light at Newtonmore. Larvae found on birch and sallow.

Griposia aprilina L. Common amongst stands of oak in the Spey valley in September.

Eumichtis adusta Esp. One of the commonest species of woodland and moor up to at least 1,500 feet. Very dark rich forms predominate.

Parastichtis suspecta Hub. Very common throughout all birch woods in the area. Very variable, both dark and variegated forms occurring.

Dryobotodes protea Schiff. Very common among oak trees in the Spey valley in September.

Dasypolia templi Thun. Common at Newtonmore at m.v. light, both sexes in the autumn, and females after hibernation.

Antitype chi L. Very common on stone walls and rocks in August. Comes to m.v. light.

Eupsilia transversa Hufn. Apparently rare. One specimen taken amongst oak trees at Kincaig with m.v. light in September 1952.

Agrochola lota Cl. Very common everywhere in woodlands in September. Comes to m.v. light.

Agrochola macilenta Hübn. Common everywhere in woodlands in September. Comes to m.v. light.

Agrochola circellaris Hufn. Rare: at Aviemore 1946, and Newtonmore, 1952 and 1953.

Anchoscelis helvola L. Moderately common at Newtonmore and Kincaig, more particularly where oak is present. Comes to m.v. light in September.

Anchoscelis litura L. Very common from August to October throughout birch woods. Larvae on birch in June.

Citria lutea Strom. Abundant everywhere in the autumn among sallows.

Cirrhia icteritia Hufn. Abundant everywhere in the autumn among sallows. Very variable, specimens with obsolete markings predominate.

Conistra vaccinii L. Common in all woods at m.v. light, ragwort, and sugar in the autumn, and again at sallow catkins in spring.

ACRONICTINÆ

Apatele leporina L. Common throughout the birchwoods and alders of the glens, but the larvae are heavily parasitized by *Apanteles* sp.

Apatele megacephala Schiff. Common on aspen throughout the Spey valley, but the larvae are also heavily parasitized.

Apatele psi L. Common through all the woods in Badenoch and Speyside.

Apatele menyanthidis View. Very common everywhere up to 2,000 feet altitude. Larvae on *Myrica gale*, *Vaccinium* and *Calluna*.

Apatele euphorbiae Schiff. ssp. *myricae* Guen. Moderately common and widespread on the moorlands everywhere.

Apatele rumicis L. Uncommon, but turns up occasionally at m.v. light near Kincaig.

AMPHIPYRINÆ

Amphipyra tragopoginis Cl. Common, sometimes abundant, everywhere on all lower ground.

Rusina umbratica Göze. Moderately common at Newtonmore, coming to m.v. light. The form is smaller and darker than in southern England.

Apamea lithoxylea Schiff. Moderately common at Newtonmore, coming to m.v. light.

Apamea monoglypha Hufn. Abundant everywhere, dark forms predominating, and black forms not uncommon. Extends up to 2,000 feet on the hills.

Apamea crenata Hufn. Abundant everywhere, up to 2,000 feet on the moors. Very variable, dark forms predominating. Partly double brooded in most years.

Apamea sordens Hufn. Uncommon at Newtonmore, at m.v. light. Darker and slightly smaller than the race in southern England.

Apamea unanimitis Hübn. Apparently rare. One taken by Mr. Craufurd at sugar at Aviemore on 18.vii.52.

Apamea infesta Ochs. Apparently rare. One taken by Mr. Craufurd at sugar near Aviemore on 18.vii.49.

Apamea furva Schiff. Widely distributed but rather uncommon throughout Badenoch, up to 2,000 feet on the hills. Comes to sugar, flowers, and m.v. light.

Apamea obscura Haw. Abundant everywhere at sugar and m.v. light up to 2,000 feet on the hills.

Apamea secalis L. Common everywhere in Badenoch on the lower ground. Very variable.

Apamea exulis Lef. ssp. *assimilis* Dbld. Moderately common on all moors in Badenoch, particularly in large areas of peat hag up to an altitude of at least 1,500 feet. Fluctuates greatly in numbers from year to year. Comes to sugar and m.v. light.

Procus strigilis Cl. Common everywhere in Badenoch up to 1,500 feet. Variable, black forms being of frequent occurrence.

Procus latruncula Schiff. Moderately common at Newtonmore and Kincaig.

Procus fasciuncula Haw. Common throughout Badenoch up to 1,500 feet. Variable, a bright red form being common.

Procus furuncula Schiff. Uncommon at Newtonmore and Aviemore. Taken at m.v. light.

Euplexia lucipara L. Common at sugar and m.v. light in the birch woods of the Spey valley.

Phlogophora meticulosa L. Common everywhere in Badenoch, particularly in October and November.

Hyppa rectilinea Esp. Common everywhere in Badenoch, especially in the larger birch woods, but extending up the moors to 2,000 feet.

Petilampa minima Haw. Locally abundant in moist grassy places near water up to 1,500 feet altitude.

Stilbia anomala Haw. Common everywhere, particularly in boggy moorlands.

Caradrina morpheus Hufn. Apparently rare. One taken by Mr. Craufurd at Aviemore on 23.vii.50.

Caradrina clavipalpis Scop. Abundant in some years, and usually common everywhere at lower levels.

Celaena haworthii Curt. An abundant moorland species at all levels, flying freely in the afternoon and coming to m.v. light, sugar, and flowers.

Celaena leucostigma Hübn. A moderately common species partial to boggy moorland and lochs. Found most frequently at blossoms of *Juncus*, but comes to m.v. light. A small dark race.

Hydraecia oculea L. Abundant everywhere in birch woods and on moors throughout Badenoch.

Hydraecia paludis Tutt. Uncommon in moorland bogs near Laggan. Local, and the least common of the four species in this group.

Hydraecia lucens Freyer. Common everywhere, but predominates on heathy moorlands.

Hydraecia crinanensis Burrows. Very common, particularly in and around the birch woods in the Spey valley where there is marshy ground.

Hydraecia micacea Esp. Extremely abundant everywhere, the commonest autumn moth. Larvae feed mostly on *Rumex* spp. Exceedingly

variable, blackish, grey, and pink forms all occurring commonly.

Cosmia trapezina L. Rather uncommon among stands of oak trees near Kincaig.

Enargia paleacea Esp. Common among well grown birch woods all along the Spey valley. Taken most freely at ragwort blossom, and at m.v. light.

Zenobia subtusa Schiff. Rare among aspen at Kincaig and Newtonmore.

Arenostola pygmaea Haw. Locally abundant in boggy ground both in the glens and up to 2,000 feet on the hillsides. Individuals flying on high ground are small and dark.

SARROTHRIPINAE

Sarrothripus revayana Scop. Uncommon near oaks at Kincaig, and willows in Glen Tromie, both before and after hibernation.

PANTHEINAE

Colocasia coryli L. Rather uncommon in woods near Kincaig and Newtonmore, where it comes to m.v. light. It is a very distinct form with markedly contrasting white ground colour and dark forewing band.

PLUSIINAE

Polychrisia moneta Fab. Common at m.v. light and flowers at Newtonmore. I have not yet succeeded in finding larvae or cocoons.

Plusia chrysitis L. Abundant at flowers and m.v. light throughout the woods and glens. Very variable, a fine metallic copper-coloured form being not uncommon.

Plusia bractea Schiff. Very common everywhere at m.v. light and flowers of melancholy thistle, sweet william and scabious.

Plusia festucae L. Rather uncommon in boggy places, both in the glens and as high as 1,600 feet on the hillsides.

Plusia pulchrina Haw. Abundant everywhere at flowers and m.v. light.

Plusia gamma L. Common only in good 'migrant' years. Rare in 1951, 1952, but common as late as November 1953.

Plusia interrogationis L. Common everywhere on hillsides and moors, but fluctuates greatly in numbers with the incidence of parasitism and heather burning.

Abrostola triplusia L. Rare. One only taken at m.v. light, September 1952, at Newtonmore.

Abrostola tripartita Hufn. Abundant in and around woods, and goes as high as 1,600 feet.

OPHIDERINAE

Scoliopteryx libatrix L. Common near Newtonmore and Kincaig at m.v. light and sugar after hibernation as late as June, but rarely seen in the autumn.

Phytometra viridaria Cl. Apparently rare. I took one specimen on a hillside near Aviemore in May 1953. The food-plant is abundant everywhere.

HYPENINAE

Hypena proboscidalis L. Common among nettles at Newtonmore and Kincaig, and probably everywhere.

Schrankia costaestrigalis Steph. Although inconspicuous and easily overlooked it is definitely uncommon. One was taken in 1952 and another in 1953 in my m.v. light-trap at Newtonmore.

Zanclognatha grisealis Schiff. Apparently rare. One taken in m.v. light-trap in 1952 at Newtonmore.

GEOMETRIDAE

ARCHIARINAE

Archiearis parthenias L. Widely distributed and moderately common amongst birch everywhere, but never abundant as in English birch woods. A large brightly coloured race.

GEOMETRINAE

Geometra papilionaria L. Abundant everywhere in all birch woods.

OENOCHROMINAE

Odezia atrata L. Abundant everywhere in and around birch woods where the food-plant grows, at Newtonmore, Kincaig and Aviemore, and probably elsewhere.

STERRHINAE

Sterrha aversata L. Rather rare. I have taken it at m.v. light near Kincaig in 1953.

Sterrha dimidiata Hufn. Apparently very local. Mr. Craufurd found it not uncommonly in Rothiemurchus forest near Aviemore in August 1950.

Scopula ternata Schr. Common everywhere amongst *Vaccinium myrtillus* and also on a number of hillsides up to 1,500 feet.

Scopula flosactata Haw. Uncommon. Mr. Leech took it near Aviemore in July 1952.

Cosymbia albipunctata Hufn. Common and widespread everywhere amongst birch.

LARENTIINAE

Xanthorhoe munitata Hübn. Locally abundant in damp spots amongst rush on hillsides at Dalwhinnie up to 2,500 feet, and in glens at Laggan and Newtonmore.

Xanthorhoe spadicearia Schiff. Locally very common in Glen Feshie, at Kincaig, Aviemore and Newtonmore, especially amongst bilberry (*Vaccinium myrtillus*). A very variable species.

Xanthorhoe designata Hufn. Locally abundant in birch woods at Newtonmore, Laggan and Kincaig. Partially double-brooded in favourable years.

Xanthorhoe montanata Schiff. Abundant everywhere in glens and woods throughout the area up to 1,500 feet.

Xanthorhoe fluctuata L. Common everywhere and double-brooded. Variable in degree of marking and ground colour, dark grey forms predominating.

Orthonoma lignata Hübn. Locally common in marshy ground in the Spey valley, also on lower hillsides at Newtonmore and Laggan. A rather large, well-marked race; single-brooded.

Ortholitha mucronata Scop. ssp. *scotica* Ckyne. Locally abundant on heather moors and amongst broom in May and early June up to at least 1,500 feet everywhere.

Ortholitha plumbaria Fab. Locally abundant amongst heather, especially where well grown and unburnt, everywhere in July and early August.

Ortholitha chenopodiata L. Common everywhere. Very variable, fine dark forms occurring frequently.

Colostygia olivata Schiff. Locally common in woods at Laggan, Kin-craig and Aviemore. Rests on moss-covered rocks by day, and comes to m.v. light and flowers.

Colostygia pectinataria Knoch. Common everywhere in birch woods.

Colostygia salicata Hübn. Locally common on the hilltops at Dalwhinnie and Aviemore. I have never found it below 2,500 feet.

Colostygia multistrigaria Haw. Abundant everywhere in and around birch woods.

Colostygia didymata L. Abundant everywhere in woods and on hillsides up to at least 2,000 feet, particularly where bilberry (*Vaccinium myrtillus*) is present.

Anticlea derivata Schiff. Common in all the glens amongst wild rose (*Rosa canina*). It fluctuates in numbers from year to year, probably due to parasitism.

Entephria caesiata Schiff. Common everywhere on the moorlands, especially so near Dalwhinnie at 1,500 feet, where it rests on rocks in large numbers.

Entephria flavicinctata Hübn. Exceedingly local. I know of only one colony near Dalwhinnie.

Perizoma blandiata Schiff. Common everywhere on the moors, hills, and in woods where eyebright (*Euphrasia officinalis*) occurs, up to at least 1,600 feet.

Perizoma taeniata Steph. Exceedingly local. I know of only one locality for it, near Laggan, where it is far from common. It comes to the blossoms of rushes and m.v. light, probably breeding in an adjoining mossy wood.

Perizoma affinitata Steph. Apparently rare, and the food-plants, *Lychnis* spp., are very local and not plentiful. Mr. Craufurd took it near Aviemore, 14.vii.1948.

Perizoma alchemillata L. Not uncommon at Newtonmore and Kin-craig in some years, but fluctuates in numbers from year to year.

Perizoma albulata Schiff. Abundant in some years on the outskirts of woods throughout the glens where yellow rattle (*Rhinanthus crista-galli* L.) flourishes.

Perizoma minorata Treits. ssp. *ericetata* Curt. Widely distributed on the moors and heathery ground throughout the area, at Dalwhinnie, Laggan, Newtonmore, and Aviemore, but rather local at each of these places and seldom to be seen in large numbers. It probably fluctuates in numbers from year to year as do other members of the genus.

Euphyia bilineata L. Moderately common in many parts of the glens, but never abundant as in Southern England. The race is smaller

and duller in colour than in the latter country, with an equal tendency to variation in the bands.

Lyncometra ocellata L. Abundant everywhere in the woods and on the moors and hills up to 2,000 feet.

Lampropteryx suffumata Schiff. Abundant everywhere throughout the glens and woods, at Newtonmore, Kincairg and Aviemore. The principal variation is to ab. *piceata* Steph., but at and near Laggan ab. *porrittii* Robson also occurs.

Electrophaes corylata Thun. Common throughout all the birch woods of Badenoch. The form ab. *albocrenata* Curt. and its gradations are not rare.

Lygris prunata L. Apparently rare. A specimen came to my m.v. light-trap in 1952.

Lygris testata L. Abundant everywhere, both in the marshy woods and on the moors up to at least 2,000 feet. All seem to be of the lilac coloured form, though some females are yellow.

Lygris populata L. Abundant wherever the *Vaccinium myrtillus* grows, both in woodlands and on the mountain-tops. Very dark, almost black individuals occur with increasing frequency the higher one goes.

Lygris mellinata Fab. Apparently rare. I have seen only one specimen, a male in fair condition in my m.v. light-trap in 1952.

Lygris pyraliata Schiff. Locally abundant near Laggan in marshy water-meadows; not seen elsewhere.

Cidaria fulvata Forst. Common everywhere amongst wild dog-rose in the glens, especially so in certain years.

Plemyria bicolorata Hufn. Common amongst alders in the glens, particularly in Glen Feshie, near Laggan, and everywhere in Strath-spey. All forms of variation occur, including the extreme smoky black form which is not rare.

Chloroclysta siterata Hufn. Moderately common everywhere in woodlands both before and (females) after hibernation, but is most easily found amongst oak stands near Kincairg. Larvae are common on oak and sycamore.

Chloroclysta miata L. Common everywhere in woodlands before and (females) after hibernation.

Dysstroma truncata Hufn. Moderately common in all the woodlands of the glens, where it is double-brooded, appearing in June-July and again in August-September. It also occurs well up the hillsides, where I have not yet seen a second-brood specimen away from woodlands.

Dysstroma citrata L. Abundant everywhere, single-brooded from end of July-October. It is exceedingly variable and found up to at least 2,000 feet in the corries where scrub birch, willow, or alders occur. The striking ab. *thingvallata* Staud. occurs very rarely at Newtonmore.

Thera obeliscata Hübn. Abundant everywhere amongst Scots pine. It is double-brooded.

Thera cognata Thun. Common amongst juniper near Aviemore and Kincairg, and sometimes abundant. Single-brooded.

Thera firmata Hübn. Common everywhere in Badenoch among Scots pine, even quite small stands, in September. Apparently it is single-brooded and autumnal only; I have taken a first brood in June only in Southern England.

(To be continued)

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EXCHANGES AND WANTS

Wanted.—I would be grateful for the loan of any photograph or coloured drawing of specimens of *Lysandra coridon* of the various forms of *ab. extrema* as illustrated and described in Bright & Leeds' Monograph of the Chalk Hill Blue Butterfly, pl. 10, and 18.—S. G. Castle Russell, 5 Bridge Road, Cranleigh, Surrey.

Wanted.—Volume XV (1903) of *The Entomologist's Record*, in parts as issued. £1 offered.—F. W. Byers, 59 Gurney Court Road, St. Albans, Herts.

Wanted.—Set or unsét, *Zygaena exulans*, Scotch Burnet, *Zygaena purpuralis*, Transparent Burnet, *Zygaena Meliloti*, New Forest Burnet, *Zygaena loniceræ*, Narrow bordered 5 Spot Burnet, and any of their vars. Also *Adopoea lineola*, The Essex Skipper. Can give almost any species of British Lepidoptera in exchange, or cash. If you have any of the above to offer, please send long list of desiderata.—Chas. B. Antram, "Heathside", Latchmoor, Brockenhurst, Hants.

Wanted.—At a reasonable price: Volume 9 of Seitz Macrolepidoptera of the World. *English Edition*, i.e. "The Indo-Australian Rhopalocera."—Capt. A. W. H. Row, 15 Macaulay, Widcombe Hill, Bath, Somerset (Telephone Bath 61336).

Wanted.—Owing to the occurrence of virus disease amongst the Laboratory stock of *Biston betularia*, it will be necessary to breed from fresh material next year. Would anyone willing to supply either *typical*, *carbonaria*, or *insularia* pupae (either exchange or cash) please notify:—The Secretary, Genetics Laboratory, Department of Zoology, University Museum, Oxford.—Dr. H. B. D. Kettlewell, Department of Zoology, Capetown University, Rondebosch, South Africa.

Wanted.—Pupae of *L. sinapis* and pupae of *C. tullia*, for cash.—W. Morris, 66 Wells Road, Penn, Wolverhampton, Staffs.

Wanted.—Distribution records in Great Britain and Eire of *Erebia epiphron* Knoch (Small Mountain Ringlet).—L. Christie, Station House, London Road, Hackbridge, Wallington, Surrey.

Exchange.—Entomologist 1888-1893 (Vols. 21-26 incl.) bound in green cloth, excellent condition. Also Tutt's 'Hints', Vols. 1 and 2 only. Poorly bound in card but letterpress good. Interleaved copy with some notes. *Wanted.*—Back numbers of the Record or Entomologists Monthly Magazine (bound or in parts).—Dr. N. L. Birkett, 3 Thorny Hills, Kendal.

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TO OUR CONTRIBUTORS

All material for the magazine should be sent to the *Assistant Editor* at No. 4 WINDHILL, BISHOP'S STORTFORD, HERTS.

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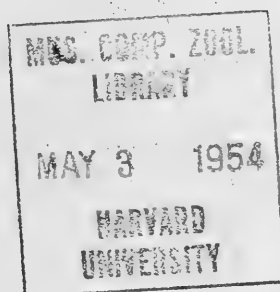
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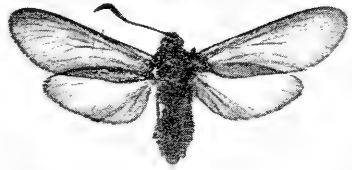
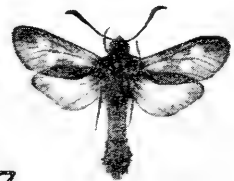
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Aberrations of British Lepidoptera

By S. GORDON SMITH, F.L.S., F.R.E.S.

PLATE III.

The aberrations mentioned in this paper are all in the collection of S. Gordon Smith.

Triphaena pronuba L. ab. **infrapallida** ab. nov. (Fig. 1).

Hindwing—creamy white with pale greyish border.

Type ♀ : Tarvin, nr. Chester, bred 1921, by S. Gordon Smith.

Biston betularia L. ab. **grisea** ab. nov. (Fig. 2).

Head, thorax, abdomen and forewings dark grey, hindwing grey.

Type ♂ : Chester, bred 1938 by S. Gordon Smith.

Triphosa dubitata L. ab. **brunneosuffusa** ab. nov. (Fig. 4).

Forewing dark brown tinted with pink and crimson. Subterminal line normal. Hindwing much darker than normal.

Type ♀ : Castor Hanglands at light 1947, S. Gordon Smith.

Cleora cinctaria Schiff. ab. **separata** ab. nov. (Fig. 6).

Forewing—similar to ab. *submarmoraria* Fuchs. but with a blackish brown line through the middle of the white band extending from the costa to the inner margin.

Type ♂ : Portmadoc district 1953, S. Gordon Smith.

Leucoma salicis L. ab. **radiosa** ab. nov. (Fig. 7).

Forewing—Veins on outer margin and along part of the costa black, otherwise typical.

Type ♂ : Wallasey, bred 1923 by S. Gordon Smith.

Eriogaster lanestris L. ab. **nigrosuffusa** ab. nov. (Fig. 8).

Forewing and hindwing with the whitish fascia indistinct, the space beyond these to the cilia is suffused with black, cilia black.

Type ♂ : New Forest, March 1921 *ex* Vaughan-Roberts Collection.

Amathes glareosa Esp. ab. **griseonigra** ab. nov. (Fig. 9).

Forewing—Colour darker grey than type. Hindwing smoky.

Type ♀ : nr. Llangollen 1951. Taken at light with several others of a similar form. S. Gordon Smith.

Harpyia furcula Cl. ab. **obliterata** ab. nov. (Fig. 10).

Forewing—The broad purplish-grey central band edged on both sides with black is absent, the usual markings along the costa are indistinct, there are two spots on the inner margin.

Type ♂ : nr. Portmadoc 26/6/1953 at light. S. Gordon Smith.

Xanthorhoë designata Hufn. ab. **fumata** ab. nov. (Fig. 11).

The whole surface of the fore and hindwings is suffused with smoky grey.

Type ♂ : nr. Llangollen 29/8/1953 at light. David Shenton.

Cidaria fulvata Forst. ab. *arearuptata* Sitovski *Spraw. Ac. Cracov.* 1910, 142.

Chailey, 25/6/1920, S. Jacobs. (Mansbridge Coll.)

The undernoted aberrations are described by R. E. VAUGHAN-ROBERTS, B.Sc.

Triphaena pronuba L. ab. **cricori** ab. nov. (Fig. 3).

Forewing normal. Hindwing ground colour almost white with the typical black border.

Type ♂: Llysfasi, Denbighshire 1945, R. E. Vaughan-Roberts.

Hipocrita jacobaeae L. ab. **pallida** ab. nov. (Fig. 5).

Forewing—Ground colour typical, markings cream with pinkish suffusion. Hindwing—white. Cilia all wings typical.

Type ♂: Llysfasi, Denbighshire bred 1945 by R. E. Vaughan-Roberts.

A Further Note on *Apatura iris* Linn.

By GEORGE E. HYDE, F.R.E.S.

Mr. H. Symes, in his interesting article on the larva of *A. iris* (*Ent. Record*, 1954, 66: 40), draws attention to several important points relating not only to the appearance and habits of the larva concerned, but also to *A. iris* in its other stages. Having devoted a considerable amount of time and energy to the study of this species during many years, I venture to add a few further remarks.

My first encounter with *iris* goes back a quarter of a century, and since that distant time I have had, at intervals, many interesting experiences with the species, both in the field and at home. On various occasions I have admired *iris* on the wing in its natural setting, and have caught examples of both sexes, but I agree with those authorities, including Mr. Symes, who have commented on the elusive nature of the butterfly and its habit of remaining out of view. This seems to apply equally to localities in which *iris* is well established and to places where its hold is less secure. In consequence of the butterfly's ability to remain not only out of reach but out of sight, one's thoughts turn to the records of earlier collectors. How is it that no one to-day seems to allure the "emperor from his throne" by offering a dead rabbit or a similar bait? Is it that the present generation of butterflies has a less sordid taste? Or are collectors less persevering in the provision of refreshment? No one seems to know.

I have on one occasion seen a male *iris* on a corpse in the woods, and the butterfly concerned had settled on a dead stoat in a gamekeeper's gibbet. But in my experience *iris* displays more often a liking for puddles and muddy patches in woodland rides, or in roads adjacent to its haunts. I have several times surprised males in such places, though I never saw more than one butterfly on a single patch. The sap-exuding damaged limbs of certain trees, especially ash, are also attractive to the males. The females are frequently more in evidence than the males, but it usually requires both patience and skill to catch even one example.

Many collectors have been successful in obtaining eggs from captive females of *iris*, but these butterflies vary considerably in this respect. Some steadfastly refuse to lay even a single egg, but others are more obliging when subjected to the same treatment. Mr. W. A. Cope, one

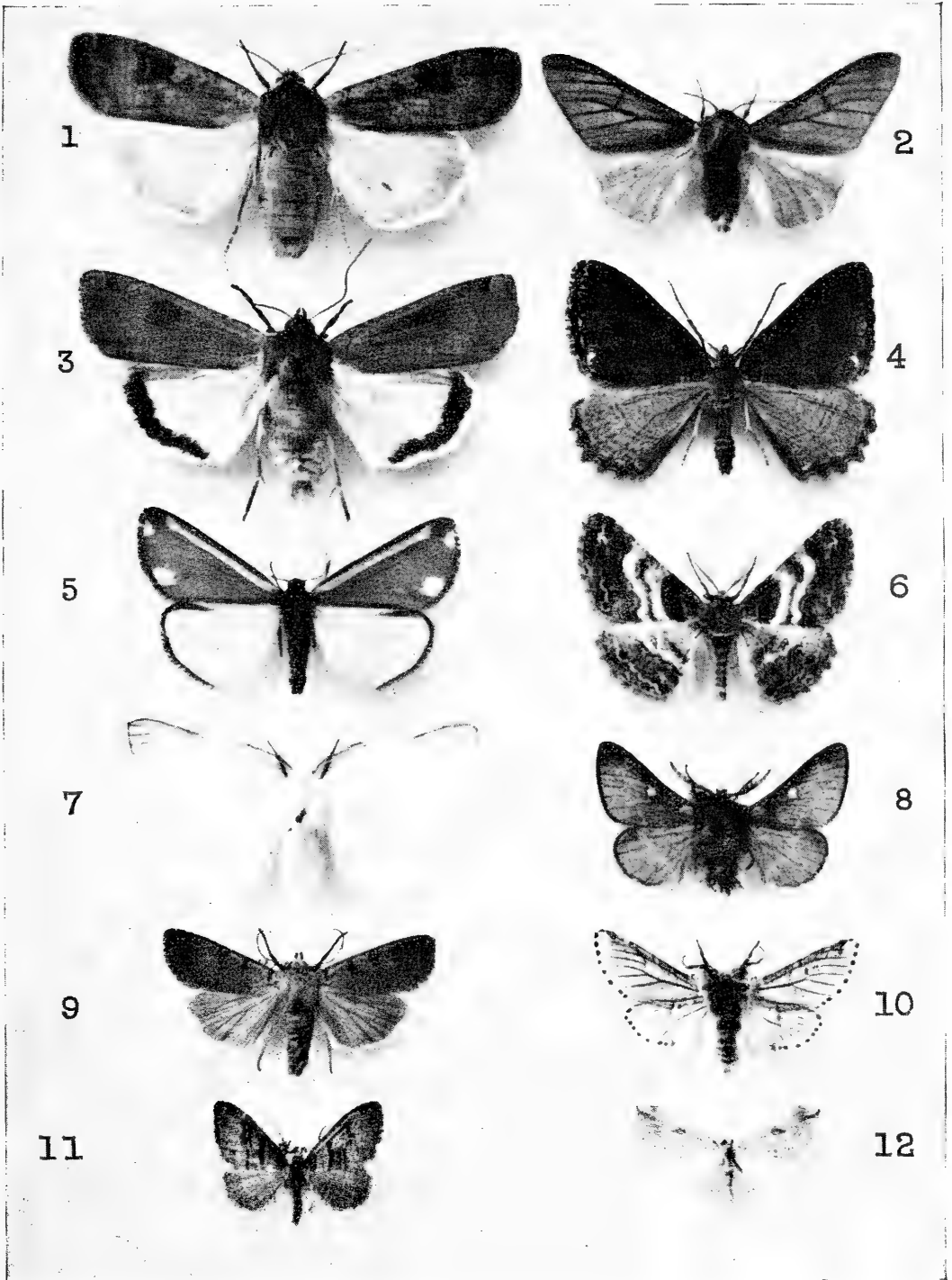


Photo: W. E. Ashworth.

of our best authorities on this species, once obtained about 100 eggs from a captured female, but the most I ever succeeded in getting was 38. It is usually supposed that the female in the wild lays only a single egg on a leaf, but it is by no means unusual to find two eggs together on one leaf. This, of course, might be due to the visits of two different females, or it could result if the same butterfly paid a second visit. Whatever the cause, however, the finding of more than two eggs on the same leaf is exceptional, but on one occasion I found no less than eight on a leaf of medium size—it was before the days of National Health, and at the time I did not wear glasses! The willow bush concerned was about five feet in height, and was one of many growing close together. Apart from the eight eggs on the one leaf, nine more eggs were located on adjacent leaves. What had led to this? Are we to assume that several females had selected that modest bush for special attention? Or had one female, perhaps injured and unable to travel far, produced the wind-fall? I must add that examination of the same bush in the following year brought no reward, though I fully agree that certain willows are selected year after year by egg-laying females.

Reference to the egg-laying of *iris* brings to mind the type of willow most often favoured. It has often been repeated that the broad-leaved *Salix caprea* is the tree usually chosen, but I have found at least the same proportion of eggs on other species of willow, including some with very small, dry leaves that looked most unpromising. The eggs are deposited at varying heights from between three feet to ten feet above the ground. They are much higher on occasion, but for obvious reasons are not as easily detected so far above eye level. Most lepidopterists know that the egg is invariably on the upper surface of the leaf, but a little time ago a writer who should have known better stated in an article that "the empress" laid her eggs underneath the willow leaf. I pointed out the error in a letter to the magazine concerned, but the author of the article repeated his mistake in a reply.

Those who are fortunate enough to obtain eggs of *iris* should remember that the newly-hatched larvae do not respond well to confinement in glass-topped tins. If no growing willow is available for sleeving, the larvae should be supplied with cut twigs inside a cylinder. They should be disturbed as little as possible, and when the old leaves wither fresh twigs should be introduced. The larvae undergo two changes of skin before entering hibernation, and their colour gradually changes from green to olive during the first half of October. They usually settle down for the winter sleep by the middle of that month. Instances have been recorded of *iris* larvae continuing to feed during late autumn, and completing their changes to the imago stage before Christmas, but only on one occasion did a larva of mine fail to enter hibernation in the normal way. This attained the 4th instar in late November, but unfortunately it failed to reach the pupal stage. In captivity the larvae frequently hibernate on withered willow leaves, but in nature this seems to be exceptional. I have found a few wild hibernating larvae in the course of years, and in every instance they were either in the fork of a twig, or flat on the twig and close to a bud.

I have sometimes been assured by other collectors that it is essential for the larvae to be kept out of doors during the winter, but this is not so. In my experience a higher proportion of larvae have survived in

cages stored in a cool outhouse. It is a good plan to spray the larvae occasionally, and this applies especially to the later period of hibernation. The late E. C. Joy, who was a great admirer of *iris* and reared many fine examples, once assured me that he considered the spraying very beneficial.

Mr. Symes has drawn attention to the larger 'horns' of the larvae which produce male butterflies, and in my opinion this is more obvious because of the slightly greater bulk of the female-producing larvae. The difference in the larvae of the two sexes is seen more easily when a number of mature examples are compared. I also agree that beating for *iris* larvae, especially after hibernation, is a destructive way of obtaining them. Searching certainly demands more patience, but surely it is better to secure a single healthy specimen by this means than to mutilate others by careless beating.

We read sobering accounts of the disappearance of this species from various ancient haunts, and every year excessive tree-felling and the conversion of woodlands limits the range of this fine butterfly. But in spite of these dismal influences there is no doubt that *iris* still has a wide range in a number of English counties south of Lincolnshire and is in no immediate danger of extinction. We can only hope that this will continue.

Further notes on *Nola albula* (Schiff.) in Hampshire

By Captain R. A. JACKSON, C.B.E., R.N.

The articles by my friend Mr. Symes (*Ent. Rec.*, 65: 247) and Mr. Huggins (*Ent. Rec.*, 65: 308) have recalled many happy memories of days and evenings spent in the company of my old friend, the late Mr. W. H. Jackson of Lyndhurst. I had hoped that one day we might write a joint article on the behaviour of this pretty little moth, which we got to know so well, thanks to his discovery of a larva just settling down for pupation on May 22nd, 1945.

The object of our expedition was *Acosmetia caliginosa* (Huebner) which he had never taken, and which in Hampshire seems to emerge quite regularly at the end of May, although July is given as the date in many text books.

On our way down to the *caliginosa* clearing, a fritillary settled in front of us, which to my great surprise turned out to be *E. aurinia* (Rott.). Later in the day, we found this insect widespread, and in great numbers, which was the more remarkable as it was certainly not present up till 1943, whilst I had not been able to visit the locality in 1944.

However, we went on to the *caliginosa* ground, but found the insect scarce and rather worn. W. H. Jackson was trying to get them out of the undergrowth, when he suddenly noticed a whitish hairy larva sitting full length on an old stem of the *Serratula*. Neither of us was able to recognise it, at the time, but we identified it almost simultaneously two days later, by the aid of Buckler. This was a most pleasing discovery, and added to the find of a new colony of *aurinia* and the capture of a female *caliginosa*, made it a memorable morning.

We arranged that directly the *albula* emerged W. H. would let me know, and I would visit the locality as soon as I could get down to Bishop's Waltham from the Admiralty. The moth so eagerly expected emerged on June 30th, and next evening I was able to go to its breeding place at dusk. The moths started to fly at 20.55 G.M.T. and in the half hour that the flight lasts I was able to catch five very fresh males, all flying very gently in the small clearing where the larva had been found.

The next time I was able to go was a week later, but it was a clear night with a nasty chill in the air, and no moths were flying, so that it was not until July 13th that I saw the moth again. The flight started at 20.40 and I took three fresh males and two rather worn females. My last visit was paid on July 22nd when five males were taken, all showing signs of wear. It was a great disappointment that petrol restrictions prevented Mr. W. H. Jackson making the journey from Lyndhurst, but in the following year he was able to make up for lost time.

The insect was not quite so plentiful as in 1945, but two friends who came to stay with me were able to take half a dozen each.

In 1947 Mr. Jackson added considerably to our knowledge, for he had got to the ground early in the evening and found that the little moths crawl up out of the herbage, generally under or near hawthorn bushes, and remain at rest or flutter gently from stem to stem from about 19.45 G.M.T., about one hour before their evening flight. He had found also that the moth occurred in the main *caliginosa* clearing. When we were joined on the 13th by a friend from Gloucestershire, we found the moth in great numbers all over the clearing, and he was able to take a good series, including females, from which he bred some very fine insects, larger, I think, than those taken wild.

The late Colonel P. A. Cardew joined me a few days later, and was able to take a good series on ground which was so familiar to him in former years, and for knowledge of which our thanks are due to him.

I deserted the main clearing this time and was delighted to find *albula* well established, both in the adjacent clearing where *caliginosa* occurs sparingly, and in another larger clearing to the N.W. where the *Serratula* is absent.

In 1948 the insect was once more abundant in the middle of July, when friends staying with me were again able to take nice series, but in the early autumn we moved to Wiltshire, and I had to sever my connection with the wood.

The Hampshire habitat seems to be very similar to that at Chatten-den, as described by Mr. Huggins. It consists of fairly open ground of about three or four acres, studded with hawthorns, blackthorn and wild roses, surrounded by woodland or wide rows of trees. The undergrowth consists principally of great masses of *Serratula*, with plenty of blackberry and dewberry. Like Chatten-den, it produced *mesomella*, *pastinum* and *sannio* in numbers, but *Siona lineata* (Scop.) (*dealbata* L.) is an absentee. Mr. Symes mentions that Tutt's description of how to find the larva makes it out as far too easy, and I could not agree more, but his description of the insects' flight at dusk like so many snowflakes is very realistic. When they take to flight it is just light enough to see them, but very soon a torch becomes essential and the flight is over in half an hour, and so regular are they that one knows to a couple of

minutes when the first one will appear. As Tutt stated, it seems quite impossible to stir up the moths from the undergrowth, and if one is disturbed crawling up the grass in the early twilight, and it falls down, nothing will make it come up again.

Another point to remember too is that the insect is extremely susceptible to the weather, and on a clear dewy night with a suspicion of mist on the low lying ground there will be no flight at all.

The headquarters is over a mile from the nearest road, and if one feels the nasty chill of a clear dewy night in July, as one gets out of the car, one might as well go home, for *albula* will not fly that night. Our failure to find larvae was perhaps because we were rather half hearted in our endeavours, but I am much looking forward to the coming season when Mr. Symes has promised me personal instruction in the art. My own experience with bitten leaves usually revealed the larva of *gothica* or *incerta*!

On Rearing *Brachionycha nubeculosa* Esper

By Major General G. F. JOHNSON, C.B., D.S.O.

B. nubeculosa is said to be a difficult moth to breed. The following notes therefore may be of interest.

A crippled female was taken from an old birch trunk on 31st March 1952 at Aviemore, Inverness-shire, and was confined in a small breeding-cage. The cage had a glass front and perforated zinc sides. A few birch twigs were put in it. One egg was laid the first night and by 8th April 360 had been deposited. Only a few of these were on birch twigs, the great majority being on the outside of the perforated zinc, the moth having to push her ovipositor through a hole in the zinc to deposit each egg. There were none on the inside of the zinc.

The eggs, at first a pale dirty blue, turned brown after four days and began to hatch on 30th April when 28 to 29 days old.

The young larvae were placed in some ordinary half-pint tumblers, each closed by laying a small plate of glass on the mouth of the tumbler. A number of larvae hatching on the outside of the breeding-cage were lost or not rounded up, and some were drowned in condensation on the sides of one of the tumblers.

Fresh birch leaves were given daily and the tumblers kept very clean. Every few days they were rinsed with a weak solution of "T.C.P." and then dried well with a cloth before putting the larvae back. The young larvae did well and the only casualties were a few from accident.

During the second instar two large batches of larvae were sleeved out on growing birch, one in North Cumberland and the other in the City of Edinburgh. Another batch was retained in glass tumblers indoors. Care was taken not to overcrowd the latter; in the last instar not more than two or three were allowed in one tumbler. An occasional oak leaf was given with the birch and was readily eaten. I do not know whether this was necessary or desirable, but it appears that oak is an alternative foodplant.

All three batches prospered and some 80 full fed larvae obtained. These were handsome insects, bright green with yellow slashes on the

third ring and the claspers. When disturbed they adopt a curious and characteristic attitude by throwing their heads and thoracic segments up and over their backs, holding up their legs in the attitude of a man complying with the order "hands up!"*

For pupation four nine-inch flowerpots were used, filled with a mixture of peat and sand. The mixture was pressed down as tightly as possible in the lower part of the pot to try to check the deep burrowing habit of the larva and induce it to pupate while still amongst the peat and not hard up against the bottom of the pot. This object was achieved.

Full grown larvae were removed from the sleeves to tumblers for observation as soon as they went off their feed or began to wander. They were transferred to the flowerpots, where they were confined by a piece of muslin tied over the pot. They quickly went to ground, the first on 19th June and the last on 5th July. About 20 larvae went down in each pot.

One pot was left undisturbed, the others were turned out in September and produced over 30 live pupae. These were placed for the winter on corrugated paper in small more or less air-tight tobacco tins, stored in an outhouse. There were nearly 50 per cent. casualties or failures to pupate and I suspect that 20 larvae were too many to be allowed to go down in one pot. The later larvae to go down probably disturbed some of the earlier ones at a critical stage.

The following December (1952) it was noted that three pupae had turned colour, from their normal dull red brown to black. These black pupae were brought indoors but only produced two cripples, in February 1953.

The remaining pupae including those in the flowerpot remained in the outhouse in Cumberland till January 1954 when all those in the tins had turned black. They were brought into a warm room in London late in January.

Emergences began on 5th February and continued till 23rd February. From the pupae in tins 23 emerged of which 4 were cripples. Nine pupae died. From the flowerpot 5 emerged, one a cripple. The flowerpot was then turned out; two dead pupae were found and 5 live ones, still red brown in colour and rather active, clearly going over for at least a further year.

To summarise. 80 full grown larvae produced 47 live pupae which in turn produced 2 crippled imagines in 1953 and 23 perfect imagines and 5 cripples in 1954, with 5 pupae going over to 1955.

The dangerous period is I think when the larva goes to ground. If I reared them again I would use larger pots, allow fewer larvae to the pot and if possible not disturb the pupae but leave the pots in a well-ventilated outhouse till emergence takes place. Suitable precautions must of course be taken against mice, clothes-moths and other vermin. As regards the larvae sleeving saves trouble, otherwise air-tight containers, fresh food daily, no overcrowding and cleanliness provide adequate conditions.

[*The larva throws up its head and thoracic somites, when alarmed, in order to bring into action a repugnatorial gland, the slit-like opening of which can sometimes be seen, with a pocket lens, on the prosternum—P.B.M.A.]

The Burren in 1953

By H. C. HUGGINS, F.R.E.S.

After the announcement of the discovery by Mr. J. D. Bradley and his party of *Alucita icterodactyla* (Mann) in the Burren area of County Clare, Ireland, in July 1952, I made plans to revisit that locality and, if possible, take it. 'Plumes' are my favourite group and with the exception of *A. icterodactyla* and *Stenoptilia saxifragae* Fletcher I had taken or bred all the British species, so I made arrangements on this trip to kill both birds with one stone.

I therefore left for Dun Laoghaire (as we must now call Kingstown) on 6th July and on the 7th had the pleasure of visiting Mr. E. S. A. Baynes at Glenageary. *S. saxifragae* is confined in the British Isles to the suburbs of Dublin, where it feeds on mossy saxifrages, preferring an imported foreign species. Whence it came is unknown as it is not recorded from any foreign locality, but it is common enough in gardens round Dublin, where it was first taken by Mr. A. W. Stelfox in 1925. Luckily it is found in Mr. Baynes's garden and he very kindly invited me to have a go at it. The damage done by the larvae to the saxifrage was at once apparent, but unhappily a gale was blowing, accompanied by intermittent showers. However, by blowing tobacco smoke into the cushions of the food-plant I succeeded in rousing two specimens, and Mr. Baynes kindly gave me sufficient unset examples which he had taken in his m.v. trap and saved for me to complete my series. My wife and I spent a very pleasant afternoon with him, examining his most interesting collection of Irish Lepidoptera. We were particularly struck with his fine series of *Selenia bilunaria* ab. *eblanaria* Baynes, of which he kindly gave me two beautiful pairs.

The only other insect we saw at large at Kingstown and Glenageary was *Cryphia perla* Fabr., which was common on most walls. Except that their average size appeared to be slightly larger than of those found in England they displayed no variation from the normal run. It is curious that *C. muralis* Forst. appears to be absent from Dublin although common enough on the opposite Welsh coast, and *perla* is almost absent from Cork (I have never seen it there and Donovan records only two) where *muralis* abounds.

On the 8th July we set out for the Burren and arrived in the early evening, remaining there until 5th August. The weather was the vilest I have ever known in my extensive experience of Ireland. We had two days free from rain, and for the first fortnight there was a continuous gale, for nine days of which we did not cross the threshold of our hotel. However, by dashing out whenever the rain stopped (frequently returning wet to the skin) I managed to take a good number of species, including the much wanted *icterodactyla*. To take advantage of the Burren a considerable amount of rather hazardous climbing is necessary, so I seldom carried a waterproof and took my chance of the weather. It may be of interest to add that we reached the Burren at the end of what had locally been considered a drought and that prayers had been offered up for rain. I do not think that answering these in the West of Ireland presents any great difficulty to le Bon Dieu!

The Lepidoptera of the Burren have already been dealt with by Messrs. Classey and Goater (*Entomologist's Gazette*, II, 95-99) and

Bradley (*ibid.*, III, 185-189; IV, 135-140), so I am omitting from the following list all species of which I can add nothing to what has already been published.

Argynnis aglaia L. Common but shattered. So far as I can judge they were of the same form as those found on the chalk, quite unlike the ruddy ones in Cork and Kerry. Some of the females were very white round the border; this may have been due to age. I intend looking into them at a future date.

Eumenis semele L. Dr. Cockayne has already dealt with the so-called ssp. *clarensis* de Lattin from material I sent (*Ent. Rec.*, 66: 39). I took one grey female corresponding to the grey males, but after I sent Dr. Cockayne his specimens I went to catch a few for my friend Mr. Dennis Smith. The second female I got proved to be the most extreme ab. *addenda* I have seen. The eye-spots on the upper wings are slightly elongated and the usual cream space in between is filled by two equally large oval dark spots. There are three minute ocelli on the hind wings instead of the usual one. My friend was unlucky!

Maniola jurtina ssp. *iernes* Graves. On an average these did not seem so large as those on the bogs in West Cork and Kerry, but the females had a much larger proportion of the *hispulla*-like form than in the south. The colour also is more brilliant.

Habrosyne derasa L. Common; not mentioned by Mr. Classey.

Eriogaster lanestris L. Several full-grown larvae.

Arctia caja L. Several seen sitting on rocks. One laid a quantity of eggs and from a partial second brood I reared a rather nice dark aberration.

Nudaria mundana L. Not uncommon in many places but in swarms round a clump of old lichen-covered blackthorns at dusk.

Setina irrorella L. Not uncommon. Donovan (*Supplement*, p. 1) refers the Burren specimens to ab. *flavicans* Boisd. They are, however, not a bit darker than fresh specimens from Dungeness. I have several bred specimens from Inishmore (the Aran Islands), which is an outlying part of the Burren, and caught ones from the mainland which I can separate from the Kentish ones only by the labels.

Apatele euphorbiae Fabr. I took a beautiful pale banded specimen on a rock which I referred at first to ssp. *montivaga* Guen. Mr. Goodson showed me the true *montivaga* at Tring, which was different, and I intended describing my insect as an aberration; but subsequently Mr. Goodson dug out further Burren specimens which showed mine to be only the extreme end of a series grading to ordinary Irish *myricae* Guen., so I abandoned the intention as I do not agree with naming arbitrary points in a series. It is, however, the brightest specimen I have yet seen.

Ammogrotis lucerneae L. Males were dashing over the higher slabs near the sea whenever the sun was out at noon. They flew somewhat like *Plusia gamma* L. and were difficult to take. Those captured were nearly black with a bluish flush. I also saw on a rock and by climbing managed to net a large female coloured like a Portland *Rhyacia simulans* Hufn., but it escaped from my net whilst I was getting out a box. It was certainly unlike any *lucerneae* I have seen. I have not seen the Irish *simulans* which is, I believe, recorded only by Russ from Sligo.

Amathes baja Fabr. I took, amongst others, a dwarf no larger than

Diarsia rubi View. As it was very badly split I let it go; as I saw no others like it I now wish I hadn't.

Hadena lepida ssp. *capsophila* Dup. Larvae on *Silene maritima*.

Phothedes captiuncula Treits. The beautiful red and white Irish form was not uncommon but very difficult to take. It flies only in sunshine, usually over the most broken and dangerous bare places, in a fast zigzag fashion. It is impossible to move after one safely without looking at the ground and, once lost sight of, the moth is very unlikely to be seen again. The position is made worse by numbers of *Philedon gerningana* Schf. and *Sericoris lacunana* Schf. which fly in much the same way, the crimson and yellow *gerningana* being especially misleading.

Apamea furva Hüb. Very scarce. A quite different form from the dull Scottish ones I have, dark brown with bright silver markings, like a small *Mamestra brassicae* L.

Calamia virens L. Generally distributed with abundant local colonies. This moth has a very long emergence period. It has been taken drying its wings on the 20th August and my first specimen, found by daylight sitting on a rock, was on 28th July and was already in vile condition, being not only colourless but also worn to shreds.

C. virens is scarcely worth taking once it has flown. All those I kept but one (an aberration) were drying their wings when found. Although always beautiful it looks best alive; when newly emerged on a thin grass-stem it is lovely; the next day alive in a box not quite so fine, and when taken off the boards comparatively prosaic. I expect in five years' time it will be dull in appearance, though mine are still as fresh as when taken.

It varies considerably in a small way. In the female the green flush on the abdomen and hind wings may be entirely absent in newly emerged specimens. The reddish-brown pre-cilial line differs a good deal in width and definition and is occasionally nearly absent, and I took three specimens with practically uniform green fore wings (both spots vary a good deal in size).

C. virens emerges at 10.30 to 11 G.m.t. and may be seen hanging to a grass-stem at that time with wings unexpanded. Its habits seemed to me very similar to those of *Rhizedra lutosa* Hübn.

Cidaria fulvata Forst. Common.

Epirrhoe galiata Hübn. A few, very dark.

Perizoma minorata Treits. Not uncommon, sitting on rocks. A very white form, much lighter than the Scottish.

Perizoma bifaciata Haw. One or two, worn; not mentioned by Mr. Classey.

Aspitates gilvaria ssp. *burrenensis* Cockayne. Common. The differences in the bands and the darkened under side are constant and undoubtedly constitute a good subspecies, but some of the differences between this and the chalk-down race mentioned in Dr. Cockayne's description (*Ent. Gazette*, 2, 100) do not hold with a good many specimens. The size is variable and frequently equals that of the English race (the largest specimen in my collection is a Burren one though I have seen thousands in Kent at one time or another) and selected specimens could be arranged nearly as light as English ones. These, however, are rare; moreover, when an English specimen is dark it is heavily

spotted, whilst dark Burren ones are smeared. I have shown some of these to Dr. Cockayne, who was interested in the variation.

Selidosema brunnearia Vill. Very common and varied, ranging from the usual light insect to blackish, and also a dark brown form I have not seen elsewhere.

Alucita icterodactyla Mann. I took seven specimens in all and saw several others. It was most frequent at the beginning of my stay, whilst the gales were raging, and seemed particularly to like the narrow shelves covered with low plants at the foot of the terraces. These are of course exposed to the wind, and the little moth on rising was apt to be blown away. On 10th July I took four and lost nearly as many. There is a certain amount of variation, particularly in the female. I took two very small unicolorous females, quite different from my others or Mr. Bradley's specimens. Mr Tams and I could not be certain of their identity but he kindly dissected one and it proved to be *icterodactyla*.

The moth has a long emergence period. Some were worn on 10th July and on the 31st I took a magnificent newly emerged female sitting on a grass-stem at midnight near Newtown Castle. This had a sequel. I told a friend the next morning and two days later a journalist arrived who had driven forty miles from Limerick for an interview. Mr. O'Callaghan asked me to give him one and as he had driven me the fourteen miles to Newtown Castle and back, "free, gratis and for nothing", I could hardly refuse. I regret to say that enthusiasm or lack of scientific knowledge caused my journalistic friend to make a shocking garble of what I told him (he called me an "etymologist"), but he managed to syndicate the interview with eight Irish newspapers, from the *Limerick Chronicle* (which gave me a front page headline over three columns) and *Cork Examiner* to the *Dublin Evening Mail*. I also acquired a considerable fan mail and never expect to be so famous again unless found murdered in sordid circumstances.

A. icterodactyla appeared to be generally but thinly distributed all over the Burren.

Philedon gerningana Schiff. A nuisance everywhere when working for *captiuncula*. The Bradley expedition only found five in one place.

Eucosma solandriana L. Common amongst hazel scrub. The transference of usually birch-feeding insects to hazel on the Burren, where no birch grows, is interesting. Donovan noted that *Tethea duplaris* L. was also found on it.

Hemimene alpinana Treits. Very common amongst moon-daisies. Mr. Bradley apparently saw only one.

Notes on Collecting during 1953

By S. WAKELY.

These notes on collecting during the year 1953 should have been sent in some weeks ago, and I hope they will be none the less interesting for being published at the start of a new season.

I do little winter collecting, and it was not till the 21st of March that I took my first larvae, namely of *Phthorimaea tricolorella* Haw. I found these fairly common feeding between spun leaves at the tips of shoots of *Stellaria holostea* (Greater Stitchwort) in a sandy lane with high banks at Tandridge, Surrey. The imagines of this species are

seldom seen in the wild, but they are not difficult to rear. I kept mine in a jam pot containing about an inch of peat, on to which the collected spun shoots were placed. A few fresh shoots were introduced each week till the end of April, by which time the larvae were full fed and had spun up among the debris. The top of the jar was covered with a piece of linen to allow a certain amount of ventilation so as not to encourage mould. The moths emerged from mid June onwards, but hid in the debris and were difficult to see. By examining the pot late in the evening I was able to see when any moths had emerged, as they could be seen then resting on the linen, but I boxed them during daylight by tipping the contents on to a sheet of newspaper. Once they moved I found them very skittish and difficult to box successfully.

At the Field Meeting of the South London Entomological Society at Eynsford, Kent, on the 19th April larvae of *P. tricolorella* were again common. During this meeting I was given a reddish coloured larva feeding on the decaying prickly outer covering of the fruits of sweet chestnut. The larva was feeding inside a cavity eaten out between the inner and outer sides of the husk, and I found another larva by examining more material at the spot where the first one was found. The moths emerged at the end of June—two fine dark specimens of *Blastobasis lignea* Wals. (var. *melanella* Mansbridge). The larvae of this species have been reported feeding on yew and other withered leaves, but this is the first time they have been found on the particular pabulum mentioned.

Larvae of *Eriocrania kaltenbachii* Staint. were found near Plaistow (Hogg Wood), Sussex, on 10th May, and again at the Sheep Leas, Horsley, Surrey, on the 16th. The larvae of this species are leaf-miners in the leaves of hazel—five other species in the same genus all feeding on birch. It is hoped to breed the moths this spring, but such species are not easy to get through.

Larvae of *Mompha nodicolella* Fuchs were again common in galled stems of *Epilobium angustifolium* at Ockham Common in early June. The moths emerged during the last week in June.

On the 13th June I visited Horsell Common with Mr. L. T. Ford. Numbers of small tortrices were to be had by tapping the fir branches and netting the moths as they were disturbed. Of 15 specimens I brought home, 12 were *Laspeyresia coniferana* Ratz., 1 *L. pactolana* Zell. and 2 *L. cosmophorana* Treits. One full-fed larva of *Dasychira fascelina* L. was also taken on this occasion.

On the 27th June I went with the South London Field Meeting party to Folkestone, Kent, when we found *Aplasta ononaria* Fuessl. not uncommon. Other specimens taken were *Laspeyresia microgrammana* Guen. flying around *Ononis*, and a few pupae of *Laspeyresia leplastriana* Curt. were extracted from stems of the wild cabbage. Pupation takes place in a silk-lined boring made by the larva.

In the evening I made my way to Whitfield, near Dover, where I was met by Canon T. G. Edwards, and stayed with him for the following fortnight. Canon Edwards was recovering from a very serious illness, which prevented him from taking active part in entomological pursuits, but we were still able to visit many of the fine collecting places in this favoured district.

Using a m.v. light in the garden, the Canon had already taken *Hadena compta* F., and others were seen on most nights when the light was used, the best night producing six specimens! Other species taken at Whitfield by the light were: *Plusia iota* L. (in numbers), *Hydrelia flammeolaria* Hb., *Biston betularia* L. (three forms), *Cryptoblabes bistriga* Haw., and *Hyponomeuta evonymella* L. (several). A freshly-emerged *Lophopteryx cucullina* L. was taken at rest on a maple leaf near the house. Larvae of *Lithocolletis sylvella* Haw. were very common in leaves of maples growing in the hedges—one could gather a score of mined leaves in a few minutes. A solitary larva of *Depressaria chaerophylli* Zell. was found on flowers of *Chaerophyllum temulum*, the moth emerging on the 3rd of August.

We visited Sandown (near Deal) on 29th June, and found larvae of *Gelechia hippophaella* Schrank quite common on the Sea Buckthorn, feeding in spun terminal shoots. One *Mesotype virgata* Rott. was netted, and another bred on the 18th July from a larva found on *Galium* and not recognised at the time.

St. Margaret's Cliff was visited on 30th June and again on 7th July. Two pale green noctuid larvae freckled with black dots were swept here, and after trying them with various foodplants one at last accepted grass, but the other died. The survivor produced a nice *Eremobia ochroleuca* Esp. on the 27th July. I was told later I should have given them grass seeds, on which they thrive. *Melanargia galathea* L. was not uncommon here, and a few larvae of *Vanessa atalanta* L. were found on one of its lesser-known foodplants—*Parietaria ramiflora* (Pellitory of the Wall). A single specimen of *Nemotois minimellus* Zell. was taken by sweeping, and a larva case of *Narycia marginepunctella* Steph. was found on a fence, with a fine *Hadena conspersa* Esp. at rest nearby.

On the evening of 30th June Mr. Youden of Dover was good enough to take me by car to Dungeness. One *Ethmia terminella* Fletcher was found at rest on a post during a stop on the way. On arrival, two Tilley lamps with sheets were hurriedly fixed up. In spite of a still, warm evening moths were not flying in the numbers one would have expected, and sugar attracted only a few common insects. The best capture was a pair of *Eilema pygmaeola* Doubl. (or should it be *pallifrons* Zell.?) Other species taken were *Comibaena pustulata* Hufn., *Anerastia lotella* Hb., *Dioryctria formosa* Haw., *Cnephasia longana* Curt. (extremely variable), *Argyroploce purpurana* Haw., *Sophronia semicostella* Hb., *Anarsia spartiella* Schrank (common here on broom), *Depressaria badiella* Hb., and numbers of the tiny *Douglasia ocerostomella* Staint. The *C. pustulata* oviposited and I have two larvae at present on an oak in my garden. It is a puzzle to me why such an oak-wood insect as *C. pustulata* should occur at Dungeness, where there appear to be no oak trees or bushes growing for miles.

A visit to Sandwich on the 3rd July revealed that *Aplasta ononaria* Fuessl. and *Sterrha ochrata* Scop. were still about in fair numbers, in spite of the flooding during the previous winter. I was pleased to find a pupa of *Depressaria enicella* Treits. on some Sea Holly. It emerged on the 24th July. Having found one I was rather surprised not to find more.

Mr. Youden took me to Elham Park Woods, near Barham, on 8th

July, where we were joined by Capt. Marsh. Two m.v. lights were worked here, and many interesting insects taken. One *Cacoecia aeriferana* H.S. was taken (previously reported), together with *Anaplectoides prasina* F., *Euphyia unangulata* Haw., *Phycita betulae* Goeze, and *Mompha conturbatella* Hb. *Angerona prunaria* L. was flying freely at dusk, but strangely enough none came to light. Other species appeared, too numerous to mention.

The first trip after my holiday at Whitfield was to Erith, Kent, on the 19th July, where *Sterrrha rusticata* F. was locally abundant. *Thymelicus lineola* Ochs. was also common. Some seedheads of Mallow (*Malva sylvestris*) which I collected produced a single specimen of *Platyedra vilella* Zell.—a species seldom recorded nowadays.

On 28th July, I visited Tooting Bec Common, South London, to see if *Blastodacna stephensi* Staint. still occurred there, and found it in its usual numbers sitting on the larger oak trunks. It is very like *Recurvaria nanella* Hb.—indeed, I have sometimes found specimens of that insect mixed with those boxed. *Lithocolletis comparella* Zell. occurs on this Common—the only locality I know for this local species. I found a number of mines (“blisters”) caused by the larvae of this moth on the leaves of the white poplars.

On 5th September I visited Druid's Grove, Mickleham, Surrey, with Mr. L. T. Ford, to search for larvae of *Ethmia decemguttella* Hb. A moth had been taken there earlier in the year, and it seemed likely that the larvae would be there on Gromwell (*Lithospermum officinale*). One had only to find the plant to take as many larvae as wanted. Mine were given corrugated paper, which seemed to be just what they needed, the larvae spinning up in the paper tubes and not in the grooves. In the same locality larvae of *Coleophora erigerella* Ford were found on 12th September (and later) among the seeds of *Erigeron acris* (Blue Fleabane). These were found by the side of the arterial road from Burford Bridge to Mickleham. Last year I recorded this species from Ranmore, a few miles south-west from this new locality.

On the 27th September I went to Darenth Wood, Kent, with other members of the South London Society. *Lithocolletis nigrescentella* Log. larvae were again not uncommon in leaves of *Vicia sepium* (Hedge Vetch). This species was first recorded from “a wood near Bexley” about 80 years ago—possibly this same wood. Larvae of *Swammerdamia heroldella* Hb. were not uncommon under their characteristic webs on the upper side of birch leaves. A few similar webs were found on leaves of sweet chestnut and, in spite of the difference in foodplant, I feel sure they were made by the same insect.

The species mentioned are the more interesting of those come across; a complete list would take up too much space.

Lepidoptera Collecting Notes, 1953

By DR. NEVILLE L. BIRKETT.

Goaded out of literary lethargy by the lashings of the Assistant Editor's pen I venture to put on paper some observations on my collecting activities in 1953 hoping they will prove as interesting to other readers as his remarks suggest.

The year under review has not been particularly propitious from the entomological point of view. After a spell of good weather early in the year the rest of the 'summer' was poor indeed. Just how poor may be judged from the report in the local paper—*The Westmorland Gazette*—in its issue of October 3rd, where it was reported that of the last 94 days there had been 71 with rain! In spite of this the rainfall figures were not excessive, but our sunshine hours were much below average.

I operated my moth trap in Kendal for the first time of the season at the end of February, the result of two nights' operating being two moths—*Erannis leucophaearia* and *Conistra vaccinii*. As I was more interested in capturing diptera, and as results with these were much better, I was not too disheartened. On 15th March I note in my diary: "Very dry weather for three weeks—practically no rain". The trap was again operated at this time and results were a little better, a fair sprinkling of the commoner spring moths being obtained—*Xylocampa areola*, *Cerastis rubricosa*, and the *Orthosias*—*incerta*, *cruda*, *stabilis* and *gothica*. At this time too *Tortricodes tortricella* was flying freely in the local oak woods.

Sunny days with cold nights was our lot during the remainder of March and one felt that winter was indeed over—a thought which came only to be rudely shattered by the return of winter conditions with much snow on the Lakeland hills for the Easter week-end. On Easter Day, in company with my nephew and some visiting collectors, I visited the Witherslack area in the evening. For two or three hours conditions were quite good and moths were plentiful at both sallows and the car headlights. Sitting on the ash saplings were many *Nothopteryx polycommata*. Other species noted were:—the *Orthosias gracilis*, *munda*, *cruda*, *incerta*, *stabilis* and *gothica*, *Conistra vaccinii*, *Gypsitea leucographa*, *Colostygia multistrigaria*, *Eupithecia abbreviata*, *Alsophila aescularia*, *Nothopteryx carpinata*, *Selenia bilunaria* and *Earophila badiata*. Under the cold conditions prevailing at the time this list was considered remarkably good.

Another visit was made to the Witherslack woods on 10th April when *N. polycommata* was again plentiful at rest on the ash trunks. I noted that of all the saplings which yielded a moth at all there was none on which I ever found two moths at a time. Nor were the moths in flight at the time of examining—*circa* 9 p.m. The species is reputed to be an early flier and one or two questions come to mind: Where and when does the species pair? I found both sexes at rest on the trees and including a female which laid fertile eggs. I should be interested to hear from anyone who can answer either or both of these questions. Our northern race of this species feeds on ash and is of a darker hue than those of the south which feed on privet.

In early May a serious and successful search was made for *Odontosia carmelita* in the Witherslack area. Mr. W. Reid of Sheffield joined me and we worked the portable mercury vapour equipment on two successive nights in Black Tom's Lane, Witherslack (3rd and 4th May). On the first night we noted over thirty species of macrolepidoptera and included were one *O. carmelita*, and 5 *Drymonia ruficornis*. It was a disappointment not to take more than a single *carmelita*, but we were not downhearted for long, for on the second night we were more successful. On the second night we placed the sheet on top of a cliff overlooking the

lane and Nicholl's Moss. This choice of site proved a happy one and we attracted some fifty species of macros, of which the following are noteworthy: *O. carmelita* 5 specimens, *Drymonia ruficornis* in plenty, *Colocasia coryli* many, *Drepana lacertinaria* and *D. falcataria* both common, a single *Agrotis ipsilon* (? a migrant), *Orthosia gracilis* in plenty with two specimens of a nice pink form, *Acasis viretata* two males and two females in fresh condition. These last call for special mention because though the older collectors have recorded the species as common I have never found it to be so in twenty years' collecting in the area. The number of species noted on this night was quite exceptional for the time of year. Mrs. Lowther of Grange over Sands presented me with the diaries and note books compiled by the late Dr. Lowther and in these are recorded many hundreds of night expeditions made by him. In all the years he collected and recorded there is no night in early May to compare in species numbers with ours. Of course one must remember in this connection that we were working with mercury vapour equipment whereas the Doctor used a multiple acetylene flare over a sheet on which were placed a few petrol vapour lamps.

The first Holly Blue (*Celastrina argiolus*) was seen flying in Kendal on 5th May. We do not often see it flying in the town though it is quite common about the holly on the limestone hills of the neighbourhood.

At the end of May I was in the south taking part of my summer holiday. I did not do much collecting having numerous family commitments. However, near Dorking I was rather surprised to find on 24th May that the commonest moth to my sheet was *Agrotis puta*. I had always associated this insect with sandhill collecting in S. Lancashire and did not expect it to turn up on a chalk hill. On the same evening a scarce beetle came to light—*Melasis buprestoides* L. After the great heat of the late days of May the Coronation cold spell came as a shock and put a stop to profitable collecting. My next trip was on my return to the north.

6th June was a gloriously sunny day and with the Rev. J. Vine Hall I did a tour of the localities of *Euphydryas aurinia* in the Carlisle-Solway area. The species was out in good numbers in a number of its stations and it was pleasing to note that it appeared to be more plentiful than in recent years. The females were not out in strength but the males were. The variation was not striking.

A single male *Melanchnra persicariae* came to my trap in Kendal on 7th June, my previous earliest date for it being the 23rd. On the 9th in the trap there was a total of over forty species and these included a nice fresh *Apatele alni* and one *Pyrrhia umbra*.

Towards the end of June—the 25th to be exact—I spent a very pleasant day in company with the Rev. J. Vine Hall and Dr. K. Greenwood. We visited the Red Screes area in search of mainly *Erebia ephiphron*. It was a broiling hot day and the climb up the Kilnshaw Chimney face was somewhat arduous to a sedentary person such as myself. However, the effort was rewarded by finding the species in good numbers and for the most part fresh. Especially in the afternoon the species seemed to be emerging and the condition of the specimens improved as the day went on. We also noted in good numbers fresh *Xanthorhoe munitata* and *Crambus furcatellus*. About teatime a few

heavy clouds had gathered over the neighbouring hills, and out of the blue almost there started a thunderstorm. We crossed the summit ridge and had only made a short descent when the summit was struck by lightning. Our descent was accomplished with much greater alacrity than the laborious ascent! The following day in the same area a similar storm on a greater scale developed and floods in the Troutbeck Valley did great damage and one man was actually killed.

My next expedition of any importance was undertaken on 31st July, when with John Thorpe and the Rev. J. Vine Hall I visited the famous Grassington locality in Yorkshire. It was my first visit to this area and first impressions were good. We had a number of possible goals and some of these were realised and some not. We wanted to find out if *Erebia aethiops* still occurred, but in this we were disappointed, finding no trace of it. Our other main quarry was *Entephria flavicinctata* and of this species I obtained the only specimen. This was beautifully fresh and it was obvious that we were a little too early for it—a fact proved by the Rev. J. Vine Hall taking it in quantity a little later. We searched for the *flavicinctata* in the rough floor of a great gash in the carboniferous limestone hillside. The going was hard since this floor was strewn with great boulders hidden beneath nettles of great proportions. Lower down the valley a stream appeared from apparently nowhere and there was a dark dank area. While traversing this part, literally walking in the stream because it was easier going than on the banks, one of the party fetched me a moth and to our great joy this proved to be *Perizoma taeniata* in very fresh condition. We then obtained half a dozen specimens in the next half hour.

On the open parts of the limestone fells *Perizoma minorata* race *ericetata* was in great abundance among the Eyebright. Also in these open areas we noted *Stilbia anomala* of a pale hue, *Colostygia olivata* and *C. salicata*. It was a great day out among the beautiful Craven dales, and besides the interest of the insects there were many plants of local distribution to delight the eye of the botanist.

A visit to our local moorlands on 26th August was successful in that there were many *Lithomoia solidaginis* sitting about on the trunks of isolated pine trees. The Rev. J. Vine Hall was with me again and he having remarked that it was sad to think it would be nearly nine months before we would be looking for *Apatele menyanthidis* again promptly found a freshly emerged specimen sitting on an alder trunk! I have no record of a second brood occurring in this area nor have I heard of it elsewhere.

Browsing round a wood at Cartmel in N. Lancashire I found some stunted honeysuckle and the leaves of many of these plants were grossly distorted by mines of some micro. From a batch of these I subsequently bred a good series of *Lithocolletis trifasciella*. We have no recent records of this species, yet in the space of a few yards I found its larvae in great abundance.

On the whole the month of August was one of poor weather and collecting was possible sporadically only.

In early September I visited the Sheffield area for a few nights. With Mr. Reid I went on a sortie in search of *Cucullia absinthii*. In the unpropitious surroundings provided by a slag heap, a dirty stream carrying factory effluent and waste ground in the neighbourhood of a

colliery, we found the larvae of this species in such abundance as I have never seen larvae before. While the larvae were mainly on the Wormwood the few plants of Mugwort also present were sparsely tenanted. Most of the larvae were about fullfed and pupated directly. When seen in illustration these larvae would be thought to be very obvious indeed. In the field, sitting among the flowers of the food-plant, they are very far from obvious until one's eye becomes attuned.

An evening at this time in the Derwent valley where light was operated amidst a sea of Butterbur resulted in the capture of a single specimen only of *Hydraecia petasitis*. In addition to this we were visited by a huge swarm of female Chironomids which covered the sheet.

In mid-September I paid an evening visit to Hutton Roof in S. Westmorland where with the Rev. J. Vine Hall I worked an m.v. lamp under some lime trees in the hope of taking *Tiliacea citrigo*. The evening was cool and there was a heavy dew and we saw nothing remotely resembling our game. We did take a number of the commoner autumn things including *Amathes c-nigrum*, *Allophyes oxyacanthae*, *Anchoscelis helvola*, *Cirrhia fulvago*, *Chloroclysta miata*, etc.

After the middle of September the weather was really far from kind and the season more or less came to an end. In October the only species of note were a fresh *Nycterosea obstipata* (male) taken on 9th October. At the same time it was noted that *Plusia gamma* was common. These notes refer to my light trap in Kendal.

Summing up, it may be said that the year 1953 was a disappointing one for the lepidopterist—at least in this part of the country. Undoubtedly here the weather was the chief offender and seriously affected the number of possible occasions on which I could get out collecting.

Current Notes

A writer in *The Times* of 8th February had something to say about the activities in the New Forest of the Forestry Commission. Under the New Forest Act, 1949, the Commission was empowered to fence areas of not more than 20 acres in any one place. Ninety-five such enclosures have now been made and "the results are impressive. On the outside of the fences the forest floors are bare of young growth" (owing to grazing animals, vermin and fires); "on the inside a vigorous crop of saplings is shooting up". Which of course is what everybody who has experience of woodlands would expect. An experiment with a roll of wire netting in a copse frequented by rabbits and cattle is sufficient to demonstrate the rapidity of regeneration when this is allowed to take its natural course. It is to be hoped that still further areas of the Forest will be protected in this way.

The ancient woods of this forest of some 93,000 acres extend, nowadays, to only about 6,000 acres, and of the rest the Forestry Commission has charge of more than 25,000 acres. "One of the special restrictions," continues this writer, "was that the Commission should preserve the proportions between hardwoods and conifers, which now exist in about equal numbers". Unless our memory deceives us, sixty years ago the hardwood trees in the New Forest must have exceeded the conifers by hundreds to one; in fact the conifer plantations, such as King's Garn

and Sloden, were negligible; it was virtually all ancient forest. We welcome the news that in considerable areas natural regeneration is to be allowed to take place. Also we hope that no further planting of conifers in this forest will be done.

The journal of the Lund (Sweden) Entomological Society, *Opuscula Entomologica*, parts 2-3, 1953, contains at page 244 a paper (in English) by G. J. Broekhuysen on a migration of Pierids observed near the lighthouse on the southern tip of the island of Öland, off the S.E. coast of Sweden, on 30th August 1952. The butterflies were chiefly *P. brassicae* and *P. napi* and were flying in a south-westerly direction at a height of 1-3 metres. There was a light wind from the south-east. The flight was first noticed at 4.25 p.m., when the wind was light, but later in the afternoon the breeze freshened and most of the migrants were blown back. Unfortunately we are not told whether these made renewed endeavours to cross the sea or whether they gave up the attempt.

The renaming of our butterflies proceeds apace. In the current issue of *Entomologisk Tidskrift* (74: 216) we read of *Mesodryas paphia*, *Rathora latonia* (sic), *Acidalia aglaja*, *Fabriciana cydippe*, *Urbicola comma* and, of course, *Clossiana selene*. It is some time since the small Geometers known as 'Waves' were deprived of *Acidalia* and of course from the evolutionary standpoint the butterflies take precedence of the moths; therefore they must have first call on any vacant name. But the allocation of *Acidalia* to the Dark Green Fritillary does not strike us as being a particularly happy choice. However, the names of our Lepidoptera are changed so frequently that *aglaja* is unlikely to have to put up with the indignity for very long.

The Special Index of species mentioned in our Editorial last December (vol. 65, page 337) was issued with the March number. Will any of our readers who ordered the Index and did not receive it please notify the Assistant Editor at once? A correspondent writes: "Let us hope there will not be too many subscribers who will 'economise' by not taking the Index—and thus spoiling their sets or runs of the magazine!" Certainly this is a point which those who have not ordered the Special Index should consider. Without its index a volume of the *Record* is robbed of much of its value as a work of reference. Nothing is more maddening or wasteful of time than having to hunt through a volume page by page to find something about an insect which could be found in a moment with the Index.

As we go to press we hear that Dr. C. B. Williams, D.Sc., of the Rothamsted Experimental Station has been elected a Fellow of the Royal Society. We offer him our sincere congratulations on this well earned and well deserved honour.

Notes on Microlepidoptera

By H. C. HUGGINS, F.R.E.S.

Talaeporia tubulosa Retz. The long file-shaped case of this moth may be found about the end of April attached to posts and tree-trunks up which the larva has climbed for pupation. The case is comparatively

smooth, the surface being finely granulated, with no attached sticks or bits of grass-stems. It may be found at any height up to four feet but is usually from two to three; it is not particular, however, and I once found half-a-dozen less than a foot from the ground on a felled log. As with *Fumea casta* Pall. males and females seem to pupate at the same height, whereas in the cases of *Pachythelia villosella* Ochs. and *P. opacella* H.-S. the female larva usually ascends far higher than the male.

Luffia sepium Spey. The curiously shaped cases of this local Psychid may be beaten at the end of April or in early May from boughs of several trees, particularly yew. The larva feeds on the lichens that grow on these and unless taken when nearly full-grown is not too easy to rear. After the first week in May, however, it attaches itself for pupation and then cannot be beaten at all. The case, which is smooth and covered with very minute pieces of lichen, is short and broad, with a rounded end, looking in profile like an inverted letter U.

Eucosma subsequana Haw. This very local Tortrix is on the wing flying round silver firs in the sunshine at the end of April and in early May. It is about a fortnight later on the wing than *E. pygmaeana* Hüb., which it closely resembles, and also is confined to the silver fir, whilst *pygmaeana* sticks to spruce, I believe, though it is an active insect and I have beaten it from Scotch fir, and oak, to which it must have wandered as it feeds on neither.

I do not think *subsequana* has been taken in the present century. I have never seen it alive, having never been in a district where there was more than an odd silver fir. Barrett gives Kent, Surrey, and Dorset; but my own type, given me by the late F. N. Pierce, was taken by Vine in Sussex.

Nemotois fasciella Fabr. The queer-looking fiddle-shaped cases of this lovely long-horn are to be found on *Ballota nigra* at the end of April. They nearly always fall to the ground and must be carefully searched for around the plant, as the larva relinquishes its hold on the least provocation. Luckily in many cases the strongly growing *Ballota* smothers other plants for a little distance about itself, so apart from its own dead leaves the ground is reasonably clear.

N. fasciella is a moth which is much commoner than is usually supposed as the perfect insect is seldom seen despite its brilliant ruby colour. When I lived at Faversham my wife one day came in with one she had seen on a flower imprisoned in her spectacle-case, and next year the larva was common on the side of the road where she found it. It is found in many places in South Essex.

The interesting Note on *Eucnaemidophorus rhododactylus* Schiff. reprinted under "Fifty Years Ago" in the March number (page 88) reminds me that this beautiful insect is still found in the Brentwood area (Thorndon Park, where F. G. Whittle took it, is close to Brentwood). It had not been recorded for Essex after Whittle's note until my son took a specimen on 2nd July 1950 when we were sugaring in a spinney on a wild part of the Essex coast, an entirely new area for the

moth; but the following year one flew into the house of a friend of mine in the Brentwood area, where the moth had doubtlessly existed since Whittle's time but had been overlooked.

E. F. Studd's Note on the same page on the curious apple-feeding form of *Argyroploce profundana* Fabr. is no doubt the first recognition, although unhappily not completed, of *A. pomedax* Pierce, which was not, however, described till nearly twenty years later. *A. pomedax* was first described from the West Country, where it is common in old gardens and neglected cider orchards. The different type of fruit culture in the more eastern parts, with heavy spraying and regular pruning, militates against it; but it is now known to be well distributed in woods on crab apple as far as Surrey and Huntingdon.

The late E. F. Studd, of Oxtan Manor, Exeter, was a gifted and observant entomologist fifty years ago and a great friend of B. A. Bower, mentioned in his note, who grounded me in microlepidoptera. Unfortunately after a time he formed the idea that his duties as a county magnate, justice of the peace, etc., did not allow him much time for entomology, and he gradually dropped out, somewhat, I believe, to the relief of his wife, who considered catching butterflies and moths rather a waste of time for a man in his position.

Notes and Observations

DECLINE OF *LYSANDRA BELLARGUS* ROTT.—We were interested to read the report upon this species in the February issue of the *Record* (p. 39) by Mr. S. R. Bowden of Letchworth. We have been watching the gradual decline in its numbers for over three years now, and we mentioned our experiences to Mr. Bowden last year. Subsequently, during the first week in September 1953, we visited one of the localities in which the species was formerly abundant, a long dry valley some four miles from Luton, Bedfordshire, and within the space of one afternoon were able to count over twenty specimens, of which unfortunately well over half were males. The butterflies were almost entirely restricted to this valley; we saw only two stragglers away from it. There is therefore some hope that even if *bellargus* does not regain lost ground completely it may at least not disappear in our area.

During August one of us visited a well known Sussex locality near Hassocks, where the species was distributed in a very scattered manner over some seven square miles of downland; odd female specimens were congregated on the flowers of *Origanum vulgare*, the males appearing in ones and twos often in quite unusual habitats, for example several were in a small immature windbreak of young ash and beech, amongst tall grass.

In this Sussex locality *bellargus* is undoubtedly indigenous, but its status is questionable in the Chilterns east of Ivinghoe, perhaps even east of Aldbury, and certainly so as far east as Royston where it was undoubtedly introduced. The wane in numbers therefore may be due to a change in the conditions that tempted it to colonize new ground in the 1940's, but can also in our opinion be associated with extensive invasion by *Bromus erectus* of the short turf in which *Hippocrepis comosa* the food plant grows, a process which has admittedly been going on for some time. Actually the numbers of *Lysandra coridon* have gone

down owing to this factor in several localities known to us in the eastern Chilterns, and this species is surely the more hardy of the two. It is not in fact only the botanists who would gladly see a renewal of sheep grazing on our hills.

In conclusion, it would be of interest to receive records of the status of *bellargus* in the eastern Chilterns and the centre, from such areas as Chinnor, Bledlow, and as far west as Ewelme, where it was once recorded. These localities must be the headquarters where under favourable conditions numbers increase and migrations take place eastwards.—B. B. WEST and K. E. WEST, 8 St. Loyes, Bedford. 24.ii.54.

DECLINE OF *LYSANDRA BELLARGUS* ROTT.—With reference to S. R. Bowden's report (*Ent. Rec.*, 66: 39) on the decline of 'adonis', I have noticed with much regret a considerable drop in the numbers of this species in the Salisbury and district areas during the last few years. Many of the well known colonies have been reduced to such an extent that one can count the number of insects seen on each visit. In some cases this sorry state of affairs can be attributed to poor attempts at cultivation or grazing cattle. Even so, there are one or two remote colonies unaffected by these changes and the status of 'adonis' has greatly diminished in these also during the last two or three years. Well known areas for this species, such as Barford Down, Homington Down, Standlynch Down, Stratford Down, Odstock Down and others are either completely ruined by futile attempts at cultivation or fenced in with barbed wire to enclose cattle grazing.—C. M. R. PITMAN, Southampton Road, Clarendon, Salisbury. 19.ii.54.

A NOTE ON *APATURA IRIS* LINN.—After reading with much interest Mr. Syme's article (*Ent. Rec.*, 66: 40) on his experiences with *Apatura iris* I would like to mention that all the larvae of this species which it has been my good fortune to find have also been on the lower branches of very old willows, often an isolated tree amongst birches; and, as Mr. Symes observes, a "family tree" is used year after year. I also agree that it is hopeless and very foolish to beat for this larva.

With regard to Mr. Symes's reference to this species in the New Forest, I last took an adult in the northern area during July 1937 when with my friend the late A. G. Peyton. We were on a mothing expedition with a Coleman lamp; and after the lamp had got going and placed in the middle of the sheet laid neatly on the ground near the edge of an enclosure we sat down to await the expected moths. Imagine our surprise when the first visitor turned out to be a male *A. iris* in good condition! No doubt his majesty, roosting in the nearby branches of an oak immediately in the rays of our lamp, resented the intrusion and came down to investigate and protest at having his royal slumbers disturbed. Needless to say this unheard of method of luring *A. iris* was tried again many times in many *iris* localities, but with no further success.

As to the existence of *iris* in the Forest to-day a friend of mine staying for a short time in the north of the Forest found a full grown larva last year quite by accident when collecting willow for foodplant. As this discovery was within a half a mile of the spot where the above-mentioned incident occurred it is possible that *A. iris* still breeds

regularly if sparingly in at least this area of the New Forest.—C. M. R. PITMAN, Southampton Road, Clarendon, Salisbury. 19.ii.54.

COLD HARDINESS OF EUPHYDRYAS AURINIA ROTT. LARVAE.—My *aurinia* larvae which were hibernating in nests on potted-up scabious plants were frozen into a solid block and covered with snow for many days during the recent arctic spell when the temperature fell once or twice to eighteen degrees below freezing-point, and I feared the worst. However, on Saturday 13th February, I was surprised to see a seething mass of larvae with shining black heads congregated on the outside of the nests enjoying the feeble rays of intermittent sunshine and none the worse for their freezing experience. No attempt was made at nibbling any food and all were back in the nests once the sun had gone.—C. M. R. PITMAN, Southampton Road, Clarendon, Salisbury. 19.ii.54.

EARLY MOTHS.—At m.v. light last night, 18th February, *Phigalia pedaria* Fab., both dark and light forms, appeared very commonly. One specimen was almost melanic. A few *Theria rupicaprariva* Schf. and two *Orthosia incerta* Hufn. also came.—C. M. R. PITMAN, Southampton Road, Clarendon, Salisbury. 19.ii.54.

EARLY LARVAE.—I read your plea for Collecting Notes, so last night, 21st February, I set off for the wood. The temperature was 46° F. and rising at 6.0 p.m. The sky was black and the air felt damp. I searched the hedgerows and tree trunks for Lepidoptera carefully for two hours, but all in vain. Only two winter gnats visited my torch. I then turned my attention to the grass in the hedge bottoms. In 30 minutes I found 30 larvae, all less than half an inch long but easily recognizable as *xanthographa*, *meticulosa*, *maura*, *nebulosa*, *crenata* Hufn. and *obscura* Haw.—J. H. JOHNSON, 1 Berry Street, Hephthorne Lane, Chesterfield. 22.ii.54.

EUBLEMMA PARVA HÜB. AT SALISBURY.—A young friend of mine living in Salisbury has recently been called to the Forces and before he went he brought me a box of well set and mixed insects for identification, generously offering me any specimen that I wanted. The majority of these insects were taken at his home in the town where at times he used to leave a 60-watt electric light burning in his bedroom during the night. The plum of this assortment was a fine *Eublemma parva* which had been found sitting on the inner ledge of the window one morning in June 1953 and was thought to be a 'micro'. My friend kindly, indeed almost forcibly, presented the insect to me although I pointed out that his chance of ever taking another one was remote. Captain R. A. Jackson, R.N., who paid me a flying visit on 21st February saw the specimen, which he said was in a better condition than the one he took at Codford (see *Ent. Rec.*, 65: 322), and as the fringes are intact he thought it possible that it had been bred here; but the date of capture would seem to disqualify it from that possibility.—C. M. R. PITMAN, Southampton Road, Clarendon, Salisbury. 26.ii.54.

ABUNDANCE OF EUPLAGIA QUADRIPUNCTARIA PODA AT DAWLISH IN 1953.—I was interested in the Editorial comment (*Ent. Rec.*, 66: 53) on a Note in the *Ent. mon. Mag.*, 89: 297, regarding the abundance in South

Devon last year of the 'Jersey Tiger'. At Dawlish during the latter part of August this insect (which I had not previously had the pleasure of seeing alive) was certainly very plentiful in the higher part of the town known as "The Bartons", where during the daytime it could be found on the hedgerows by the roadside. At night many examples could be seen flying round the street lamps. As this was my first visit to the district I have no means of checking whether this abundance was normal or whether it really was an exceptional year for this moth. Dawlish has of course long been known as one of the headquarters of the 'Jersey Tiger' in England.—ERNEST TAYLOR, Department of Entomology, University Museum, Oxford. 17.ii.54.

EUPLAGIA QUADRIPUNCTARIA PODA AT TORQUAY.—I was interested to read about the 'Jersey Tiger' (*Euplagia quadripunctaria* Poda) in the *Record* (66: 53) being plentiful in Devon. I was absent from Devon last year, being abroad, but my sister remarks of its great profusion in Torquay and district, the species being very common in gardens in residential districts, and any ivy on walls if shaken would be sure to produce half a dozen imagines. This species I have always found common here since the War and it outnumbers *Arctia villica* L. which is much scarcer. The specimens with yellow-orange hind wings are more common and now outnumber specimens with red hind wings. Variation of the markings in this species is very rare and I have never seen any in nature.—A. H. DOBSON, Sunningdale, Millbrook Park Road, Torquay. 22.ii.54.

A NOTE ON *GONEPTERYX CLEOPATRA* L.—About 25 years ago I had seen a ♂ of this species in my garden at St. Jean-de-Luz but was unable to capture it. The regions nearest to St. Jean-de-Luz where *cleopatra* flies are Bordeaux and a locality 40 km. south from here on the coast of Spain, where I have seen it in great profusion. In the foothills of the Pyrenees south of Pau I saw one once and I believe other specimens have been seen in this region, but they seem very scarce. Larralde in his Catalogue of the Lepidoptera of the Basses Pyrenées says: "July, scarce; taken at Anglet", which is on the outskirts of Bayonne. Mr. G. Adkin whilst living outside Bayonne never saw one in nine years.

At St. Jean-de-Luz in my garden I saw and took a ♂ on the 7th July 1950; on the 18th I saw a ♂ and a ♀; the latter I caught; on the 19th I saw 2 ♂♂ and captured one; on the 24th I again saw a ♂. The ♀♀ are extremely difficult to distinguish from the ♀ *G. rhamni* and it was only when I took her off the setting-board that I was certain she was a *cleopatra*.

I should think that these vagrants came probably from Spain, but it is, of course, impossible to be certain. Since 1950 I have not seen any others here.—VERA MOLESWORTH MUSPRATT, Aicë Choko, St. Jean-de-Luz, Basses Pyrenées. 8.ii.54.

SPHINX LIGUSTRI LINN. FEEDING ON HOLLY.—At the end of August last year (1953) I noticed a number of droppings on the pavement outside a neighbouring garden, and as there was a privet hedge overhanging the pavement I examined this, but could find no trace of larvae or eating. There was, however, a variegated holly tree about fifteen feet high rising from the hedge and on looking at this I saw three full-grown

larvae of *S. ligustri* on three of the top shoots, which they had completely stripped. I fetched a step-ladder and collected them, and after feeding for two or three more days on holly leaves all duly burrowed.

I am aware that *ligustri* has several times been reported before as feeding on holly but think it worth recording that these larvae preferred that food to the privet hedge out of which the tree rose. *S. ligustri* is common in this district. I have previously found it on privet, lilac, ash, 'syringa' (*Philadelphus*) and Buddleia (once).—H. C. HUGGINS, 65 Eastwood Boulevard, Westcliff-on-Sea. 4.iii.54.

EULIA FORMOSANA GEY.—My friend, Mr. P. B. Wachter of Chartham, near Canterbury, has shown me six specimens of this species in his collection. They were all taken by him at light and as follows:—Camberley, Surrey, 19th July 1952 (5); Chartham, Kent, 20th July 1952 (1).—J. M. CHALMERS-HUNT, 70 Chestnut Avenue, West Wickham, Kent. 28.ii.54.

PARASITISM OF *LIMENITIS CAMILLA* L.—With reference to Mr. Sperring's note on parasites of *L. camilla* L. in the January number of the *Record* it would appear that the incidence of parasites affecting this species may be very uneven over its range which may have something to do with the alteration which has taken place and is probably still taking place in its distribution. I have bred this species every year since 1949 from larvae collected near Aldershot and every year a small proportion of the larvae have produced a number of parasitic larvae which have spun small white cocoons after emerging from their host. The proportion has been of the nature of one stung larva to every ten healthy ones. It was noticeable that the stung larvae were always the smallest and most backward of those collected and the parasitic grubs emerged from them long after the healthy larvae had already pupated. I usually try to collect the larvae of this species when they are getting well on towards being full fed which may perhaps also have a bearing on the matter and as a result the suspicions I have had towards the smallest and most undersized ones found have usually proved correct and they have produced parasites eventually.—R. E. PARSONS, Woodlands Lodge, Woodlands Close, Ottershaw, Surrey. 24.ii.54.

UTETHEISA PULCHELLA LINN. IN GLOUCESTERSHIRE.—On 22nd May 1953 about 11.45 p.m. a fine female *Utetheisa pulchella* L. came to the m.v. lamp in my garden at Stroud. Unfortunately I was not successful in obtaining eggs from it.—LESLIE PRICE, Rodborough Avenue, Stroud. 1.iii.54.

DIPTERA

Syneches muscarius F. (Empididae), an Addition to the British List

By E. C. M. D'ASSIS-FONSECA.

A number of specimens of both sexes of *Syneches muscarius* F. were captured by Dr. C. D. Day and myself on The Moors, Wool (Dorset) on 19th July 1953, Dr. Day having previously noted the species at this locality. Odd specimens were first taken while sweeping the verges of

a cart-track about a mile west of Wool, but it was later found that the species appeared to be mainly confined to some tall grass growing in a shallow ditch adjacent to the cart-track.

S. muscarius, which belongs to the sub-family Hybotinae, is of medium size (about 5 mm.) and of rather striking appearance, being immediately recognised the broad maculated wings. The somewhat peculiar shaped head, occupied almost entirely by the (in life) conspicuously red eyes which are contiguous for some distance on the frons in both sexes, provides a further striking character.

For the identification of this species, I am indebted to Mr. J. E. Collin.

Syrphus euchromus Kowarz in Britain: its Habits and Habitat

By L. PARMENTER.

In his volume on Syrphidae in the Royal Entomological Society's *Handbook* Series published last year, Mr. R. L. Coe gives the status of the species as "Uncommon. Inverness (Aviemore), then N. Lancs. southwards, 4-6."

On 10th May 1953 at Bookham Common, Surrey, I caught a male resting on a leaf of a birch tree in the woodland. My previous capture of this species at Bookham was on 12th May 1946 when a female was taken visiting hawthorn blossom, *Crataegus* sp., in the open plain with its scattered hawthorns. In the high canopied woodland of Banstead Wood, Chipstead, Surrey, I found a male and a female visiting the flowers of wood spurge, *Euphorbia amygdaloides* L. on 2nd May 1949.

It may thus be associated with woodland and its verges.

Besides the counties mentioned by Coe, it has been found in Oxfordshire. A. Piffard found it at Felden, Hertfordshire, on 12th May 1893, and Dr. E. E. Lowe on 3rd May 1944 at Coombe Dingle, Gloucestershire, where Mr. E. C. M. d'A.-Fonseca also found the species on 2nd May 1946 and again at Cleveland, Somerset, on 7th May 1949. Of these only Coombe Dingle is a precise enough locality to fix the habitat—again woodland.

The species is not mentioned in P. Knuth's three volumes of his *Handbook of Flower Pollination* so that it is hoped that future collectors of this species will record, besides the date and locality of capture, details of the habitat and the flowers visited.

Fifty Years Ago

(From *The Entomologist's Record* of 1904)

SEASONAL VAGARIES.—The amazing change that took place in the weather in the early summer had a marvellous effect on *Agdistis bennetii*. Although the first brood was on throughout May and until the end of the month, the larvae of the second brood fed up with such marvellous rapidity, and pupated so early that the imagines were well out by July 19th, nearly a month earlier than in the previous wet and cold season. It was also abundant compared with the previous year.

The season, therefore, late as it was until June for everything, affected some species exceedingly quickly, and produced maturity very rapidly. Specimens of the second brood, however, kept emerging for quite a month this year, so that this brood also was spread over a fairly long time.—J. OVENDEN.

THOSE WERE THE DAYS!—July 16th and 17th were spent at the Col de la Forclaz, a very charming locality, on a breezy ridge of about 5,000 ft. elevation, halfway between Martigny and Chamonix, and reached from either by a good road. I have not seen a more promising locality in Switzerland; the country all round teems with butterflies, and one can get amongst them by easy walks in all directions; if one wants valley species, a walk down towards Martigny will give any amount, whilst if mountain species are required, the collector has a choice of half-a-dozen easy ascents, in addition to which very many species are to be taken just outside the hotel, or on the walk to the Glacier de Trient. There is a very good and comfortable little hotel, whose proprietor is most obliging, his cuisine excellent, and his charges five francs (4s. 2d.) per diem; what more can one wish for?—W. G. SHELDON.

HYDRAECIA PALUDIS AND *H. NICTITANS*.—As notes concerning these species from different localities may be useful, I may record that I get a small dark orange-red insect here in the woods, which I have always considered to be *H. nictitans*, and identical with an insect that I took at sugar near Southampton, some years ago, also in a wood, towards Eastleigh. I also take a considerably larger insect, which to my eye always appeared distinct, at sugar, in Dawlish Warren, and which exactly agrees with the *H. paludis* taken by Mr. Oviden on the Medway marshes. I remember that on the first occasion on which I took this insect Mr. Bower was with me, and we were both much struck with it, but supposed that it must be a form of *H. nictitans*.—E. F. STUDD, Exeter.

Current Literature

THE RELATIONSHIP OF *COLIAS CROCEUS* FOURCROY AND *COLIAS ELECTO* LINN.

By F. V. L. Jarvis. *Trans. R. ent. Soc. Lond.* 1953. 104, Part 14. Pp. 521-542. 1 Pl. (col.), 7 figs.

This paper should be of interest to British entomologists because most authors treat *Colias croceus* as a subspecies of *Colias electo* from S. Africa. Jarvis has confirmed and amplified the work of Gowan Clarke and finds structural differences in every stage; perhaps the most notable are those in the first instar larvae which are well shown in the coloured plate. The differences in the other stages are for the most part small, but they are cumulative and few will disagree with the author that they are sufficient to prove that *C. croceus* and *C. electo* are distinct species. Attempts to cross them were abortive, but very few pairings could be attempted either in England or S. Africa and no conclusion can be drawn from the failure. We congratulate the author on this fine piece of work and the Society on the way in which it is presented.

E. A. C.

In *Z. Wien. Ent. Ges.* 1953.38.285. L. Schwingenschuss has a paper headed "Beitrag Lepidopterenfauna Niederoesterreich" in which he describes three aberrations of *Sarrothripus revayana* Scopoli: (a) *ab. strigatanus*. Grey ground; deep black 2 mm. broad band extending from the centre of base of fore wing diagonally to the tip. A male with one hind wing badly damaged. This is a synonym of *ab. sagittata* Sheldon 1919. It is a very rare form which is not represented in Sheldon's collection. There is one from the Rothschild collection in the Rothschild-Cockayne-Kettlewell collection in the British Museum.

(b) *ab. fuscoramusanus*. This is *ab. ramosanus* with the ground colour of the forewing unicolorous black-grey. This appears to be a synonym of *ab. atrata* Sheldon 1919.

(c) *ab. diluteramosanus*. This is *ab. ramosanus* with the pale grey ground colour of *dilutatus*. This is a synonym of *ab. cladodes* Sheldon 1919.

E. A. C.

The Macrolepidoptera of Inverness-shire— Newtonmore District

By Commander G. W. HARPER, R.N. (Retd.), F.R.E.S.

(Continued from page 96)

Thera juniperata L. Common everywhere in Badenoch among juniper in September and October, but sometimes is parasitized heavily.

Hydriomena furcata Thun. Common everywhere throughout the birch woods, where the large green and blackish forms predominate. On the moors a small, brightly coloured race, largely composed of reddish white-banded individuals predominates. This race is rather local and is to be found in corries amongst scrub willow and bilberry.

Hydriomena coerulea Fab. Abundant among alders along all streams and rivers. Very variable, beautiful pale marbled forms being not uncommon.

Hydriomena ruberata Freyer. Very local, but sometimes not uncommon, especially in larval form, among stunted willows growing in boggy places on the mountain-sides. I have never found it much below 1,000 feet, and only near Newtonmore, Kincaig, and Laggan.

Chesias legatella Schiff. Abundant everywhere amongst broom in September and October.

Chesias rufata Fab. ssp. *scotica* Richardson. Widespread amongst broom throughout the area, but owing to a very prolonged emergence period few individuals are to be found at any one date. I have taken it at m.v. light on various dates between 20th April and 18th August. On the latter date fully fed larvae were also found.

Anaitis plagiata L. Uncommon, as also is the food-plant, *Hypericum* spp. I have taken odd specimens at Dalwhinnie, Newtonmore and Aviemore.

Carsia paludata Thun. Locally abundant among cowberry (*Vaccinium vitis-idaea*) on the moors throughout the whole area.

Epirrhoe alternata Müll. Moderately common amongst bedstraw in the glens, and more plentiful on hillsides, especially at Drumochter at over 1,500 feet; also at Dalwhinnie, Newtonmore and Aviemore.

Epirrhoe tristata L. Locally common on the higher ground, especially on hillsides above 2,000 feet near Dalwhinnie and Drumochter.

Eulype hastata L. The status of this species and of the next is not yet clear. Until recently (1953) I had supposed that *E. hastata* did not occur in Badenoch and that the rather small dark population of *Eulype* was *subhastata* Nolck., though the apparent absence of the former was remarkable. Mr. D. S. Fletcher of the British Museum (Nat. Hist.) now tells me that a large proportion of supposed *E. subhastata* have proved in fact to be *E. hastata*. Distribution data must therefore await determination of species.

Eulype subhastata Nolck. See remarks under the previous species. The *Eulype* species are to be found locally not uncommonly amongst bog myrtle (*Myrica gale*) in June and July on boggy moorlands and hillsides at Drumochter, Dalwhinnie, Laggan and Newtonmore, usually not below 1,000 feet, and up to 1,600 feet. Larvae are often plentiful but heavily parasitized.

Coenocalpe lapidata Hübn. Exceedingly local. I have found it so far only in one locality on a boggy, heathery mountainside at about 1,500 feet near Newtonmore in September 1953.

Eupithecia pini Retz. Apparently very local. Mr. Austin Richardson has taken it near Aviemore.

Eupithecia pulchellata Steph. Common, especially in larval form, amongst foxglove near Laggan, Newtonmore, Kincaig, and probably everywhere.

Eupithecia valerianata Hübn. Taken by Mr. Austin Richardson near Aviemore. Probably to be found in various marshy spots in the glens where *Valeriana* spp. are not uncommon as probable food-plants.

Eupithecia intricata Zett. ssp. *helveticaria* Bdv. Common amongst juniper at Kincaig and probably elsewhere. Comes to m.v. light in numbers.

Eupithecia satyrata Hübn. Common everywhere on the moorlands and hills, and always associated with heather or sallow.

Eupithecia goossensiata Mab. Not uncommon amongst heather on the moors near Kincaig and Newtonmore. Comes to m.v. light occasionally.

Eupithecia vulgata Haw. Abundant everywhere, particularly in and around birch woods. A very variable race.

Eupithecia castigata Hübn. Moderately common everywhere in the glens, but not seen on high ground.

Eupithecia icterata Vill. ssp. *subfulvata* Haw. Moderately common on Speyside at Newtonmore, Kincaig and Aviemore. The predominant form is grey and without the tawny patch on the front wings, though the latter are not uncommon.

Eupithecia indigata Hübn. Abundant in all stands of Scots pine in Badenoch at Newtonmore, Kincaig, and Aviemore. Comes freely to m.v. light.

Eupithecia nanata Hübn. Common everywhere on heather moors and hillsides; abundant in some years.

Eupithecia innotata Hufn. ssp. *fraxinata* Crewe. A very large dark grey form apparently confined to ash is not uncommon at Newtonmore and Kincaig. This is somewhat surprising as ash trees are far from common on Speyside.

Eupithecia sobrinata Hübn. Abundant at Newtonmore, Kincaig, and Aviemore amongst juniper. Comes freely to m.v. light.

Eupithecia lariciata Freyer. Apparently rather uncommon, amongst larch at Newtonmore and Kincaig.

Eupithecia tantillaria Bdv. Moderately common around spruce plantations at Newtonmore and Kincaig. Comes to m.v. light.

Chloroclystis rectangulata L. Apparently rare. I took one specimen in my m.v. light-trap in 1953. Apple trees are scarce in Badenoch.

Gymnoscelis pumilata Hübn. Apparently scarce. I have taken only two specimens, in one day, in 1952, on the outskirts of a moorland pine-wood near Kincaig.

Lobophora halterata Hufn. Abundant everywhere amongst aspen, and also black poplar, at Kincaig and Newtonmore. The ab. *zonata* Thun. is common, especially amongst females.

Nothopteryx carpinata Bork. Abundant in all birch woods throughout the glens everywhere. Very variable, dark banded and suffused forms being common.

Oporinia autumnata Bork. Abundant everywhere through the birch woods in the glens. Comes freely to m.v. light.

Oporinia filigrammaria H.-S. Rather uncommon on heathery hillsides at Dalwhinnie and Newtonmore. Probably widely distributed in the area.

Oporinia dilutata Schiff. Abundant everywhere in the woodlands and glens. A beautiful silvery grey form predominates. Comes freely to m.v. light.

Operophtera brumata L. Common everywhere in the glens, but surprisingly not as abundant as usual elsewhere in the South, perhaps owing to excessive predation of the larvae by birds in spring.

Operophtera fagata Scharf. Common amongst birch woods at Newtonmore, and probably elsewhere.

Venusia cambrica Curt. Not uncommon and widely distributed with the main food-plant, *Pyrus aucuparia*, throughout the birch woods at Dalwhinnie, Laggan, Newtonmore and Kincaig; and probably everywhere in the area.

BOARMIINAE

Lomaspilis marginata L. Apparently rare or very local. I have taken only one specimen, from a sallow in a wood near Laggan.

Cabera pusaria L. Moderately common but rather locally distributed in birch woods at Newtonmore and Kincaig.

Cabera exanthemata Scop. Common in marshy places in woods throughout the district.

Anagoga pulveraria L. Apparently rare. I took one specimen from a sallow bush near Kincaig in 1952.

Elloppia fasciaria L. Abundant everywhere in Badenoch in almost all conifer plantations.

Campaea margaritata L. Abundant everywhere in the woodlands and glens.

Selenia bilunaria Esp. Abundant everywhere in woods and glens in May and June. It is single-brooded only.

Selenia lunaria Schiff. Rather uncommon in the birch woods near Newtonmore, but probably widespread in distribution. The race is of a very red colour and appears to be single-brooded in June.

Selenia tetralunaria Hufn. Abundant in all birch woods throughout Badenoch. The race is very rich in colour, and single-brooded in May.

Gonodontis bidentata Cl. Extremely abundant everywhere and very variable; very dark lilac, as well as banded, forms occur commonly.

Colotois pennaria L. Rather uncommon in oak woods near Kincaig. The males are very large, handsome, of a deep red colour, and come to m.v. light in September and October.

Crocallis elinguaris L. Common everywhere, not only in woods but also on open moors and hillsides. Very variable, a dusky brown unicolorous form predominating.

Ourapteryx sambucaria L. Apparently very rare. Mr. Craufurd records one from Aviemore near the hotel in 1952.

Opisthograptis luteolata L. Abundant everywhere. The larva in my experience is always of the pale green form with reddish spots, greatly resembling that of *Venusia cambrica* Curt.

Epione repandaria Hufn. Not uncommon locally in marshy ground near Newtonmore and Kincaig.

Semiothisa notata L. Rather common in some years in birch woods at Newtonmore, Kincaig, and probably elsewhere.

Semiothisa liturata Cl. Moderately common in all pine woods throughout Badenoch.

Itama wauaria L. Not uncommon at Newtonmore, but I have not found it elsewhere. Comes to m.v. light.

Itama brunneata Thun. Apparently very local. Baron de Worms has taken it near Aviemore, and Mr. Craufurd in Rothiemurchus forest in two places.

Erannis leucophaearia Schiff. Apparently rare. I took two males at m.v. light in February 1951 at Newtonmore, but further search has not yet been successful, even amongst oak trees. The form here seems to be a very pale one.

Erannis aurantiaria Hübn. Moderately common in birch woods at Newtonmore, and among oak at Kincaig; probably widely distributed.

Erannis marginaria Fab. Fairly common everywhere in Badenoch birch woods and also on open moors in boggy places, where it feeds on bog myrtle. The blackish form ab. *fuscata* occurs at Newtonmore.

Erannis defoliaria Cl. Common everywhere in the birch and oak woods on Speyside. Comes freely to m.v. light.

Phigalia pedaria Fab. Common everywhere, the form being larger and brighter than in Southern England. It is usually to be taken about the end of March and early April, but in 1953 a very early emergence occurred on 15th January.

Poecilopsis lapponaria Bdv. Not previously recorded from this area in Inverness-shire I searched for it in 1953 and found an abundant colony near Laggan, and three other smaller colonies near Newtonmore. It is probably fairly widespread in suitable boggy moorland spots.

Lycia hirtaria Cl. Abundant in all birch woods. It is variable, blackish forms being not rare.

Biston betularia L. Common in all birch woods. Neither of the melanic forms, ab. *carbonaria* nor ab. *insularia*, occurs, but there is slight variation in the degree of black 'peppering'.

Cleora cinctaria Schiff. I hope to find this species in my defined area,

as it occurs commonly but locally at Struan in Perthshire, a few miles south of the county border.

Alcis rhomboidaria Schiff. Apparently not very common. Mr. Craufurd has taken it in some numbers at Aviemore.

Alcis repandata L. Common in all woodlands. The race is grey and rather small.

Ectropis bistortata Göze. Abundant in all woodlands. It is single-brooded, appearing from April to May. I have never seen a summer emergence.

Gnophos myrtillata Thun. Common on all the heathery moorlands and hillsides in Badenoch. Comes to m.v. light.

Psodos coracina Esp. Common on the mountain-tops of the Monadhliath hills and the Cairngorms among crowberry. It appears every year, but most commonly in the 'even' years as a rule.

Isturgia carbonaria Cl. Locally very common on heather moors as low as 600 feet and as high as 2,000 feet, wherever the food-plant, *Arctostaphylos uva-ursi*, occurs.

Ematurga atomaria L. Abundant everywhere amongst heather. Occasionally a partial second brood occurs.

Bupalus piniaria L. Abundant everywhere amongst Scots pine and spruce.

Dyscia fagaria Thun. Widely distributed on heather moors and hillsides, but seldom common.

SESIIDAE

Aegeria tipuliformis Cl. Apparently very local. Mr. Harwood took it near Aviemore in 1922.

Aegeria culiciformis L. Apparently local, but probably to be found throughout the birch woods in the glens. Mr. Harwood took it near Aviemore in large numbers in 1922.

HEPIALIDAE

Hepialus humuli L. Widespread and not uncommon in grasslands in the glens. Normal form.

Hepialus fusconebulosa De Geer. Abundant throughout Speyside in marshy grasslands and on the borders of woods; by no means confined to bracken.

ADDENDA

AGROTINAE

Peridroma porphyrea Schf. Apparently a rare immigrant, which probably breeds locally in good immigrant years. A fresh male came to m.v. light at Newtonmore on 7.x.53.

Amathes agathina Dup. Very local and uncommon; probably greatly affected by heather burning. A single male came to m.v. light near Newtonmore on 5.ix.53.

This completes my list to date, 22nd January 1954. In all, 328 species of macrolepidoptera.

22.1.54

Nedaich, Newtonmore.

On page 59, to *Anthocharis cardamines* L. add: "A large male was seen by Dr. E. A. Cockayne about a mile and a half south of Aviemore in June 1944."

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EXCHANGES AND WANTS

Wanted.—I would be grateful for the loan of any photograph or coloured drawing of specimens of *Lysandra coridon* of the various forms of *ab. extrema* as illustrated and described in Bright & Leeds' Monograph of the Chalk Hill Blue Butterfly, pl. 10 and 18.—S. G. Castle Russell, 5 Bridge Road, Cranleigh, Surrey.

Wanted.—Volume XV. (1903) of *The Entomologist's Record*, in parts as issued. £1 offered.—F. W. Byers, 59 Gurney Court Road, St. Albans, Herts.

Wanted.—At a reasonable price: Volume 9 of Seitz Macrolepidoptera of the World. *English Edition*, i.e. "The Indo-Australian Rhopalocera."—Capt. A. W. H. Row, 18 Macaulay, Widcombe Hill, Bath, Somerset (Telephone Bath 61336).

Wanted.—Owing to the occurrence of virus disease amongst the Laboratory stock of *Biston betularia*, it will be necessary to breed from fresh material next year. Would anyone willing to supply either *typical*, *carbonaria*, or *insularia* pupae (either exchange or cash) please notify:—The Secretary, Genetics Laboratory, Department of Zoology, University Museum, Oxford.—Dr. H. B. D. Kettlewell, Department of Zoology, Capetown University, Rondebosch, South Africa.

Wanted.—Distribution records in Great Britain and Eire of *Erebia epiphron* Knoch (Small Mountain Ringlet).—L. Christie, Station House, London Road, Hackbridge, Wallington, Surrey.

Exchange.—Entomologist 1888-1893. (Vols. 21-26 incl.) bound in green cloth, excellent condition. Also Tutt's 'Hints', Vols. 1 and 2 only. Poorly bound in card but letterpress good. Interleaved copy with some notes. *Wanted*.—Back numbers of the Record or Entomologists Monthly Magazine (bound or in parts).—Dr. N. L. Birkett, 3 Thorny Hills, Kendal.

Wanted.—Back numbers of *The Entomologist's Record* for 1951 (January to May inclusive); 10/- offered.—P. J. Gent, 3 Irthlingboro Road, Wellingborough.

Faint, illegible text, likely bleed-through from the reverse side of the page. The text is arranged in several paragraphs and appears to be a formal document or report.

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THE ENTOMOLOGIST'S RECORD

AND JOURNAL OF VARIATION

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

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ZOOLOGY

A Remarkable Case of Convergence in the Pupa and Cocoon of Two Agrotid Moths

By ALFRED HEDGES

A few years ago when rearing *Anarta cordigera* Thunb. and *Hadena bombycina* Hufn. *ab ovo* from females taken at Aviemore I was struck by the similarity of their early stages, especially their pupae and cocoons. The larva of *cordigera* might well be mistaken for a half-grown *bombycina* of the brown form, both being brown with yellowish stripes and fast moving. The pupae and cocoons, however, are extraordinarily alike and their ratio of pupal length to that of the cocoon is almost exact in both cases. The length of *cordigera* pupa, 12 mm., and cocoon 36 mm., being three times the length of the pupa, with *bombycina* pupa 18 mm. and cocoon averaging 50 mm. giving almost exactly the one third ratio again, as may be more readily seen by reference to Plates iv and v.

The pupae differ from those of any other British Macrolepidoptera in having spines on the somites. The arrangement of spines on the pupae of clearwings, swifts, and Cossids, which strictly speaking are not Macrolepidoptera, bears little resemblance to that of these Agrotids.

The cocoons are tubular and the pupae fit them just nicely. When the pupae are up at the top end of the cocoon if one touches them they work their way down to the bottom very rapidly, and if touched when at the bottom they reverse the process, so it is evident that the spines can be so worked as to propel the pupae either up or down the cocoon and no doubt do this many times during the winter. The cocoons always have the tail end just on the soil spun in moss and rubbish and they then stand up at about 45° as shown in Plate iv. There must of course be some definite reason for these tubular cocoons and the only reason I can suggest is that in winter, if flooding gets too bad, the pupae can come up to the top and let the water drain away.

I sent the pupae to Dr. Cockayne for his erudite description and he very kindly sent me the following:—

“In each species there is a ridge on the dorsal surface of the 5th, 6th, and 7th abdominal somites ending just above the spiracle, that of *cordigera* being rather higher and sharper than that of *bombycina*. Along the ridge there is a row of hooked spines with the points directed towards the anal extremity, those of *cordigera* arranged more evenly and of more uniform size. Some of those of *bombycina* are smaller than others and sometimes two are partially fused, arising from a common base. The cremaster of *cordigera* is small, ending in two blunt processes; that of *bombycina* is broad with an inner pair of small sharp spines and an outer pair of much larger ones with their conical bases projecting laterally almost at right angles to the last somite. From the conical base arises a spine curving inwards.”

He also told me that Dr. Skat Hoffmeyer says the peculiar pupae and cocoons are mentioned by Nordström in his book *Svenska Fjärilar*.

Now what conclusion can one come to to account for this close similarity between two apparently widely separated species? Is it environmental or was there some relationship in a bygone age? The early life of their congeners is very different. *H. w-latinum* Dup. has

a similar larva but its pupa is smooth and its cocoon is very flimsy, just an ordinary normal oval chamber with plenty of room but no extra length as in *bombycina*. On the other side *Anarta myrtilli* Linn., which would appear to be the closest relation of *cordigera* from the appearance of the imago, has a totally different larva, a beautiful green powdered with white, not striped, and feeds exposed by day up on heather, whereas *cordigera* keeps under cover and like *bombycina* feeds chiefly at night. *Anarta melanopa* Thunb. is a little more like *cordigera* in the larva, but the pupa is just normal in shape with no spines and a normal oval cocoon houses it, so here is food for thought for the taxonomist and more advanced students than myself, but I felt I could not let this considerable similarity between these two species pass without recording it.

[I do not think relationship accounts for the similarity in the pupa and cocoon of *cordigera* and *bombycina*. I do not regard *bombycina* as a congener of any of the species placed by Tams in *Hadena*. *Hadena* is the correct name for the species we used to call *Dianthoecia* and with *Anepia irregularis* they form a very compact genus. Other generic names must be found for the remainder such as *w-latinum*, *contigua*,

EXPLANATION OF PLATES.

PLATE IV.

- Figs. 1, 2, 3. Cocoons of *Anarta cordigera*.
 Fig. 4. Pupa of *Anarta cordigera*.
 Fig. 5. Pupa of *Hadena bombycina*.
 Figs. 6, 7, 8. Cocoons of *Hadena bombycina*.

PLATE V.

- Fig. 1. Pupa of *Anarta cordigera*.
 Fig. 2. Pupa of *Hadena bombycina*.

and *thalassina*. *Bombycina* appears to me to be as far removed from any of these as all of them are from *Hadena* (*Dianthoecia*). *Cordigera* may not be congeneric with *myrtilli* and *melanopa* or with any of the other Palaearctic *Anarta*, but I know nothing of their early stages. I consider the resemblance in pupa and cocoon is due to convergence and it has been evolved to meet special environmental conditions common to both. I hope anyone who finds a cocoon of either species in its natural surroundings will make a careful note and send it to the *Record*. The relevant passage in Nordström's *Svenska Fjärilar* to which Mr. Hedges refers is as follows:—

“ *Hadena bombycina* (*Polia glauca*). The inner side setae of the anal somite are twice as far from one another as from the nearest outer ones, thereby differing from the other *Hadena* (*Polia*) larvae, such as *contigua*, *thalassina*, and *genistae* (*w-latinum*).

“ The larva spins a tube in moss or among plant fragments, leaning, often bent, closed at both ends, 60 mm. long, in the bottom of which it pupates; before emergence the pupa works itself halfway out of the cocoon by means of its peculiar armament. The pupa (fig. 48) is dark red-brown, rather shiny; abdominal somites 1-8 except at the hind edge punctate, somites 5-7 coarse and denser and with a crown of spines, interrupted on the abdominal side.





Fig. 1
Anarta cordigera

Fig. 2
Hadena bombycina

“ The larva of *Anarta cordigera* pupates in the same way as *H. bombycina*. The pupa has the same shape as that species (figs. 48, 49) and abdominal somites 5-7 have a similar armament, dark red brown with the front parts wrinkled; the front half of the abdominal somites fairly coarsely punctate.”

Nordström also describes the differing cremasters of the two species. I am indebted to Mr. Avery for translating these passages.—E. A. COCKAYNE.]

The Migrations of *Pontia daplidice* L. and *Euchloe ausonia* auct. in France

By VERA MOLESWORTH MUSPRATT, F.R.E.S.

At St. Jean-de-Luz in the summer of 1950 I had the pleasure of finding two different species of butterflies which were either very rare or unknown in this region. One of these butterflies is *Pontia daplidice* L., of which I had not seen ten specimens in all in about 25 years and these always in May, June or July, never in the autumn; nor did I ever see the vernal form *bellidice* Ochs. in the spring. Most of these isolated specimens were found not very far from my house, on a wind-swept bit of uncultivated ground about 400 metres from the Ocean; it is part of my ‘round’ of about a mile and a half where I go to see what is flying north of St. Jean-de-Luz.

On the 14th June when I was leaving this stretch of land I was not unduly surprised to see fly past my face what I thought was a rubbed specimen of *daplidice*; I secured it by a lucky stroke of the net. Looking at my captures later I was very astonished to see it was no *daplidice* but a ♂ *Euchloe ausonia* auct. (= *esper*i Kirby), a species that I had never seen here before.

The following days were wet or grey, but the 18th was beautiful. Full of hopes I went out that morning and it was pleasant to see in the same place six *ausonia* all feeding on the flowers of one *Raphanus* plant. I caught three together; the others disappeared, but remaining on the spot in the hope that they might come back I saw and caught two *daplidice*. The *ausonia* did not turn up again that morning. On the 19th I saw eleven *ausonia* and seven *daplidice*; I took a few, hoping that the others might found a colony. However, I sent word of my discovery to Mr. G. Adkin, who now lives at St. Jean-de-Luz, and he came up next morning. Fortunately some of the butterflies were still there, both *ausonia* and *daplidice*; he took some of each species and I took a few more; then we called it a day and left the others to found a colony!

On the 21st it was grey and rainy, but the 22nd was fine. Mr. Adkin (with my consent!) went back to see if he could get a few more *daplidice*. He saw only one spoilt female, which he let go, and two *ausonia*. On the 24th I saw one *daplidice* and one *ausonia*; this was the last of the *ausonia*. On the 27th I saw one *daplidice*, then on the 12th July one ♂ and on the 19th one ♀. I found these butterflies feeding in lucerne fields, and I hoped that they might lay eggs in the area. I wondered if there would be any autumn brood; but although I hunted for them at the right period I found none. I believe that in hot summers *ausonia*

has been known to produce a third partial brood but that it is rare. Nothing turned up in the spring of '51, but on 17th July I found one *daplidice* ♂ and on the 24th one ♀. In 1952 and '53 I saw none; unfortunately my colony has existed only in my imagination!

All the *ausonia* were more or less rubbed; they must have been on the wing some little time. The *daplidice* as a whole were fresh and in good condition.

In comparing notes Mr. Adkin and I came to the conclusion that *ausonia* and *Pieris rapae* looked very much alike when flying; we constantly found ourselves going after *rapae* by mistake. They are the same size, fly in the same manner, and one had to get fairly near them to see the difference. *E. ausonia*, like *P. rapae*, rested on flowers with their wings closed, whilst *daplidice* flew quite differently, a bolder, nervous, quick flight, and when they rested it was usually on the ground and always with their wings spread. I think both these species must have been scattered in the region as Mr. Adkin took an *ausonia* on the 18th June at about 26 km. north of St. Jean-de-Luz, and he had also seen a *daplidice* on the 14th in the Park here. They did not stay long and I was so busy looking for them on my rounds that I had no time to go further afield. *E. ausonia* showed signs of mating, but *daplidice* none at all.

When I caught my first *ausonia* I thought it might be the first one taken in this department; but Mr. Adkin told me that he had taken one in his region round Bayonne on the 19th June 1936; he had also taken one *daplidice* on the 27th June 1931—only these two in nine years and he had not seen any others. Evidently *daplidice* comes here in very small numbers, but there seems to be a sketch of a northern movement in the early summer which almost turned into a picture in 1950. I have never seen any in the autumn.

In his Catalogue of the Lepidoptera of the Basses Pyrénées (1895) Mons. M. Larralde does not mention *ausonia*, but he gives two places near together for *daplidice* in April and July. They are about 60 km. from here, and so far I have not been able to get there.

I think both these species were migrating through this region in 1950, though I could not detect any movement in any given direction. They flew here and there, resting, and *ausonia* was busy feeding.

There are two records of *ausonia* having been found in England; both are recorded in *Entomologist*, 1949, pp. 72 and 153. In each case there were only two specimens and these seem more likely to have been wanderers than immigrants. However, there is an interesting observation in *L'Entomologiste*, vol. VII (1951), p. 161, which I think indicates a migration. It was recorded by Mons. E. Rivalier and this is what he says:—

“During the Easter holidays of 1948, which were early and sunny, I was surprised to see *Euchloe crameri* (= *ausonia*) flying in numbers north of Loches (Indre et Loire) and particularly on the edges of Chanceux Wood. I took these butterflies between the 21st and 28th March. They were nearly all in excellent condition. *Leucochloe daplidice* was flying with them, but *crameri* was in much greater numbers. I know the Loches region very well and ever since I was a child I have gone back there many times each year; I have practically always been there at Easter, and for the last fifty years I have taken a great

interest in the entomology of this region. During these fifty years the same weather conditions during the seasons must have obtained more than once, and I found these butterflies in a place which I used to pass nearly every day. As therefore I had never seen this species before 1948 it must have been either very rare or completely absent in the Loches region, where indeed it seems to be a new arrival. I was unable to go far afield, so I do not know if *crameri* was common in other places round Loches."

After reading this Note I wrote to M. Rivalier to ask him if *ausonia=crameri* had continued to appear north of Loches since 1948. He kindly sent me this answer:—"I was unable to go back to Loches in June 1948 to see if there was a summer brood; but in 1949 I saw it again though in much smaller numbers. Since then I have not seen any and this year (1951), being at Loches at the right season, I have searched in vain all the places where it was flying in 1948. I do not know if the 1948 lot were migrating, but I do not think so as they were extremely fresh and the ♀♀ seemed to be just out. If there was a migration it is more likely to have taken place in the summer of '47, which was notably a hot one."

It seems to me from this letter that there must have been a migration to Loches and that probably it occurred, as M. Rivalier suggested, in 1947, also that it was probably the summer brood *esperii*, as these further observations seem tentatively to show.

After the unusual occurrence of *ausonia* at St. Jean-de-Luz I wrote to a few French correspondents to ask them if this species flew in their region and if so could they give me any observations on this insect's behaviour. Four correspondents reported that *ausonia* occurred in their regions; they all kindly answered my question and their answers were curiously alike. M. Marion (Nièvre), M. Caruel (Marne), M. Levèsque (Deux Sèvres) and M. L'Abbé Vigneau (Gironde) all said the same thing, that the generation *belia* Cram. is "more abundant than the second one *esperii* Kirby". Constant, in his *Catalogue du Saone et Loire* (1866) says under *belia* Esp. "not common; flies in April and May", then under *ausonia*, "rare", adding that "some modern authors consider this species the summer brood of *belia*"!

These few observations from various regions that are widely apart in France make me wonder if some of the butterflies of the second generation *esperii* do not *always* disperse or migrate from their usual habitat, so that one could almost call it a yearly migration. To ascertain this possibility, however, a great many consecutive observations over some years would be required.

From observations which have been kindly sent me by French lepidopterists it would seem that *daplidice* is of very uncertain occurrence in some regions of France and, what is more, it seems to be indigenous in some departments where one would think it too cold for the species to live. The butterflies do not seem to migrate regularly (perhaps a lack of observers) and turn up in some regions quite unexpectedly and where they have not been seen for years.

In 1945, which was a very plentiful year for *daplidice*, M. Salerou (Eure) reported that it was unusually abundant from the 10th July to the end of September and that he had not seen it since 1936. None was seen in 1946. It was also very abundant in 1945 in the Orne and Seine Inférieure. M. Berjot (Oise) had the same experience as M. Salerou:

he had not seen this species for ten years when, in August 1944, he found two specimens. In 1945 they were in such profusion that they were flying all over the place and it was the commonest butterfly on the wing in July-August. He did not see any of the spring brood, if there was one, but says that at that time he was always hunting for other larvae in the forest.

Now these are northern provinces where it seems that *daplidice* does not live or get to regularly every year; but in the Marne, and in its most northern part, M. Caruel tells me that it is indigenous and flies there regularly every year; he kindly sent me a lovely series of the form *bellidice* Ochs. taken near Rheims. The Marne is in the same latitude as the Eure but further east, and is usually colder!

In the Loiret and Nièvre *daplidice* is also indigenous, but in the latter department M. Marion tells me that after a period of great abundance it disappears completely for some years. M. Fischer, in his Catalogue of the Lepidoptera of Alsace (1940-41), says it flies commonly in Alsace, in both generations, every year, and this department has very cold winters. Gélin and Lucas in their *Catalogue* says that *daplidice* is found all along the Atlantic coast of France as well as in the Dordogne and Lot et Garonne, and Constant, in his Catalogue (1866) of the Soane-et-Loire, which department is just south-east of the Nièvre, says that it is rare. It occurs constantly round about Toulouse, and from general information as well as from special observations kindly sent to me by Lt.-Col. N. Eliot (Var) and M. de Puységur (Herault) it seems to be common round the Mediterranean.

I am aware that the above information is scrappy and I am certain that the departments quoted in this paper are by no means the only ones in which *daplidice* lives in France; there must be other regions in that country where it is indigenous. However, I do think it is curious to find that it can live in Alsace and in the Marne but has not been able to establish itself round Bayonne and St. Jean-de-Luz. I do not think the reason for this is a lack of food-plants. Perhaps it is too wet in this region so near the Atlantic; Larralde's locality, which I have mentioned above, is about 50 km. inland from the ocean.

Some observations which Mr. A. Valletta has kindly sent me from Malta indicate that it is not only in France that *daplidice* is capricious in its appearances. "In 1948", he writes, "*daplidice* migrated to Malta in thousands in March. In 1949 and 1950 it decreased in numbers. I did not see a single specimen on the wing in 1951, yet a few must have found this island as on the 25th July I found a larva on the usual food-plant, *Diplotaxis tenuifolia*; it pupated on the 29th and a ♂ emerged on the 3rd of August. In 1952 it was fairly common in April and the first week of May, but in the autumn was rare again. In 1953 it did not appear in spring, but was fairly common in the autumn, especially during October. I have noticed that the drier the season the more we have of this species".

A few entomologists have seen *daplidice* crossing the Pyrenees and going south in the autumn, and I have just received the following observation from M. H. Descimon, who saw between 50 and 100 migrating F.N.E. down the Pouey Aspé valley above Gavarnie (Hautes Pyrénées) on the 31st July 1953. They were coming from Spain and were scattered in the trough of the valley, all going down it. Their condition was

very poor, all torn and rubbed, and they certainly looked as if they had been some time on the wing.

To conclude at present: I wonder if these two species, with their primitive black and white colouration, are not very old ones whose migrating genes are getting more and more obsolete and that under some special, more accentuated, stimulus than is necessary for the regular migrating species, they are sent once more on their travels which in olden days did bring them to regions where sometimes they could live all the year round.

Observations on the Early Stages of *Apatura iris* Linn.

By H. C. DUNK.

This article was nearing completion when the February issue, containing the notes by Mr. H. Symes, arrived. Apart from the excellent life history by Stanley Morris, which Mr. Symes mentions, very little has been written about the habits of this butterfly in recent years and it is hoped that other readers will add their experiences.

My own observations have been made in half a dozen localities in Buckinghamshire, Oxfordshire and Northamptonshire, but the most interesting comparisons have occurred in two areas of contrasting character as described below.

Area 1. A large forest of mature growth, mainly oaks, intersected with wide rides and clearings. Most of the rides contain sallows, some over 25 feet high, on both sides.

Area 2. A wood which has been extensively felled, now overgrown with hazel and birch. Few trees of any size have been left and most of the rides are narrow and, in places, practically impassable. The majority of sallows are smaller than in Area 1 and are much more dispersed and inaccessible.

The choice of broad-leaved sallows.—I have rarely found much on narrow-leaved sallows, and it is generally accepted that these are less favoured than the broad-leaved types. However, one tends to spend more time searching the varieties which have produced results in past years, and in so doing there is a growing assumption, possibly wrong, that it is a waste of time looking on the narrow-leaved bushes. In 1953 I had a good example of this apparent discrimination by the female. A Buckinghamshire wood which I had never seen before was visited in late July in the hope of discovering the insect, but in a stay of over two hours no Purple Emperors were seen. There were a few very tall sallows which could not be inspected along one ride. On the outskirts of the wood there were large clumps of sallows, some of mature growth, but they were all the narrow-leaved varieties and a thorough and prolonged search produced nothing. I had already decided that the occurrence of the species in this wood was unlikely when a single broad-leaved sallow, about twelve feet high, was noticed in a sheltered corner. Within five minutes two eggs were found on the lower branches. No further trees of this type were located anywhere in the vicinity.

Area of egg laying.—As Mr. Symes points out, there are undoubtedly "favourite" trees on which eggs and larvae can be found year after

year. These old trees are not always in a position generally considered ideal, and one in particular which I have in mind is well away from cover on all four sides. But it has that "Purple Emperor" look which one instinctively associates with this species after experience. The female must, however, range over most of the wood during egg laying. In 1952 eggs were found in a favourite clearing and along several paths nearby. One very overgrown path led away from the area of the larger trees and for a distance of 200 yards there was no sign of any willows. Yet on an isolated sapling, only about eight feet high, two eggs were detected despite the fact that no further willows could be seen for another 100 yards along the pathway. Later on, several equally isolated trees and bushes far removed from any oaks or large trees of any kind were found to hold eggs. The butterflies had never been seen in these parts of the wood.

Position and aspect of bush for ovipositing.—Bushes and trees well open to the north and east are regularly selected and in Area 1 the females usually fly straight into a bush from a ride. In Area 2, however, many of the willows are only accessible from the top and in fact are quite often unnoticed till the winter. These willows are closely surrounded by birch and hazel, and it would be difficult, if not impossible, for the female to "strike the tree" from any quarter as described by Frohawk.

Height and position of eggs on bush.—A good average would be 4-8 feet in height and most of the females watched closely have appeared to favour this position. Eggs are, however, deposited at the top of very tall willows and I have found them, and newly-hatched larvae, in the topmost branches of a 25-ft. tree. These would have little respite from sun or rain. As a complete contrast, in 1952 an egg was found on the sunny side of a puny bush of narrow-leaved willow, only three feet high. Eggs are usually deposited well inside the bush, but when outer leaves are selected the position is often sunny and exposed. This particular departure from recognised habit is more noticeable in Area 2, where on several occasions the sunny side of the bush has been used to the apparent exclusion of the shady and open side.

Position of eggs on leaf.—As Frohawk emphasised that the female apparently favoured the right side of the leaf for depositing, the following analysis may be of interest.

Date,	Number of eggs found.	Right side of leaf.	Left side of leaf.	On the midrib.
22/7/50	20	14	6	—
29/7/50	34	16	15	3

Most of these eggs were found on four bushes in an area of about twenty yards, over thirty being on one bush. A female was seen depositing in this restricted area, a small clearing, on both occasions but never more than one at the same time. It would, therefore, be reasonable to suppose that a good proportion of these eggs came from this one female.

Position chosen by larva for hibernation.—The fork of a bush or tree appears to be the usual choice both in the wild and captivity, but some have been found at the top or bottom of notches on branches. Larvae have been located as high as 10 feet on branches pulled over for inspection, and as low as 3 feet. In December 1951 a larva was found wild

on the notch of a branch known to have been dead at least 12 months before. This might suggest that awakening in the spring is not entirely dependant on rising sap—a theory which has been advanced.

Despite careful searches in the wild, larvae have never been found hibernating in a leaf as described by Frohawk. On two occasions in captivity, both during the winter of 1951-52 but in different sleeves, a larva has successfully wintered *on* a leaf. The circumstances were identical. In July, a leaf holding an egg had been tied to a branch and in October a larva chose this position for hibernation. The larvae were partly visible throughout the winter and the leaf was in no way made secure as described by Frohawk.

Colour of larva during hibernation.—The colour of the larva does not always match the site chosen as exactly as would be expected. Some found on notches in the wild appeared to be browner than those in forks, but this may have been coincidental. I have one record of a larva never really losing its green colouration during the winter. It was found wild in December, a normal green, astride a thin branch of a bush overhanging a path. The position was an unnatural one for hibernation and as it seemed impossible for such a conspicuous object to survive long on a bare tree, the branch was cut off. The larva became active on the way home and soon settled down in a fork when transferred to a sleeved growing tree in the garden. Remaining a lightish green throughout the winter it was always very obvious during the whole period of hibernation.

Movement during hibernation.—On several occasions in captivity a larva has shifted its position, perhaps only a quarter of an inch, for no apparent reason some weeks after settling down for the winter. Larvae found wild in December have crawled freely within an hour of the branch being cut from the tree and settled down quite easily when transferred to a tree growing in the garden. In December 1950 twelve larvae were discovered hibernating during a three-hour search and the branches were carefully marked. On examination early in the following February every one had apparently disappeared and it was assumed that they had been taken by natural enemies. In the following May, however, two half-grown larvae were found on branches from which a larva had disappeared in hibernation. It seems possible that these might have moved from the original marked position and thus escaped detection during the February check-up. Early February would surely be too early for the larva to awaken and move towards a leaf ready for feeding.

In conclusion, I agree entirely with Mr. Symes that, in the long run, searching for larvae produces more satisfaction than beating—apart from the disfigurement caused to the bush. In addition, of course, the Purple Emperor can be found in any one of its four stages in the appropriate part of every year. Very few insects give such an opportunity and this fact alone enables plenty of research to be carried out in the wild by those people like myself who have only week-ends at their disposal. Each year I plan to explore several new woods where I have never been before, usually in the winter or spring. The results have been encouraging because eggs and larvae, both during and after hibernation, have been discovered in places which probably would not be visited at all during the busy month of July.

An Entomologist in Argentina

VI. Citrus entomologist

By KENNETH J. HAYWARD, D.Sc. (Hon.), F.R.E.S.

My collecting trip to Misiones having served its purpose in delaying my proposed departure from Argentina for sufficient time to avoid my arriving in England during winter, I now began to make plans for sailing. However, before I had come to any definite arrangement, my friends the brothers Breyer intervened, and asked me to stay on for a further two months and make a publicity trip through the citrus growing districts of north-eastern Argentina for a firm of insecticide and fungicide manufacturers in which they were interested. Little did I think that my agreeing to do so was to lead to my becoming a professional entomologist and to permanent residence in Argentina!

There is little of interest to be written about the trip itself. I left early in June by river steamer up the Uruguay to Concordia where I spent a fortnight visiting the local citrus plantations and those across the river in Uruguay before travelling slowly across country to the Paraná and up this river to Corrientes. Between Corrientes and Posadas the river was so low that normal traffic had been suspended and I was compelled to make the trip in what was little better than a large launch. The low water enabled me to appreciate the danger offered to navigation by the cataracts of Apipé as everywhere rocks, usually hidden from the sight of unsuspecting passengers, lay exposed and the passage through them showed itself to be a tortuous channel between two walls of rock that seemed scarcely wide enough to take the larger steamers.

I spent some time in southern Misiones, where there were a number of grapefruit plantations spread out along the Alto Uruguay, before returning by train to Concordia and from here to Buenos Aires, again by river.

At each of my stopping places I took the opportunity of collecting, but it was mid-winter and although there is no moment of the year in northern Argentina when insects cannot be found, they had to be searched for under loose bark, stones and in such like places. On sunny days there were always plenty of butterflies about and one morning in southern Misiones I counted nearly thirty species, but they were mostly very worn.

Spraying oils and fungicides were something of a novelty in Argentina in those days and my visit aroused considerable interest and the contacts I made proved very useful when shortly afterwards I became official citrus entomologist for this area, I might say general entomologist as we had no other, for it was during the course of this trip that I received a telegram from the Ministry of Agriculture asking whether I would accept a post as entomologist. Replying in the affirmative, I found on my return to Buenos Aires that I had been appointed to the Concordia citrus Experiment Station. In this appointment I considered myself lucky, as with the exception of the Loreto Experiment Station in Misiones, where there was already an entomologist, Concordia was undoubtedly the most interesting from an entomological point of view.

I missed the mountains of La Rioja and the freedom of the *quebracho* forests of northern Santa Fé with their unlimited shooting, but Con-

cordia was beautiful in a less rugged way and but for the endless citrus plantations was not unlike certain parts of England, for the terrain was undulating and windbreaks planted everywhere gave it a wooded aspect.

The Experiment Station lay a mile to the north of the town on some high ground, the buildings where I lived and had my laboratories being surrounded by the plantations. My duties were multiple as we were grossly under-staffed. Although nominally the entomologist, I had to double as pathologist and do my share of the work of photographer and chemist and when the Director was absent, to undertake his duties as well. In consequence I was seldom idle.

Apart from Concordia and its immediate neighbourhood where there were at that time nearly three million citrus trees, mostly mandarines for which the region is famous, I was entomologist in charge of the whole citrus growing zone of north-eastern Argentina, an area more than half as large again as England. From time to time I would be detached and sent to visit the citrus plantings of Tucuman, Salta and Jujuy, and once I was ordered to Mendoza and San Juan to report on a beetle pest of alfalfa.

When I first went to Concordia most of the plantations were in a very poor sanitary condition, the trees being heavily attacked by scale, especially by the so-called 'snow scale' (*Unaspis citri*), sometimes so severely that the trunk and branches appeared to have been white-washed. The mandarine fruit itself was also being badly disfigured by a fungous scab, at least 97% of all fruit being blemished. How little importance was then attached to this aspect of citrus culture will be realised when I add that outside the Experiment Station there was only one power sprayer in the whole district. Although we had a hard time at first, we gradually convinced the growers that sanitation paid, and when I left Concordia six years later, scale had been reduced to a minor problem and all the larger estates owned their own motor spraying machines. As 'pathologist' I had evolved a simple spray programme that took care of the *Sphaceloma* scab. The last four years of my stay at this Experiment Station were devoted principally to a study of fruit flies which had suddenly become of paramount importance in the fruit-growing districts of central and northern Argentina, and this work was considered of sufficient importance to warrant my being given an assistant and increased laboratory facilities.

The country round Concordia was on the whole so densely planted with citrus that there were few places left where one could collect and I never encountered much of interest with the exception of the rather scarce *Euryades corethrus* (Papilionidae) that was to be found on some waste ground belonging to the Golf Club. There was, however, one splendid collecting area that lay between the Experiment Station and the river Uruguay half a mile to the east, and to reach this spot I had only to cross one of our fields and the intervening road. This was an old estate known as San Carlos, once the property of a French nobleman and now belonging to the Municipality and allowed to run wild. It consisted of several hundred acres of very undulating land, the knolls crowned with clumps of bushes and cactus, the low-lying ground along the river with woodland that was subject to flooding. As it was some distance from the town it was little visited and was a sanctuary for

many scarce birds. In the hollows there were several springs and from these small trickles of water found their way to the river, forming narrow strips of swamp with their attendant moisture-loving trees and aquatic vegetation. One never knew what to expect when collecting in San Carlos as the rafts of floating water hyacinth that the river brought down in time of flood sometimes left behind them specimens of a more tropic fauna or seeds of strange plants that when the water subsided would take root and grow. In spring it would be heavy with the scent of mimosa and bright with flowers and it was here that I found the larvae of *Morpho catenarius argentinus* which lived gregariously on *Inga uruguensis**, red like the flowers; only quite recently have I disposed of the last of those I bred. San Carlos was also a great place for scale insects in which I was at that time interested and of the sixty-seven species I found within a five mile radius of Concordia, most of those not occurring on cultivated plants came from here. It was here also that I discovered the nest of a small humming bird which except for its downy lining had been constructed entirely of hundreds of the tiny chinese-lantern shaped egg sacs of a spider which the birds had laboriously collected. Since those days this delightful spot has been turned into a municipal park, the undergrowth cleared away and the weeds suppressed, there is a motor racing track and all the usual amenities of such parks. *Sic transit gloria Sancti Caroli!* The inexorable advance of civilisation has wiped out yet another of those few remaining strips of riverside forest that lie along the Paraná and Uruguay, where plants and insects from a more tropic clime have been transported and survived, giving joy to the naturalist who wandering there comes unexpectedly upon them.

My travelling was just sufficiently spaced to prevent its becoming boring and it interrupted the monotony of my daily laboratory routine and field work, the latter chiefly plantation inspection and the supervision of my spraying squads. From a citrus point of view the plantations of southern and western Corrientes were the most interesting, but my visits to what was known as the Pindapoy district in north-eastern Corrientes and southern Misiones offered more scope for collecting, especially along the Alto Uruguay which had up to that time never been visited by an entomologist.

Although much large scale planting was now taking place, the majority of the citrus groves of western Corrientes along the Paraná were small in area and composed of seedling trees, often from eighty to a hundred years old. These trees had grown to great size and showed their age, for they had been sadly neglected and the dead wood had not been cut away and, further, many of them were severely attacked by a virus; but they still produced their annual crop, which was considered poor if it did not reach about four thousand oranges per tree. Since they had been grown from seed and not grafted as is the custom to-day, these plantations held a great fascination for me as sometimes when inspecting them I found strange mutations or crosses, such for instance as an orange tree which the locusts never touched (they not only strip

*A more favourite foodplant where available is *Scutia buxifolia* (Rhamnaceae). The breeding places of this, the most austral of all the Morphos, are year by year becoming fewer as woodland is being cleared for commercial and other projects.

the orange of its leaves but even eat the tender bark), or the mandarine whose fruit did not ripen till several months after the main crop had been harvested, thus allowing it to be placed on the market during the hot days of late spring when little citrus fruit was available. I used when possible to take back budwood from these trees, and then there was the anticipation of seeing what the grafted stock produced.

My most frequent visits, however, were to the Pindapoy area which was new and where planting was being undertaken on a large scale, mainly grapefruit for the London market. The railway journey to these distant places was somewhat monotonous after the excitement of the first hour or so as the way lay for the most part over flat grassy plains relieved only by scattered *algarrobo* and mesquite (*Prosopis* spp.). But there was one place where there were always large numbers of rhea, the so-called South American ostrich, and amongst these there was one flock in which there existed a strain of white, though I never saw a true albino. Towards evening the train ran for a while through low-lying swampy meadows, often with shallow surface water, and for a time one had the pleasure of watching duck and teal, ibis, heron, snipe and all the gamut of water-loving birdlife.

Travelling in western Corrientes I lived in the towns and villages, putting up at the small hotels, but in the Pindapoy zone the estates were widely scattered and it was the custom of the owners to give me hospitality and when I had finished my work to pass me on to a neighbour. Living thus amongst the plantations, most of which lay in areas that had but recently been forest, I was able to snatch many odd moments for collecting, and when visiting the estates along the Alto Uruguay we often spent a Sunday on the river, exploring, or fishing for *dorado*, or even crossing to Brazil to buy the coarse black twist tobacco every settler made and which at that time cost me about eight-pence a pound. Whenever possible I tried to arrange to end my trip on the extreme eastern border of my area where there was a plantation right on the river, surrounded by forest and weed and bush-covered waste. Here I would take a day or two off for collecting and many were the interesting insects of all orders that I found, even at the garden flowers. It was near here, when collecting one morning in some forest at the bottom of a hollow where the ground was wet and swampy and where one would have expected any self-respecting citrus tree to have died long since, that I found eight aged orange trees growing in a perfectly straight line and at exactly the same distance apart; man-planted, for no freak of nature could have caused them to grow so mathematically spaced. These were without doubt the relics of some Jesuit garden, and the Jesuits had been expelled more than three centuries before! I searched for any signs of ruins but not a trace remained.

Orange trees may live to about 400 years, that planted by San Francisco de Solano in front of his small adobe cell in La Rioja reached that age and bore fruit up till the time of its death a few years ago. In the full glory of their productiveness these old trees sometimes bear enormous crops, from eight to ten thousand oranges not being unusual and there is a record of 24,000, truly an exceptional yield for a single tree.

As few people had a better knowledge of the citrus growing area of the north-east than I did, visiting experts were usually entrusted to my care for their personally conducted tours, and thus I had the pleasure

of meeting many charming people, especially two, pre-eminent in their respective callings, Filippo Silvestri of Italy and Professor Fawcett of California. When I asked the latter to autograph his great book on citrus diseases he expressed a hope that it had never done me any harm!

My work was too general and occupied too much of my time to allow of my carrying out much detailed biological study, though I now and again managed to do a little investigation on a small scale.

One of my experiments was related to the beetle *Trox suberosus*, or *champi* as it was locally called, as a factor in locust-egg control. I had heard many stories about this insect when investigating the locust in La Rioja during the winter of 1933, so when it appeared in numbers following egg laying by a swarm of locusts, I seized the opportunity of finding out for myself if there was any truth in the matter. The results observed were surprising, the *champi* and its larvae cleaned up the locust eggs so that the few hoppers that emerged were easily disposed of by the birds. Unfortunately there are many technical difficulties in the way of employing this natural enemy in practical biological control.

I also did a lot of experimenting with baits for attracting fruitflies and these produced most interesting results, showing that the same product was not always equally attractive to both sexes and that a good attractant for a given species in one district was sometimes not the best in others, due no doubt to some combination of local factors. My trapping experiments which when added up were equivalent to the exposure of one trap for more than a hundred years and which were carried out simultaneously all over my area, brought to light new species of fruitflies and others whose presence had never been suspected.

As the years passed my interest in citrus insects began to wane. I was finding little new and had come to know most of the local plantations almost as well as I knew our own. Even my fruitfly work was falling into a routine groove. The little time I had left for investigation was being more and more taken up in testing new insecticides, a job for which I had little heart, especially for the long hours spent checking dead and living scale. Therefore when I was offered a contract to go to the Tucuman Agricultural Experiment Station, a provincial Institution, as Chief of the Department of Entomology, I lost little time in accepting. I was influenced entirely by the hope of greater diversity in my work and in the possibility offered of learning something new, since the Ministry of Agriculture on hearing of my decision immediately offered me better terms to remain with them, in fact I would like to put it on record that they kept my job open for me for two years in case I might wish to return.

Thus in March of 1940 I left Concordia, taking with me a treasured memory of its people and plantations and of my introduction to economic entomology.

Lepidoptera in North-East Derbyshire, 1953

By J. H. JOHNSON.

Work with Light.—Two simple box type light-traps were used during 1953. Trap No. 1, illuminated by a 100-watt gas-filled electric lamp, was fastened to a brick wall facing North about three yards above ground

level and operated every night from dusk to dawn between 1st May and 19th August. Trap No. 2, illuminated by an 80-watt mercury vapour lamp, was fastened to a wall facing South, also about three yards above ground level, and operated regularly from 1st May to 19th August when it was moved to another position facing North and used regularly until 10th December. Separating the areas covered by the two traps was a row of substantial brick-built houses about ten yards high which served as a very efficient wind-break and produced on some nights two noticeably different micro-climates. Had it been possible I would have used an 80-watt m.v. lamp in both traps, but the powerful m.v. light confused engine-drivers on the main railway line about two miles away and after I had used it in the north-facing trap for a few nights in April the station-master requested me to remove it or replace it with an ordinary electric lamp which has no effect on the drivers' sight. Although my first aim to demonstrate the effect of wind direction and velocity on the number of moths taken in identical traps facing opposite ways was thus obstructed, the results obtained with the two traps above described showed clearly, to my satisfaction at least, that:—

(i) A trap facing the wind takes fewer insects than a trap which faces away from the wind;

(ii) The position of the trap is more important than the type of illumination used;

(iii) When the wind velocity can be described as very strong, from whichever direction it is blowing, very few moths are taken in any box type light-trap;

(iv) Although the m.v. lamp is the better attractant, ordinary gas-filled electric lamps are a satisfactory substitute.

The following table shows clearly how wind direction affected the number of moths trapped during one week in July. If it is borne in mind that Trap No. 1 faced North and Trap No. 2 faced South the correlation of the wind with the number of moths will be obvious. The wind direction, temperature and humidity were recorded at 9.0 p.m. on the evening when the lamp was switched on, and the maximum and minimum temperatures and rainfall were recorded at 9.0 a.m. when the traps were opened. The remarks in the last column are rough estimates based on observations made before midnight or slightly later. Often the wind drops in the early hours, but this probably has little effect on the numbers in the trap. Throughout the whole week there was no sign of the moon during any part of the night. The number of moths recorded refers to those lepidoptera found *inside, or resting on the trap itself, only.*

TABLE I.

Date.	Temperature °F.		Relative humidity.	Rain-fall.	No. of Moths		Wind direction.	Remarks.	
	Min. 9 p.m.	Max.			Trap 1.	Trap 2.			
July 4	55	63	70	68	0	17	450	N.	Dull, calm
„ 5	52	62	75	72	0	15	58	N.E.	Clear, calm
„ 6	60	68	79	70	0	15	5	S.W.	Very windy
„ 7	56	65	75	59	·07	45	27	S.W.	Cloudy, calm
„ 8	53	61	72	72	0	12	3	S.W.	Very windy
„ 9	53	58	68	70	·04	14	8	W.S.W.	Clear, windy
„ 10	52	54	64	87	·25	0	79	N.W.	Showery, calm
„ 11	49	57	66	88	·01	23	34	N.	Calm, clear

It is clear from this short extract from my records that when the wind was in the North the mercury vapour lamp was more attractive, but when the wind was in the South the gas-filled electric lamp showed better results. On those nights when there was no perceptible wind movement in any direction, then the m.v. invariably proved more successful as on 4th July and on 11th July.

The most propitious night for insect flight, judging by the number of moths in the m.v. illuminated trap, was 7th August, and I think it will be interesting to look at my figures for the nights before and after it.

TABLE II.

Date.	Temperature °F.		Relative humidity			Rain-fall.		No. of Moths		Wind direction.	Remarks.
	Min. 9 p.m.	Max.	humi- dity.	Rain- fall.	No. of Moths Trap 1.	No. of Moths Trap 2.					
Aug. 4	58	64	73	68	0	137	92	S.W.	Windy.		
„ 5	57	65	78	89	·02	22	170	N.W.	Windy, drizzle		
„ 6	58	60	65	71	0	17	401	N.W.	Very windy		
„ 7	63	64	71	89	0	178	1124	N.W.	Slight breeze		
„ 8	60	69	80	80	0	276	259	S.	Calm, close		
„ 9	56	68	80	84	0	148	265	N.	Windy, cloudy		
„ 10	55	66	80	74	0	118	625	N.W.	Calm		

It is clear from this short extract, too, that the number of moths in each trap varies with the wind direction. The correlation of high humidity with a large number of moths is not always apparent. These figures could easily be subjected to mathematical treatment, but I think the labour would merely underline what is already apparent. Statistical treatment will undoubtedly be necessary to ascertain which atmospheric condition or set of conditions is likely to produce an excellent catch, since this is not apparent by simple comparison of figures; but data from many more traps would have to be included to make this labour worth while. Incidentally, the labour involved in the operation of a single trap is not inconsiderable. My traps were switched on regularly every night at dusk and emptied as soon as possible after the dawn switch-off. It is in the early mornings when it is an advantage to be enthusiastic; occasionally only the thought that *Catocala fraxini* might be waiting has dragged me out to begin the chores which have kept me occupied until now. Very occasionally I have taken advantage of the power of tetrachlorethane to keep the victims quiescent until a reasonable hour of morning, but usually I relied on egg-trays placed in such a way as to give plenty of hiding places. The records show that sufficient insects were taken to keep one worker busy. An accurate scientific record should give the sex and variety of every moth taken in the trap, e.g., *Entomologist*, Vol. 86, p. 229; but this is possible only in what are usually described as poor collecting areas. In a good locality, such as one near oak woods, the material in the trap would keep several collectors busy nearly every day, and on some days in August the whole staff of the British Museum would be needed!

On this account it is probably more profitable for the solitary worker to set up his trap in a position to which moths move only on fairly good nights. His catch may be smaller, but he will be able to deal with it and scrutinize it carefully enough to make significant observations. At least he will find out which insects are in the habit of making long flights. For instance *Perizoma albulata* Schf., said to feed on Yellow

Rattle, appeared on three occasions in a trap at least two miles from the nearest plant of this species. This movement may have been induced by the ploughing up of old pastures. There are, of course, many puzzling features in this method of collecting, but in order to add interest to my records I have classified the species taken into four groups:—

(a) Those which are abundant in the trap in their season and obviously settled residents, that is, they are well inside the limit of their range, conditions suit them and they respond well to m.v. lamps. If more than 50 were taken in the trap, I have included that species in this group.

(b) Those which are common enough to be found when looked for, including all those species of which between 10 and 50 individuals visited the trap.

(c) Those which are abundant within a few miles of the traps and yet are rarely attracted by them.

(d) Those which are rarely seen or quite unexpected. Not more than 5 taken.

I have listed them in the order in which they visited the traps. It is well known that many specimens of a species of moth are observed near their foodplants in the vicinity of light-traps many days before they actually enter a trap. It is probably not wrong to suppose that in all districts the time between the date of the eclosion of a species and the date of its first appearance at the m.v. light-trap is fairly constant although difficult to check, therefore I think the dates both of first and last appearance in the trap will have more than local value.

In my list the first number in the brackets after the author's name is the number of moths of that species taken in the m.v. trap, the second number refers to those taken in the 100-watt electric lamp trap. I have added relevant data when possible.

LIST OF LEPIDOPTERA TAKEN IN LIGHT TRAPS, 1953.

A. Abundant.

Orthosia gothica L. (64) (0). 25th April-1st June. First appearance at sallow 4th April.

Hadena thalassina Hufn. (50) (0). 4th May-4th July. One small specimen was taken at m.v. light on 6th September, but this is the only evidence of a second brood ever found. Fourteen were taken at sugar.

Spilosoma lubricipeda L. (148) (46). 18th May-11th July.

Apatele rumicis L. (80). 24th May-27th September. Five at sugar, none at 100-w. lamp. One specimen was taken in a garden on 20th April.

Xanthorhoe fluctuata L. (368) (40). 24th May-27th September. This species exhibits considerable variation in size and markings. There are two distinct broods.

Eupithecia vulgata Haw. (94) (35). 25th May-27th August.

Xanthorhoe spadicearia Schf. (*ferrugata* Stdg.). (95) (35). 25th May-28th August. There are two distinct broods.

Opisthograptis luteolata L. (*crataegata* L.). (101) (5). 24th May-2nd September. Scores of this species were observed most evenings near hawthorn hedges everywhere. A female taken at light on 2nd September laid six fertile eggs before she died. The second generation is much less numerous than the first.

Ceramica pisi L. (141) (23). 25th May-3rd August. Although usually a dowdy unattractive looking moth a fine reddish variation has been numerous this year.

Diataraxia oleracea L. (216) (58). 25th May-16th August. Thirty-five taken at sugar. No variation at all.

Agrotis exclamationis L. (407) (37). 26th May-6th September. Eighteen at sugar.

Apamea sordens Hufn. (*basilinea* Schif.). (116) (10). 26th May-16th July. Twenty-eight at sugar.

Spilosoma lutea Hufn. (*lubricipeda* L.). (78) (7). 28th May-5th July. A few very pale specimens.

Biston betularia L. (51) (0). 7th July-26th July. All were of the *ab. carbonaria* form except one which was a typical "Peppered".

Plusia gamma L. (66) (0). 7th July-21st September. None at the 100-w. lamp and only one seen at flowers in the daytime.

Caradrina morpheus Hufn. (79) (39). 8th June-14th August.

Procus fasciuncula Haw. (255) (12). 11th June-21st August. Sixty-seven at sugar. A very variable species, melanic specimens common. Several were seen at noon feeding at ragwort flowers on more than one occasion.

(To be continued)

Larva-Hunting in Spring

By AN OLD MOTH-HUNTER.

Fifty years ago Tutt wrote in his *Practical Hints* (I, 4): "It would well repay an entomologist . . . to lay down his net for two or three years and devote his time to hunting the lepidoptera in their early stages; at the end of that time his observations and descriptions . . . would ensure his name being handed down to future generations of scientific workers, whilst his collection would be enriched with species quite unknown to the mass of collectors without souls . . . May and early June comprise one of the best periods of the whole year for work among the early stages, and the collection of imagines should be quite subsidiary to that of working for larvae, pupae, and the clearing up of difficulties relating to life histories".

Whether any species to-day, no matter how rare, are "quite unknown to the mass of collectors without souls" now that the mercury vapour lamp is with us I know not; nor, in this matter of souls, have I any intention of rushing in where angels fear to tread. Tutt was a forthright man; I am a man of peace and love not controversy. For aught I know souls may hover above the m.v. lamp as gaily as corporants above the mast-heads of ships sailing uncharted seas—if the relations of mariners be true. At all events I hope they do, for the moths' sake. However, be that as it may there is no doubt that the man who pays no heed to the early stages of his quarry is only half an entomologist, if indeed he be so much. Only a quarter-entomologist perhaps, since a lepidopteron has four metamorphoses. Yet there have been ardent collectors who formed rich collections though they could hardly tell a caterpillar from a slug. I knew one who used to send his

butler out with a net to catch butterflies for him and rewarded his servant every time the fellow netted an aberration—until he became old and 'careful'. And I knew another who used to return to his nearby Rolls and drink a toast to each specimen that he caught. After his captures exceeded the dozen the disinclination to take the field again became stronger and stronger, until at last he went to sleep in the back of his car, whereupon the long-suffering chauffeur drove him home to bed.

Yet the course which Tutt would have had the tyro take was a counsel of perfection. Certainly the man who devotes the whole of his time to observing larvae in the wild and breeding from egg to imago in his cages is more likely to become an authority on the lepidoptera than he who uses only net and m.v. lamp. Not only that: the interest which his hobby affords him will be a hundred per cent. greater. But one cannot press all men into a mould as it were and turn them out perfect entomologists. Tutt would have had *every* collector a first-rate entomologist. Being a schoolmaster by profession, he wanted every one of his entomological 'pupils' to take an honours degree—first class honours if possible. I respect him for his zeal, but unhappily "'Tis not in mortals to command success" no matter how greatly one may deserve it, and we must take our fellow men as we find them.—But to this matter of larva-hunting in spring.

In the days when I went larva-hunting by night I used to regard May as the month *par excellence* for this pursuit. Of course one can collect larvae by night in almost every month of the year, for there are a good many species which on mild evenings crawl up to feed on such herbage as they can find throughout the winter. But most of these kinds at the best are in their second stadium during the period of frosts, and although they are more plentiful then before weather and predators and ills of the flesh have taken full toll of them, being small they are not very easy to see. The rule is "early, small, plenty; late, large, few". So the lepidopterist who wants to fill his cages and rear common species for series (and, one always hopes, aberrations) had better start to work in January while he who wishes to pick and choose and has not the opportunities to keep many cages going must wait until the spring. Taken by and large, however, May is so to speak *der Tag* for collecting larvae by night and the keen man should take advantage of every fine evening. On a really 'good' night in spring, when the meteorological conditions are just right where larvae are concerned, one often has to call a halt after little more than an hour's work. I have read of more than 500 larvae being taken in a single night between 10.30 p.m. and 1.0 a.m.

The torch or lamp need not be a powerful one: larvae are easy to see at night; for they feed fully exposed; therefore one can economise in battery money by using quite a small torch and carrying a spare battery with one. Remember always to carry a spare *bulb* as well. On one never-to-be-forgotten occasion, when larvae were in quite amazing profusion, I dropped my torch early in the proceedings and broke the bulb. Feverishly I searched my haversack in vain for the spare bulb that *ought* to have been there. . . . These things always happen at the wrong time—though I am not sure that there *is* a right time for a bulb to break—and foresight is good, and cheap, insurance. By the way, if you have

an acetylene bicycle lamp you will find that the light from this makes larvae 'stand out' in a remarkable way at night; but it is very trying for the eyes. It is also very trying for gamekeepers and village policemen. . .

Apart from causing interferences by gamekeepers, officious policemen, barking dogs, snorting bulls, stertorous horses, and other nocturnal pests, a powerful torch has a further drawback. Many larvae tumble off the foodplant at the slightest provocation and are thus liable to escape unless one has taken the precaution of holding an open box underneath them. But this is a tricky business: ten to one when pushing forward the box your hand or sleeve will shake an adjoining twig, and that is quite sufficient to make these tetchy larvae take a header into the undergrowth. Worse still, some of these species are so unused to a spot-light that they seem to regard the sudden illumination much as a pedestrian regards the headlamps of a rapidly approaching car pursuing a tortuous course: they make an instant dive for safety before the box, or the car, catches them. So let your torch be no brighter than a bicycle lamp which is *un peu passé*. Yet there are some species, such as *Leucochlaena hispida* and other maritime and rock-haunting kinds, which have to be continually bracing themselves against the stormy blast, and these hold on so tightly that one has to cut off the plant-stem below them with scissors. And again there are coastal species, such as *Eumichtis lichenea*, which drop at the least touch.

The lie of the land is sometimes important when larva-hunting by night. I once lived in a house built on a rather steep grassy slope, about halfway down it. At the foot of the slope there was a thick hedge and beyond this a sunken lane. At the top of the slope there was a mixed oak wood. The plentiful and diverse herbage at the hedge bottom and on both banks of the sunken lane seemed the very place for larvae—lush herbage and nicely sheltered. But I found so very few larvae there that I soon gave up visiting the spot. On the other hand the herbage at the top of the slope, at the fringe of the wood, though not so lush, proved to be a rich hunting-ground. The reason of course was that cold air flowed down the slope and was ponded in the lane. I never took temperatures but probably there was a difference of 10° F. at night between the top and the bottom of the slope. However, that was an experience which most of us have had: the banks of low-lying sunken lanes with rising ground on either side are usually poor places to search for larvae at night, no matter how lush the herbage.

I think the fringes of woodlands on the higher ground are always good spots to visit by night in spring, and so are, quite often, grassy drives and glades inside a wood. But again it is not possible to draw up any rules because so large a part is played by the subsoil. There are species which one finds only on chalk and sandy subsoils; there are some which inhabit dank woods on boulder clay. There are others which one meets with only on the sloping faces of cliffs or can be collected only in fenlands by the man clad in waders. But whatever the quarry, provided one knows what one is about and one's plans are properly laid, larva-hunting by night in spring must come high on the list of the moth-hunter's preferences. In fact if I had to choose between sugaring in summer and larva-hunting by night in spring—why, it would be the very devil of a choice to make.

Current Notes

The Editorial of *Weather* for March 1954 (Vol. 9, No. 3, p. 66) is devoted to the matter of summer holidays. "The long-term averages over the last 50 years tell us that 23rd-30th July is the wettest week of the year in north-east England, and notably wet in most other districts, and that 20th-27th August is one of the three wettest weeks of the year in north-west England. The average monthly rainfall figures in England and Wales read: June 2.44 in., July 2.87 in., August 3.35 in., September 2.54 in." Therefore so long as the entomologist avoids August there seems to be little difference, so far as rainfall is to be expected, between June, July and September. "On the other hand," this writer continues, "28th May to 18th June includes the sunniest weeks of the year in Scotland and most western districts, and 25th June to 2nd July is the sunniest week of the year in southern and eastern districts . . . with 10th-17th September one of the driest weeks of the year in all districts." For our part we have found only too often that no matter how fervid our incantations, however profuse our libations, Jupiter Pluvius is usually a cantankerous old deity.

The same issue of *Weather* contains a pleasant short paper on "Bird-watcher's Weather" and this suggests that birds react to some of those weather conditions which affect our expeditions with the sugaring-tin. "When opportunities for excursions to the coast or country are limited it is often possible to ensure a good day's 'bag' by watching the weather forecasts . . . a hot summer afternoon is usually still and silent except for the wheeze of yellowhammers and goldfinches. On the best of evenings during a heatwave the sunset chorus is a half-hearted and ragged affair and even the nightingales do little more than tune up. Yet hear the chorus when rain is forecast for the night or early morrow! It is as good when rain is lately over on a still, warm evening; moist air seems to lubricate the birds' throats and one has a full reward for venturing out in dubious weather." All of which, *mutatis mutandis*, applies to the Noctuidae.

Those of our readers who are interested in the Continental Lepidoptera will be wondering what kind of a season 1954 is going to be: whether their collecting expeditions across the Channel will be profitable this year or whether there will be a discouraging dearth of insects wherever they go. For the winter now past has been of unusual severity all over Europe, from Lapland to Turkey. In a letter from Istanbul our friend Dr. Malcolm Burr wrote in January: "We are having the most violent winter I have known in Turkey and it is causing a lot of distress"; then in February: "The cold winter here is causing immense distress and suffering, as indeed it is everywhere, and much loss. It began two months too soon and is exceptionally severe, and all over Europe." Later (March) he wrote: "The ice has now gone from the Bosphorus. This gets plugged with ice about twice a century. It was an amazing sight and they had to blast open the channel at the mouth of the Black Sea end. People managed to walk across. The ice floes must have come down from the Danube, as the great Russian rivers

cannot have thawed out yet; those floes come along as a rule in April and give us our annual chilly spell in the third week of that month."

Weather (March, p. 87) commenting on the wintry conditions of February, observes that "Over most of Europe there was unusually severe wintry weather recalling the early months of 1947. In France and areas bordering the North Sea the continuous frost broke soon after the first week [February] but over most of northern, central and eastern Europe the frost lasted day and night until the month had almost ended. Many very low maxima and minima occurred. In the early part of the month heavy snowfalls disrupted rail and road traffic even as far south as Morocco while there was snow at Malaga and Gibraltar. It was the first snow at Malaga for 71 years. Rivers were frozen for long stretches, ice barriers on the Rhine and Danube had to be broken by explosives, the Friesian islands were icebound and traffic in the western Baltic was maintained only with great difficulty." A hard winter in England is often (but by no means always) followed by a 'good' season for the entomologist. Has the same subsequence been noticed in other countries as well?

A week or two ago we read a new book on country life in which the hummingbird hawkmoth was described as having "orange wings and amber hindwings". Last week we had perforce to review another which contained these two sentences: "To-day the once fashionable hobby of butterfly collecting no longer attracts the elderly gentleman as once it did. Too many beautiful species have been collected out of existence". Fifty years ago we were told that the hero of a novel spent the long winter evenings "rearranging his large collection of butterflies, and renewing their corks and pins". Which indicate that the spread of what used to be called "polite education" is slow. We once asked an Oxford blue-stocking how many wings a butterfly had. Her reply was "Why, two, of course: how could it fly, otherwise?" How indeed.

The larva of *Daphnis nerii* L. in Connemara recorded in *The Field* proved to be *Deilephila elpenor* L. The dead pupa was identified at the British Museum.

"On the trail along an affluent of the Tambopata [in Bolivia], called the Cocos River, I saw the most glorious butterfly I have ever seen. It was of a yellowish-grey colour with brown markings and orange antennae, and the hind wings had dark brown tails about six inches long with spiral ends. Naturalists may know the species, but never before had I seen it, and never did again. These forests are a paradise for the entomologist, the butterflies are everywhere, and the number of different species is amazing. There must surely be many not yet collected—perhaps entirely unknown" (*Exploration Fawcett*, ed. Brian Fawcett, 1952, p. 164).

Notes on Microlepidoptera

By H. C. HUGGINS, F.R.E.S.

Scoparia dubitalis Hübn. Collectors visiting Dungeness at the beginning of June should pay attention to the forms of this insect to be

found on the bare shingle. They are most interesting, varying from extreme examples of *ab. ingrattella* Zell., in which the usual brown markings are replaced by pale sandy-brown, to an occasional pure white form. On a sunny day they are common but not too easy to catch, as the little whitish moth skipping over the glaring shingle is difficult to keep in view, particularly when the usual coast wind is blowing.

Agrotera nemoralis Scop. This most beautiful Pyralid seems to have disappeared of recent years, but collectors in Kentish woods at the end of May should keep a sharp look-out for it amongst hornbeam, as it probably still exists in some of the older woods. Fifty years ago I used to see it in Swanscombe woods near Gravesend and at the same time Battley took it regularly in East Blean Wood, and I think it still existed in Abbott's Wood, Sussex.

Just before the war my late friend P. F. Harris took a few odd specimens in Blean although I never saw it there myself during several strenuous collecting seasons from 1924 to 1932. Blean is, however, a very large place and I never visited the part where Harris found it. He told me at the end of the war that the place had been largely spoilt by the overgrowth of the trees, but we intended going together when a suitable amount had been felled and re-grown to the right height. His sudden death frustrated these plans, however, and I have no idea of his exact locality as I omitted to ask him for it as we proposed making the joint expedition. An odd specimen has since been taken near Dover and I fancy intensive work would result in its rediscovery.

Evergestis extimalis Scop. Although found occasionally in many places in eastern England (I once took one near Standon, Herts.) the headquarters of this local moth are in the Breck. At dusk it may be seen, too often flying over the crop, on the edge of cornfields, but the best places to take it are the old stack-yards, now too frequently ploughed up. There was formerly a very extensive one about half a mile from Tuddenham on the left-hand side of the Higham road. This was two stacks broad and over a hundred yards long and had been known for seventy years as a locality for *extimalis*. Bower and Farn collected them there in the late '80's and Bower told me the place in 1912. *E. extimalis* could usually be disturbed there in ones and twos, but on 10th June 1935 the late W. S. Gilles and I visited it on a heavy sultry afternoon with thunder threatening, and *extimalis* was flying freely. We took about a score in as many minutes and could have had more if we had wished. In 1949 my son (who as a small boy had accompanied Gilles and myself) drove me over to the place, and we found it had recently been ploughed up, the roots of the mustard plants on which the moths used to feed were still projecting from the soil. I feel that it should have been preserved as an ancient monument! *Sic transit . . .*

Myelois neophanes Durrant may be beaten from burnt furze stems, on which it loves to sit, in early June. It prefers stems in their second year after burning and as it is very active in warm weather its capture is a rather dirty job, as plunging through the burnt stems is very bad for clothes. I have also occasionally beaten *neophanes* from green birch.

The moth appears to be locally distributed in Surrey, Hampshire, Dorset and Devon, but the only place where I have found it really common was near Yarmouth, Isle of Wight.

Notes and Observations

ETHMIA BIPUNCTELLA FAB. AT DUNGENESS, KENT.—I should like to put on record the capture of this species whilst collecting with m.v. light at Dungeness on 30th May 1953. The usual insects for this area, in addition to this scarce micro, were obtained, namely, *Hadena lepida* Esp. (*carpophaga* Bork.), *H. conspersa* Schf., *H. albimacula* Bork., and a single example of *Heliophobus anceps* Schf.—M. J. LEECH, The Spinney, Freshfield Road, Formby, Liverpool. 27.ii.54.

PLUSIA NI HÜB. IN LANCASHIRE.—It is I think worth recording that a male of this species came to my m.v. light at Formby on 9th August 1953. Another specimen of the same species was taken in the district three nights later. From correspondence relating to this species in 1953 this appears to be one of the most northerly records for this migrant insect.—M. J. LEECH, The Spinney, Freshfield Road, Formby, Nr. Liverpool, Lancs. 27.ii.54.

MILTOCHRISTA MINIATA FORST.: AN UNUSUAL HABITAT.—South states that *M. miniata* is "a wood loving insect, but is also found on heaths, and even in lanes and the borders of fields when plenty of trees occur in such places." It may, therefore, be of interest to record its appearance on Swanage Beach (Dorset), on 1st August 1953. It was flying, at dusk, at a height of about five feet, and was luckily knocked down by hand. Although there are very few trees on the cliffs in this region, this seems the only likely place from which it may have come.—M. SMITH, 27 Highmead, Plumstead, London, S.E.18. 14.iv.54.

ABUNDANCE OF *BUPALUS PINIARIA* LINN. AT CANNOCK.—On 19th September 1953 I paid a visit to Cannock Chase, which lies 20 miles north of Birmingham and consists of stretches of heather and bilberry, with some patches of deciduous trees and large plantations of larch and Scots fir. Its extent is about 5 miles by 4 miles, and it is between 200 and 700 feet above sea-level. The plantations yielded hundreds of larvae of *Bupalus piniaria* L.; in many of them the Scots firs were denuded of leaves, and larvae were dropping by their threads to the ground, only to ascend other trees equally bare. The local authorities have announced their intention to use helicopters this spring to spray the plantations with poison.

On a previous visit to this place in 1952 I found males with white ground colour of the wings and they showed little variation; but of the females about half had the normal golden brown and half were melanic, and three had male colouration. Only two parasites emerged from 250 pupae.—W. BOWATER, 41 Calthorpe Road, Edgbaston, Birmingham. 3.iii.54.

COLLECTING IN THE MIDLANDS IN 1953.—At Cannock Chase larvae of *Semiothisa liturata* Cl. were uncommon last year and many were stung.

About 60 per cent. of the imagines were *nigrofulvata*. Larvae of *Gonodontis bidentata* Cl., very varied in colour, were taken from hawthorn, birch, Scots fir, willow and crab apple, the last-named foodplant also yielding *Smerinthus ocellata* L., *Notodonta ziczac* L., *N. dromedarius*, *Lophopteryx capucina* L. and *Biston betularia* L. On willow I found *Pheosia gnoma* Fab. and, unexpectedly, *Phalera bucephala* L. about a fortnight old. A fresh female *Lithomæia solidaginis* Hüb. fell on the beating-tray from Scots fir.—W. BOWATER, 41 Calthorpe Road, Edgbaston, Birmingham. 3.iii.54.

INSECTS AT A LIGHTSHIP.—Mr. H. E. Axell sent me the following insects which he caught on the Smith's Knoll lightship in Lat. 52° 43' N., 2° 18' E., during a short stay in September 1953 for the purpose of studying bird migration.

25th September 1953, at 10.30 hrs. Wind W., force 1. Fog, clearing: 1 *Herse convolvuli* Linn.; 1 *Rhizedra lutosa* Hübn.

26th September 1953. 06.20 hrs. Wind S.W., force 1. Very fine: 3 *Amphipyra tragopoginis* Linn.; 1 *Plusia gamma* Linn. At 10.40 hrs.: 2 *Aglais urticae* Linn. At 16.20 hrs. Wind S.S.W., force 2. Fine: 2 *Syrphus vitripennis* Mg.

27th September 1953. 06.20 hrs. Wind E., force 1. Fine: 3 *Plusia gamma* Linn.

29th September 1953. 06.15 hrs. Wind S.W., 14 m.p.h. Fine: 1 *Peridroma porphyrea* Schiff.—E. G. PHILIP, 80 Boxley Road, Maidstone. 14.iii.54.

[The Smith's Knoll lightship is 25 miles E.N.E. of Great Yarmouth and about 80 miles West of the Hook of Holland.]

DECLINE OF *LYSANDRA BELLARGUS* RÖTT.—Following the various comments on this species, and its decline in many places, it may be of interest to note that this trend seems to be followed on the North Downs, for it is now quite uncommon, for example, at Shoreham, Kent, although *L. coridon* still abounds. Similarly, I have not seen it at Wrotham for several seasons.—A. J. SHOWLER, 19 Harvel Crescent, Abbey Wood, London, S.E.2. 14.iv.54.

DISCOVERY OF THE LARVA OF *MACULINEA ARION* LINN.—At the end of the review of Captain Purefoy's paper, in the March number (*Ent. Rec.*, 66: 89), it is remarked "But was not G. B. Oliver the first to find a larva?" I do not think, however, that I can claim to be the first to find the larva of *arion*; the discovery of it I believe is due to Mr. B. G. Adams, who preceded me by roughly one month. My first find was 15 pupae and 1 larva, the last-named resulting in an imago on 10th August 1920. I still have my bred series of 15 specimens, each with its own pupa-case (the 16th case was too broken to be worth keeping).

I well remember digging up an ants' nest for F. W. Frohawk and packing it in a biscuit tin, which he took back to London with him by train, with the intention of establishing the nest in his garden. I have often wondered what the reactions (and antics) of his fellow passengers were when the ants escaped and explored the train compartment!—were when the ants escaped and explored the train compartment, the tin being far from 'ant-proof'!—G. B. OLIVER, Corydon, Hazlemere, High Wycombe. 20.iii.54.

LATE SUMMER IMMIGRATION OF *AGLAIS URTICAE* L.—The large numbers of *Aglais urticae* which Messrs. Blathwayt and Easton record (*Ent. Rec.*, **65**: 295-6; **66**: 55) appeared here at their maximum in the last week of August. Their numbers were, in my experience, quite unparalleled, three hundred being observed on one clump of *Buddleia*. I believe the butterflies were local emergences, for a month previously the larval nests were comparably abundant and seemed very healthy. In the first few days of September, the butterflies suddenly disappeared, and only the normal seasonal numbers were recorded thereafter. Whether the butterflies were killed off by a bad spell of weather (which seems unlikely of an hibernator) or moved away, remains to me a problem. I should like to think that those specimens observed 'up the country' were emigrants from Devon, but I think it far more likely that they were local emergences, answering the same controls as in Devon. If this is so, perhaps some reader can throw light on the fate of this swarm of butterflies.—P. JEFFERY, 24 Woodland Terrace, Greenbank Road, Plymouth. 21.iii.54.

—.—I do not agree with the above note. These *A. urticae* were probably immigrants. The large numbers observed were in 'pockets', and the largest total for any one day (768 on the 30th August on bomb-sites) were in a built-up area where local emergences could not have reached a high total. Also there was an influx of *Plusia gamma* soon after this, and on the 16th of August *Vanessa atalanta* were seen coming in from the sea near Plymouth.—F. W. JEFFERY, 24 Woodland Terrace, Greenbank Road, Plymouth. 21.iii.54.

MACROLEPIDOPTERA OF THE FYLDE COASTAL AREA.—I was interested to read the paper under this heading by your contributor Mr. K. Bevan in the March issue (*Ent. Rec.* **66**: 74) as I have collected from this locality for about 25 years. I can confirm from personal experience almost everything he says, having taken all the species he lists as occurring in the area at the present time except *Celastrina argiolus* L. and *Heliothis armigera* Hübn. I would like, however, to make one or two comments on, and additions to, his list.

As regards the species we have lost, the late Mr. Arthur Murray of St. Anne's, who collected in this locality for over 50 years, told me that *Nyssia zonaria* Schf. was still to be found in a locality near Fleetwood but had disappeared from the sand dunes by about 1910. He also told me that the last specimen of *Argynnis aglaia* L. was taken on the dunes in 1914.

There are two species in Mr. Bevan's list which he describes as rare and which I take regularly in the area:—*Smerinthus ocellata* L., which is definitely on the increase, and *Macrothylacia rubi* L., which I have taken every year, though it fluctuates greatly in numbers. In addition to Mr. Bevan's list the following species still occur in the area:—

Deilephila porcellus L. Uncommon; taken at sugar occasionally.

Notodonta ziczac L. Larvae fairly common on *Salix repens*.

Phalera bucephala L. Rare in this locality but does sometimes feed on *Salix repens*.

Arctia caja L. Used to be plentiful but now becoming scarce though still common inland.

Peridroma porphyrea Schf. (*sauacia* Hb.). Occasionally taken at sugar.

Actebia praecox L. Much less common than formerly but still taken at sugar or ragwort blossom.

Triphaena ianthina Schf. Larvae can be found feeding on catkins of *Salix repens* in spring and being very similar to *T. comes* Hb. are easily overlooked. The moth does not come as readily to sugar as *T. comes*.

Rusina umbratica Göze (*tenebrosa* Hb.). Rare. The males come occasionally to sugar.

Orthosia incerta Hufn. Fairly common at *Salix repens* catkins.

Cerastis rubricosa Schf. Taken regularly at *Salix repens* catkins.

Xylena exsoleta L. Uncommon at sugar in September.

Cucullia chamomillae Schf. The larvae are to be found wherever the foodplant, wild chamomile, grows.

Selenia bilunaria Esp. Not common but larvae occur on *Salix repens*.

Crocallis elinguaris L. Larvae taken regularly on *Salix repens*.

Biston betularia L. Larvae taken occasionally on *Salix repens*.

All that I have found have been the form *carbonaria*.—W. A. WATSON, 5 Hoyle Avenue, St. Anne's-on-Sea. 25.iii.54.

CORRECTIONS.—*Ent. Record*, 1954, **66**: 65. *Arctia villica* Linn. ab. *spoliata*. The description is incomprehensible because part of it has been omitted. It should read:—"Spot 6, using the schema of *O. Schultz*, is missing. This is the spot on the inner margin of the fore wing next to the large spot at the anal angle".

Zygaena filipendulae Linn. ab. *nigrolimbata*. The legend, Pl. 2, fig. 9, should read "♀ type" in place of "♀ allotype". The text, p. 68, should read "Type ♀ . . . Paratype ♀" in place of "Type ♂ . . . Allotype ♀".

COLEOPTERA

Coleoptera in North Scotland

By C. A. COLLINGWOOD.

Some of the beetles taken in the course of short visits to North Scotland over the past few years may be of interest although no systematic collecting was undertaken; a list is given below:—

Cicindela campestris Linn. has been seen in several places—some specimens were taken running over a path near Loch Assynt, W. Scotland and also at Coigach, W. Ross. *Carabus glabratus* Payk. is one of the commonest beetles of this genus in the area and has been taken at Durness and Stoer, W. Sutherland, and in various places on moorland and mountainside at Coigach, W. Ross. Kevan, 1949, *Ent. mon. Mag.*, **85**: 263, records taking a specimen near Gairloch, W. Ross. *Carabus jansonii* Kraatz. was taken by the roadside on moorland near Durness, W. Sutherland. *Carabus silvaticus* Dejean, *granulatus* Linn. and *gallicus* Géhin. were taken at Coigach, W. Ross, on sand and heather near the sea shore. *Leistus terminatus* Hellwig was found running from a nest of the ant *Formica rufa* Linn. in a birch wood at Inverpolly, W.

Ross. *Nebria brevicollis* Fab. and various spp. of Harpalinae are abundant in coastal areas under stones.

Elateridae include *Adrastus nitidulus* Marsham in peat at Reiff, W. Ross. *Hypnoidus riparius* Fab. was found in the same district near the sea shore. *Melanotus rufipes* Herbst., *Elater balteatus* Linn. and *Corymbites incanus* Gyll. were taken in stumps among birch thickets at Coigach, W. Ross. The latter species also occurred in woodland along Loch Assynt, W. Sutherland. *Adelocera murina* Linn. and *Corymbites sjaelandicus* Muell. were taken on stony hillsides at Stoer, W. Sutherland, and *Athous haemorrhoidalis* Fab. at Kylescu, W. Sutherland.

Chrysomelidae include *Lochmaea suturalis* Thoms. at Berriedale, Caithness. *Gastrophysa viridula* Degeer was very abundant in the area in 1949 infesting docks at Clashnessie and Elphin, W. Sutherland and at Coigach, W. Ross. One specimen of *Gastrophysa polygoni* Linn. was taken in cultivated land at Coigach, W. Ross. Several species of flea beetles have been seen but only *Haltica oleracea* Linn. and *Longitarsus jacobaeae* Waterhouse taken at Coigach, W. Ross. *Cylindronotus laevioctostriatus* Goeze was abundant in peat among the dead roots of burnt heather at Rieff, W. Ross, where no trees have occurred for a long period.

Among Rhynchophora *Otiorrhynchus arcticus* Fab. is abundant everywhere, specimens having been taken at Coigach, W. Ross, Durness, W. Sutherland and Berriedale, Caithness. *Otiorrhynchus atroapterus* Deg. was found on sand dunes at Durness, W. Sutherland. Kevan, 1949, *Ent. mon. Mag.*, **85**: 263, recorded this species from Gairloch, W. Ross. Fragments of *O. rugifrons* Gyll. were frequently found under stones at Coigach, W. Ross, but no specimen had been seen alive. *Strophosomus nebulosus* Stephens occurred among heather at Lairg, E. Sutherland, where a specimen of *Apion miniatum* Germ. was also taken. *Anoplus plantaris* Naezen and an *Orchestes* sp. were found in birch at Garve, E. Ross.

Serica brunnea Linn. was taken at Berriedale, Caithness, *Thanatophilus rugosus* Linn. was found at 1,000 feet on Ben More, Coigach, W. Ross.

DIPTERA

Records of some of the rarer Trypetidae

By H. BRITTEN, M.M., F.Inst.P.A.

Trypeta vectensis Coll. In early April 1953 I collected a good sample of old flower-heads of Sawwort (*Serratula tinctoria* L.) from a roadside waste near Smallfield (Surrey). On 6th June of the same year a number of males of the above species emerged, to be followed by females on 20th June. Emergences continued until 7th July, the preponderance of females over males being three to one. *T. vectensis* was considered to be a coastal species, and this record of breeding from an inland locality is therefore of particular interest, besides being an addition to the Diptera of Surrey.

Paroxyna loewiana Hend. In the autumn of 1945 I collected a small bundle of flower-heads of Golden Rod (*Solidago virgaurea* L.) in Selsdon Wood (Surrey). Two males and three females of the above Trypetid

emerged on 2nd June of the following year, and on this same day a male and three females emerged from material collected in Puplet Wood (Surrey). A good supply of flower-heads was collected at Coldharbour (Surrey) in September 1952, from which a number of both sexes of this species emerged during the period 30th May to 26th June 1953. This is another welcome addition to the Diptera of Surrey.

During the latter part of July 1953 I spent some time collecting Trypetidae in the Forest of Dean (W. Glos.), and had the great satisfaction of taking a number of both sexes of *P. loewiana* on Golden Rod near Hewelsfield on 28th July. On the same day several males and females were taken on the same plant near St. Briavels, and two days later a small number of each sex was captured in Dymock Forest (W. Glos.).

On 18th September 1949 I collected a small quantity of Golden Rod from various rocks in the Pass of Killiecrankie (North Perth), from which two males of *P. loewiana* emerged on 26th June of the following year. So far as I am aware, this is the most northerly record for this species.

While on a visit to the Isle of Arran (Clyde Isles) I collected a good sample of Golden Rod from the rocky cliffs near Lochranza on 23rd September 1949, from which two males and a female of *P. loewiana* emerged on 16th June 1950. An interesting record for the Clyde Isles.

Tephritis separata Rond. On 28th November 1953, while collecting hibernating Trypetidae at Old Coulsdon (Surrey), I was pleased to be able to record the capture of the above species, thus making an interesting addition to the Diptera of Surrey. On the same afternoon several females of *Tephritis conjuncta* Lw. were also taken, which made comparison of these two closely allied species in fresh condition a simple matter.

Tephritis cometa Lw. On 27th June 1953, while collecting Trypetidae on some rough scrub-land near Nutknowle Wood (Sussex), I was fortunate in capturing a female of the above species, and another female on the same afternoon at South Lancing (Sussex). On both occasions the flies appeared to be ovipositing in the unopened flower-buds of the Creeping Thistle (*Cirsium arvense* (L.) Scop.).

Acanthiophilus helianthi Rossi. On 28th July 1946 I captured a female of this species on Outwood Common (Surrey), and another female on 4th August 1946 at the same locality. On 21st July 1952 a further female was captured on Holmwood Common (Surrey), and on the following day a pair was taken at the same locality. In February 1953 I collected a small number of old flower-heads of Knapweed (*Centaurea nigra* L.), from which a female of this Trypetid emerged on 16th June of the same year. This is the first record of breeding of this species in the British Isles. *A. helianthi* was considered to be a coastal species, and it is therefore of particular interest to be able to add it to the list of Surrey Diptera by these records of capture and breeding.

NOTE: The insects depicted on Plate II are slightly magnified and rather too light.

With regard to the remaking of Plate II that was the subject of a note in the March issue of *The Entomologist's Record*, we would like to mention that we were not in any way involved in the preparation of that particular block.—V. SIVITER SMITH & Co. LTD., Birmingham.

Fifty Years Ago

(From *The Entomologist's Record* of 1904)

CELERIO LIVORNICA IN 1904.—In the *Revue de Viticulture and Réveil Agricole* Marès and Bedos give details of the swarms of this species that occurred in Algeria last spring (1904) . . . Owing to a very wet winter and spring the earliest imagines . . . did not appear till the middle and end of April, when they were driven from the higher lands by the sirocco into the lower cultivated areas. They laid their eggs on the vine . . . and the larvae were in enormous numbers, and soon devastated the vineyards, stripping the vines of buds, leaves and blossoms. Marès states that some children collected from 10-12 litres of larvae in a day, and that after this the larvae seemed as abundant as ever. Their polyphagous habits stood the larvae in good stead, and, in due course, they pupated, and the imagines appeared at the end of July. In Tunis, where the species has been equally abundant this year, the larvae have attacked the olives in preference to the vines. One suspects that the movement in the spring, in Algeria and Tunis, from a higher to a lower level, was part of a large general dispersal movement, the most northerly edge of which touched our coasts. If this were so, it follows that our spring captures were full-blooded North African individuals, and our autumnal ones British bred, and born from African parents. It is interesting to know that, owing to the greater interest now taken in the question of the distribution of our lepidoptera, we may get from current entomological literature facts that, pieced together, show us the origin and extent of migration movements in the Palaearctic lepidoptera.—J. W. TUTT.

AULONIUM TRISULCUM AT ENFIELD.—I have much pleasure in introducing this rare beetle to our list of indigenous coleoptera. On July 13th last, at Enfield, I found the insect in all stages, inhabiting the burrows of *Scolytus multistriatus* Marsh. in elm bark . . . It may appear to be strange that the insect should for so long escape detection, but I think this is due to its rarity, as well as to the fact that, as a hunting-ground, Enfield does not appear to have been discovered by many coleopterists. The spot where it has now occurred would have been unapproachable a short time ago, but owing to building operations now going on I have been able to work at a number of fine old trees, which are doomed to destruction at an early date . . . Enfield contains a spot which at present is very rich in good beetles, and . . . a splendid hunting ground is about to be sacrificed to bricks and mortar. In a few years' time, or perhaps months, there will be commenced a new line of trams connecting Enfield with the great metropolis, and some day, when seated on the roof of a County Council electric car, I may sorrowfully point to an off licence public-house occupying the spot where once occurred *Aulonium trisulcum*.—C. J. C. POOL.

MALES AND FEMALES IN CAPTIVITY.—I am not quite sure that all breeders of lepidoptera will agree with Mr. Tutt that the conditions of confinement are usually such that the males will more easily survive, when broods are reared in captivity, than the females. I have very little experience myself on any large scale, but I had an impression that

the females more readily defied the unnatural conditions imposed by captivity than the males. This would be a point on which the experience of some of those observers who now rear large numbers of species would be valuable, not merely their statistics, but their impression of what befell the two sexes in cases where the imagines resulting were only a final remains, after losses of their brethren throughout the whole life of a brood.—T. A. CHAPMAN.

Current Literature

ENTOMOLOGIST'S GAZETTE, 1954, Vol. 5, No. 1. *Page 9*: I. R. P. Heslop reports the capture of a female of *Nymphalis xanthomelas* Esper taken in mid-Kent, 2.vii.1953, by the lady who exhibited it at the Annual Exhibition of the S. London Ent. and N. H. Society. He thinks it the progeny of a spring immigrant and says *xanthomelas* is a double brooded East European species which feeds on *Salix* exclusively. He mentions that he has seen another specimen without data reputed to be British.

Page 10: E. S. A. Baynes records the capture of two *Daphnis nerii* in Ireland in 1953, one at Donabane, Co. Dublin, 17.ix, by J. Hely Hutchinson, the other at Carlow, Co. Carlow, 18.ix, by T. Scully.

Page 41: A note on *Euphyia luctuata* Schiff. by G. Haggett. He gives an account of this species flying freely in the evening sunshine in early August and saw no evidence of a flight after dark. He thinks very few can be disturbed by day and the females are often unfertilized. He agrees with others that it is usual for a female to pair twice. Emergence is very irregular and there may be a partial third brood. From his eggs he obtained 7 brown larvae and 11 green ones.

There are other papers of interest to lepidopterists, but these are not easy to abstract.

E. A. C.

ENTOMOLOGIST'S MONTHLY MAGAZINE, March 1954. *Page 56*: A possibly unrecorded habit of *Donacia impressa* Payk. (Col. Chrysomelidae). Specimens of this uncommon beetle were found by A. A. Allen in some numbers in 1953 on the heads of the bulrush *Scirpus lacustris* L. in Sussex. "I casually reached down a flower-head of the tall bulrush . . . and was agreeably surprised to find it covered with *D. impressa*. This proved to be the case with a considerable proportion of the bulrush-heads; only about one in three had no *impressa* on it, whilst the highest number noticed on any head was fifteen or more—the beetles being thickly clustered, often several deep . . . This habit of the species does not seem to be generally known . . . Perhaps if the flowering heads of the bulrush in areas where it flourishes were examined in May or June, *D. impressa*—hitherto regarded as rare—might be taken more commonly."

Page 64: The second part of K. A. Spencer's paper on the British Agromyzidae (Dipt.). Nine, and possibly twelve, species of these leaf-miners new to the British List are recorded, with descriptions of mines, larvae and foodplants.

Page 65: Further records of *Volucella zonaria* (Syrphidae) in Devon and Gloucestershire.

Page 66: A paper by J. F. Burton and D. F. Owen on Insect Migra-

tion in S.W. France. Observations of southward migrating insects, chiefly Lepidoptera and Diptera, on the Mediterranean coast are given. The Lepidoptera concerned are *Vanessa atalanta*, *Colias croceus*, *Pieris* spp., *Argynnis lathonia*, *Lampides boeticus*, *Plusia gamma* and *Macroglossum stellatarum*.

P. B. M. A.

GRASSHOPPERS OF ANGOLA AND NORTHERN RHODESIA COLLECTED BY DR. MALCOLM BURR IN 1927-28. By B. P. UVAROV, D.Sc., F.R.S. Diamang, Publicacoes Culturais No. 21. Museu do Dundo. Lisboa. 1953.

Our older readers may remember a series of papers by Dr. Malcolm Burr which were printed in the *Record* from 1927 to 1930 under the title "Field Notes from Angola". These were the fresh impressions of an experienced entomologist in the field in Equatorial Africa, in what was almost virgin territory entomologically and sometimes in almost unexplored country, amid a luxuriant wealth of insect life. The Orthoptera which Dr. Burr sent home to the British Museum numbered several thousand, and Dr. Uvarov, who had of course encouraged him to send all the Orthoptera he could, soon found he had underrated the work he had invited. A provisional estimate put the number of species represented at about 600, of which probably about 100 were new to science. To use his own words "the numbers were overwhelming and, since the systematics of many of the groups were still fluid, a revision of numerous genera was involved".

Now at long last the work of twenty-five years has been published, as far as the Acrididae or grasshoppers and locusts are concerned. The remaining groups were not so richly represented. Partial results have been published by Rehn on the Tetrigidae, and the Eumastacidae were sent to Candido Bolivar for determination, but no result of these has yet appeared in print. This is regrettable as it is a curious little group which had not previously been observed in the field, and Dr. Burr's account of the behaviour of these quaint little grass- and tree-hoppers is the more interesting since it was he who did the pioneer work on their taxonomy before the end of last century.

But the Acrididae are of course by far the most important, both in numbers and economically, for they include the locusts which at times devastate Africa. Dr. Uvarov here enumerates no less than 130 genera and 245 species of Acrididae, of which 15 genera and over 100 species are new. A number of Dr. Burr's field observations have been included; many of these have not been published before and are of great interest. In addition to illustrations of the insects described there are a number of photographs illustrating the terrain where the collecting was done. It must be very gratifying to Dr. Burr to see his labour of love so happily—and sumptuously—crowned; both collector and author are to be congratulated upon an impressive and valuable piece of work.

The book, a quarto of 217 pages, is well produced by the Companhia de Diamantes de Angola (abbreviated to Diamang) in their series of Cultural Publications. It is always pleasant to see industrial organizations devoting funds to the cause of science.

P. B. M. A.

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TO OUR CONTRIBUTORS

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THE ENTOMOLOGIST'S RECORD

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An Account of Mr Hedges's Breeding Experiments with *Cleora (Alcis) repandata* Linnaeus

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

PART I.

Mr. Alfred Hedges took a wild female *Cleora (Alcis) repandata* ab. *conversaria* Huebner in his garden at Ballavale, Santon, Isle of Man, 17.vii.1951, and it gave a brood:—

F 1.	vi.1952.	normal <i>repandata</i>	45 (26♂, 19♀)
		<i>conversaria</i>	39 (18♂, 21♀)

close to the expected ratio of 1:1 assuming that the unknown male parent was a normal *repandata*. Some of these heterozygous *conversaria* were brown and others white with black markings, closely resembling homozygotes. Two of these black and white ones were paired, a natural proceeding for anyone breeding for the cabinet, but unsatisfactory for the geneticist wishing to prove that the clear black and white *mendeli* Williams is the homozygote. A pairing of two of the brown ones would have shown clearly whether this view is correct. The pairing gave:—

F 2.	<i>repandata</i>	12 (6♂, 6♀)
	<i>conversaria</i>	34 (12♂, 22♀)

the *conversaria* varying from brown to clear black and white specimens. Mr. Hedges admits that he could not separate the black and white ones with certainty into heterozygotes and homozygotes, but he separated the best black and white ones from the rest, 16 (5♂, 11♀). Owing to an unfortunate mischance I bred only 3 out of 50 eggs received, 1 brown *conversaria* ♂, 1 black and white heterozygous *conversaria* ♂, 1 homozygous *mendeli* ♂. Neither the black and white heterozygote nor the *mendeli* was as beautiful as the corresponding forms from Kinlochewe. Added to those bred by Mr. Hedges the final result is:—

<i>repandata</i>	12 (6♂, 6♀)
<i>conversaria</i>	20 (9♂, 11♀)
? <i>mendeli</i> , black and white			17 (6♂, 11♀)

Since the ratio expected is 1:2:1, I suspect that Mr. Hedges has included 4 or 5 heterozygous black and white ones with the homozygotes. The heterozygote is very variable and can be almost indistinguishable from the homozygote. Three pairings of the best black and white ones were obtained, but out of hundreds of eggs laid only one hatched and produced a very small *mendeli* as a second brood, ix.1953. This is the first specimen of an F3 generation Mr. Hedges has ever bred. To avoid the infertility of brother-sister pairings which occurs so quickly with this species it would be necessary to keep at least two separate lines and take cross pairings.

PART II.

I can find only one paper, that by H. Walther (*Iris*, 1927, 41-43), in which normal *Cleora (Alcis) repandata* Linnaeus ab. *conversaria* Huebner, and a melanic form have been used in the same experiment.

Walther calls the melanic form he used ab. *nigricata* Fuchs, which from the original description some think has a clear white subterminal line and others think has the line almost obsolete, the form known to English entomologists as ab. *nigra* Tutt. Walther gives no picture of his insects. He mentions one brood of which only one parent, ♀ *conversaria*, was known and the other assumed from the result. This gave *repandata* 11 (4♂, 7♀): *conversaria* 14 (7♂, 7♀): *nigricata* 12: black *conversaria* 11. The male parent was presumably a heterozygous *nigricata*. In the same year he took a normal *repandata* ♀ and bred *repandata* 7 (3♂, 4♀): *conversaria* 8 (4♂, 4♀). In 1922 he paired a *conversaria* ♂ from this brood with a *nigricata* ♀ and obtained *repandata* 2: *conversaria* 3: *nigricata* 1. It is surprising that Walther did not clearly separate his insects into the four groups into which they fall genetically and by appearance.

The experiment by Alfred Hedges is far more successful, and the melanic form he used is a different one. It has a circumscribed western distribution, is dominant, and in most examples there is an ill-defined white patch in the median area. In the female used in this experiment the patch is almost absent. I do not think the form is named. The male parent was a heterozygous F2 Manx *conversaria* with a brownish ground colour like many New Forest specimens and the melanic female parent from Delamere was also heterozygous. This pairing *conversaria* ♂ × melanic ♀ gave:—*conversaria* 12 (5♂, 7♀): *repandata* 15 (7♂, 8♀): melanic *conversaria* 11 (4♂, 7♀): melanic 17 (6♂, 11♀).

The expectation is that the brood will fall into 4 groups all equal in numbers, and each containing an equal number of males and females. The actual result does not differ much from that expected.

EXPLANATION OF PLATE VI.

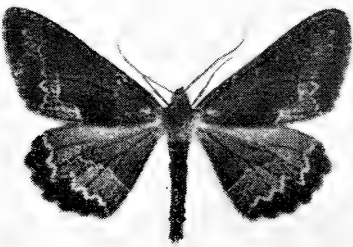
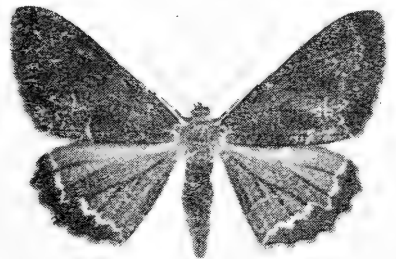
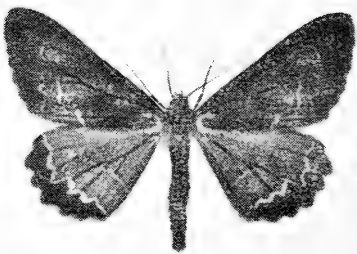
- Fig. 1. Male parent. Ab. *conversaria*, Santon, I. of Man.
 Fig. 2. Female parent. Unnamed melanic form, Delamere.
 Figs. 3, 4. Normal *repandata*, male and female.
 Figs. 5, 6. Ab. *conversaria*, male and female.
 Figs. 7, 8. Unnamed melanic form, male and female.
 Figs. 9, 10. Ab. *conversaria* combined with melanic form, male and female.

The Wood Leopard Moth on the Essex Coast

By H. C. HUGGINS.

At different times I have found odd specimens of *Zeuzera pyrina* Linn. in various parts of Westcliff-on-Sea and have usually given them away, but last year (1953) I resolved to get a decent uniformly set series. I thought a short Note on the result of my task (possibly in my Notes on *Micros*, for I understand *pyrina* is now regarded as such) would be sufficient; but a few weeks back I re-read Mr. Haggett's most interesting and instructive paper on the moth in *Entomologist* (83: 73-81), and the habits of the insect here seem in some ways so different from its behaviour in the Sussex woods as to merit a little longer notice.

The genesis of last year's hunt was the finding of a large newly emerged female on the trunk of a mountain ash at the corner of my road on 3rd July 1951. As I had contemplated my series with disgust for some time I immediately ran round some of the other roads where



mountain ash is planted on the grass verges but found I was too late and four empty pupa-cases were the only results.

In 1952 I left for Ireland on 16th June so was away at emergence time; but in 1953 I searched the tree trunks in May and found in all eight capped borings. These are covered by a thin usually cracked covering of bark, but sun and weather destroy this as a rule before emergence time, leaving an uncapped hole. Only one burrow last year preserved its covering till emergence time.

I discarded one burrow as being too far for regular watching and from the second week in June made a round of the others twice a day, at 12 p.m. and 3.30 p.m. (G.m.t.). By so doing I obtained six *pyrina*, all females, the first two on 24th June, the last on 3rd July; the seventh from the pupa-case, also a female, emerged after I left for Ireland on 6th July.

My leopard-hunts (shades of Jim Corbet!) provided me with healthy exercise and a few observations. The moths, as I have already mentioned all females, apparently emerged about 1.30 p.m. I did not see a pupa even near the hole on any early rounds ending at 12.30 p.m., whilst the four I took at 3.30 p.m. had completed drying their wings, a slow process with *pyrina*. The remaining two (in this road) which I kept under close observation both emerged at 1.30 p.m.

The burrows I have observed here have all been between two and six feet from the ground and (including one not watched, of which I subsequently collected the pupa-case, and five in 1951) all 13 moths were females. It seems possible that the males may be in the higher boughs. I took five males but no females at the m.v. lamp in the garden.

The emergence period here seems to be earlier than that noted by Mr. Haggett as all the emerged cases I saw in 1951 and 1953 were before 5th July except for the one that came out whilst I was in Ireland.

The trees in which I noted the moths varied from 3½ to 5 inches in diameter. There appeared to be none in the smaller trees, and one was in an ash seven inches in diameter. I noticed that the smaller trees produced the larger females, that from the big ash being the smallest female I have taken. I suspect that the wood in younger trees is more nutritious.

I have examined in all 58 burrows, all comparatively recent, say in the past five years. Of these, 53 were in mountain ash, one in service-tree, two in ash, one in lilac, and one in horse chestnut. The mountain ash, though extensively planted here, is not commoner than horse chestnut or ash and little commoner than service-tree, so the preference of *pyrina* for this tree is most marked. One tree in a neighbouring garden produced two moths last year and has two other old burrows, I should say four years old.

The mountain ash is not mentioned by Tutt, South, or Mr. Haggett; as it is not a native tree in many parts of the south I presume it did not occur in their districts. The moth does not appear to kill the tree, even when several burrows are in one, but a number of trees die here from silver-leaf and a park-keeper informed me he believed the injured bark encouraged the entry of this pest.

Dr. Cockayne told me that Mr. C. N. Hawkins some years back had several *pyrina* in his garden but that he was prevented from taking the moths as woodpeckers forestalled him. We have plenty of woodpeckers

about here (I have seen the green, greater-spotted, and once the lesser-spotted in my garden) but I have seen no trace of their work as they do not frequent the roads and front gardens facing them where all my burrows have been situated and I made my rounds as early as possible after emergence time to frustrate the sparrows and other avian riff-raff which abound everywhere.

The Genus *Sterrha* in N. W. Kent in 1953

By A. J. SHOWLER.

In that part of North West Kent bordering on London, *Sterrha rusticata* Schiff. is generally the commonest of the Sterrhinae, and this was the case in 1953 when it outnumbered both of the more widespread species, *S. aversata* and *S. seriata*.

The first *S. rusticata* were observed on 6th July 1953, when a pair were taken in my garden at Abbey Wood (in Kent, about half a mile from the London border). They were at rest on a fence. *S. seriata* was first seen a day later at Belvedere, Kent, with two more *S. rusticata* and one *S. aversata*. Again, all were at rest on shaded fences.

After this, *S. rusticata* and *S. seriata* (less commonly) could be found by searching any shaded fence in the area. *S. aversata* and *S. trigeminata*, which had first been seen on 17th June, also favoured these situations, and thus on 16th July a 45-minute cycle ride yielded three *rusticata*, and one each of the other three species mentioned, in Bexley-heath and Erith. On 18th July single specimens of *rusticata* were seen at Bexley, Hawley (near Dartford), and Blackfen, and again at Blackfen on 19th July (M. D. Smith). It also appeared on various occasions at the m.v. lamp in my garden. Specimens were seen on most days after this until 30th July, when I left for Swanage, and one obligingly appeared on 4th August on my return. The last *rusticata* was seen on 7th August, when I left Abbey Wood for a fortnight.

In addition to the above-mentioned localities, *S. rusticata* was observed last year at Darenth, and while it was not seen in London this year one specimen was reported at Hither Green in 1951 by K. Hyatt and D. F. Owen. Observations did not extend far eastwards, but since it occurs at Darenth and Hawley it presumably is found at Dartford. Woolwich Surveys (1909) mentions Slades Green as a locality, and here it is still to be found. South gives "Greenhithe to Sheerness", but in view of the above observations it would seem to occur at least from the London-Kent border at Abbey Wood to Sheerness, along the South bank of the Thames, penetrating inland from the river to a depth of four miles in most places.

Returning to the other species, *S. marginepunctata* first appeared at the m.v. lamp on 13th June (1st brood) and one example was seen on Blackheath on 25th August (2nd brood). *S. trigeminata* as usual was quite common, but only one *S. inornata* was taken (m.v.). The last *S. aversata* was last seen at the m.v. lamp on 25th August, but *S. seriata* persisted until 30th August.

From this short account it can be seen that several of the less common species of this genus are found in N.W. Kent, notably *Sterrha marginepunctata*, *S. trigeminata*, and *S. rusticata*, as well as the more

widely distributed *S. aversata*, *S. seriata*, and *S. inornata*. *S. rusticata* appears to be the most common species, and it would be interesting to hear more of this pretty little insect in its other haunts.

[*S. rusticata* is not fond of fences, but in places sits in large numbers on ivy leaves; such places must be the breeding grounds.—ED.]

Hybrid Races of the Genus *Philosamia*

By W. J. B. CROTCH, M.A., A.K.C.

In 1953 *Ent. Rec.*, 65: 281-2, I was permitted to record and figure a new hybrid of the silkmoth *Philosamia cynthia* Drury (Saturniidae) which I named *reversa*, because of the curious reversal of the depth of colour within and without the double median line. Owing to lack of space and leisure on the one hand and the onset of larval infections on the other, I have not been able to make the statistical study necessary for a proper genetical appreciation: but there is a good deal of evidence that the hereditary factor responsible for the reversal is a dominant.

The origin of the mutation may well lie within the wild stock of ssp. *canningi* Hutton, because some imagines from wild cocoons sent to this country from South India in 1952 and 1953 show a peppering of dark scales in the outer zones which was not present in earlier stock or in the Museum specimens.

By further cross-pairings, I have produced three other forms, one of which shows a broad reversed band and two which have complete reversal. They are described below.

- (1) *Obversa* race. Side-product of *reversa* × *reversa*, otherwise breeding true. Generally describable as a reversed *obscura*.

Linear markings white, outlined narrowly in black, except double median line which is devoid of coloured borders. Crescents hyaline above, Indian yellow below. Apical spot indigo topped with white, in area of middle grey. Margins sepia. Outer ground colour Vandyke brown: inner ground colour burnt umber.

- (2) *Adversa* race. Product of *advena* × *reversa*. Generally describable as reversed *advena*.

Linear markings white, outlined broadly in black, including inner margin of double median line, which is separated and outwardly bordered by vivid purple lake. Crescents hyaline above, yellow ochre below. Apical spot Payne's grey, outlined with indigo below and white above; below area of silvery grey. Margins sepia. Outer ground colour Vandyke brown: inner ground colour greenish khaki (almost olive green while the insect is alive).

- (3) *Obscans* race. Product of *obversa* crossed back to *canningi*. Similar to *canningi*, but with more rounded wings and a partial reversal.

Linear markings white, narrowly outlined with black, including inner margin of double median line, which is separated and outwardly bordered by dull rose madder. Crescents hyaline above, yellow ochre below. Apical spot charcoal, below area of middle grey. Margins middle grey. Ground colour both outside and inside burnt umber, but broadly shadowed outside with Vandyke brown.

I should like to acknowledge the help of other members of the Amateur Entomologists' Society, particularly that of Mr. P. Barnard, B.Sc.

Current Notes

Entomologische Berichten for May. (Vol. 15, No. 5) contains at page 133 a paper by J. P. Van Lith on the hymenopteron *Chrysis ignita* L., three males having been reared from nests of the mason wasp *Ancistrocerus nigricornis* Curt. On hatching, the young larvae immediately sucked the eggs of the mason wasp. "This operation took one or two days, after which they ate the Tortricid caterpillars which were stored as food for the offspring of the mason wasp." This Chrysid is therefore a predator of *A. nigricans* and not merely a commensal.

The same Journal contains a paper (p. 144) by B. J. Lempke on the duration of the imaginal stage of *Maniola jurtina* L. Specimens have been seen on the wing in the Netherlands as early as the beginning of May and as late as the middle of October. The question is therefore raised whether this species may produce a partial second brood in favourable seasons. In England a partial second brood does seem to occur, but only (*teste* Barrett) "in exceptionally fine and warm summers". Frohawk, with his customary optimism, asserted (*Complete Book of Brit. Butterflies*, 1934, p. 73) "there is not the slightest doubt that it is frequently double-brooded". We prefer Barrett's more cautious statement.

Dr. Uvarov has supplemented his great work on the Acrididae collected by Dr. Burr in Africa by a short paper published by the Filippo Silvestri Laboratory at Portici, in which he has described two new species of Eumastacidae discovered by Dr. Burr in a wild part of Northern Rhodesia in 1928. There is something appropriate in this, for it was Dr. Burr who published the pioneer work on this group as long ago as 1899 and it was he who, thirty years later (1928), was the first to give an account of the way of life of these queer little insects. For many years the Eumastacidae were represented in collections by seldom more than two specimens, usually only one and that often incomplete. But of the second species described here the material is represented by 23 ♂♂ and 15 ♀♀, with several nymphs of both sexes, while of the former, with abundant field notes, there are no less than 315 specimens, of both sexes.

The Wicken Fen Fund is raised annually by entomologists and other nature lovers to assist in defraying the expenses incurred by the custodians of Wicken Fen (The National Trust) in administering the Fen, preserving the fauna and flora, and in providing a watcher. The Fen is, unfortunately, very inadequately endowed, and its maintenance places a severe strain on the resources of the custodians, who for many years have had to contribute a considerable sum of money annually towards its upkeep. It is earnestly hoped therefore that every nature lover who possibly can will contribute towards this desirable object and will send his or her contribution as soon as possible to the Hon. Treasurer, H. M. Edelsten, O.B.E., Bramble Hill, Balcombe, Haywards

Heath, Sussex, who will be pleased to send permits for admission to subscribers on application. The amount of the fund in 1953 was £64 16s 6d.

“A Trap designed to collect insects attracted by ‘sugar’ ” is described and illustrated by P. M. Miles in the April *Ent. mon. Mag.* (Vol. xc, No. 1079, p. 86). The principle is “one end of a straight section of tree trunk (preferably covered with rough bark) 1 ft. 6 in. in length and 5½ in. in diameter” crowned with a pyramidal canopy of cellulose acetate sheeting stitched to a wire frame and standing in a cone of the same material, the whole contraption being accommodated in a square stand “constructed from light timber”. Surprisingly, no results are given, though we are told that “the effectiveness and range of the sugar trap varies according to the manner in which the attractant is prepared. The main ingredient may be waste honey, brown ‘Barbados’ sugar or treacle”. We seem to have heard of brown Barbados before . . . It is a pity that no ‘catches’ are recorded. Perhaps the brown Barbados was not brown enough.

In a review of a recent work on taxonomy (*Ent. mon. Mag.*, 90, xi) the reviewer remarks: “It was a very remarkable piece of insight which made the ancient Hebrew writer assign the naming of the animals as one of the first tasks of Adam in the Garden of Eden. The task, so begun, of stabilising nomenclature has been long and arduous, and the literature is voluminous, excessively detailed, and frequently obscure”. The reference to *Genesis* is contained in verse 19 of that Book: “And . . . the Lord God formed every beast of the field, and every fowl of the air, and brought them unto Adam to see what he would call them; and whatsoever Adam called every living creature, that was the name thereof”. It could do no harm if some of our modern nomenclators reflected occasionally that Adam’s requital for his work in the Garden of Eden was forcible ejection from his biotope, with ignominy.

Notes on Microlepidoptera

By H. C. HUGGINS, F.R.E.S.

Schoenobius gigantellus Schiff. This fine insect does not seem to be taken very often to-day and is undoubtedly very local, but I do not think it is often sought in the right way. It does not appear to like the thick reed-beds but is commonest just beyond their edges, where a fringe of straggling stems comes up in deeper water. In such a place it may be taken from about an hour after dark till far into the night. It is strongly attracted by a good hand-lamp and will follow the beam right up to the net when it happens to cross it, whilst ignoring a petrol-vapour lamp and sheet twenty yards away (I have not tried the m.v. lamp in its localities which I know). The female particularly flies low over the water between such scattered reeds; most of mine were taken by my son who walked in thigh-boots on a narrow spit of hard mud which ran between two pieces of deep water from which stunted reeds projected (he called this his “cat-walk”). *S. gigantellus* is a very sensitive insect which does not fly freely except on hot still nights.

On one night with thunder crackling in the distance we saw forty or fifty where usually a dozen would be a good bag.

Schoenobius forficellus Thunb. On the edges of the big drains in the bogs of the New Forest a percentage of a rather scarce aberration of this moth may be captured in which the wings are unicolorous dark brown. The first week in July is the best average time for both this and *gigantellus*.

In the same places in the Forest, usually ankle-deep or more in water, a similar aberration of *Nymphula nymphaeata* Linn. may be taken, in which all the wings are dull peaty-brown except for a small lighter patch in the centre.

It is very curious that although these two nigrescent aberrations are widely spread in the bogs of the New Forest, e.g. at Denny, Matley, etc., they do not appear to occur in peat-bogs in Ireland which look exactly similar, both *forficellus* and *nymphaeata* from these localities being all typical.

I have also noticed that the specimens of *Gnophos obscurata* Schiff. that I have seen on Cork and Kerry peat-bogs have been pale grey, whilst New Forest ones are of course usually melanic.

Eurhodope cirrigerella Zinck. The first week in July is the best time to look for this very local insect on the chalk downs in Hampshire and doubtless other southern counties, though I am almost certain it does not occur in Kent or Surrey.

The only places where it may be sought with much hope of success are those where the grass is neither cut nor heavily grazed, so that its food-plant, *Scabiosa arvensis*, is undisturbed. On a dull day the moth sits beneath the flower heads and is most difficult to find; but on a warm sunny day it sits on the top and flies gently away when disturbed and may easily be captured.

The best place for it I ever found was a partridge sanctuary on the downs near Winchester, where about half an acre of ground had been wired against cattle and rabbits to allow grass and other herbage to grow as a refuge for the birds. This was full of scabious and *cirrigerella* was not uncommon. I fear, however, that war and post-war agriculture has abolished most of these enclosures.

Phalonia rutilana Hüb. This tiny but most beautiful Tortrix may still be found in Surrey; indeed I should not despair of turning it up in early July on any chalk down there where juniper is common. It flies very quickly round the tips of the boughs in hot sunshine and is not easy to catch, as from its minute size and dazzling colour it is difficult to keep in view. The junipers that it particularly likes, also, are those that grow on the steep slopes, where it is easy to slip over when concentrating on a capture.

It is one of those delicate insects (*Rhodaria sanguinalis* Linn. is another) that are rather apt to die in the box a few hours after capture, so that if possible the full boxes should be stowed in a shady place till the time comes to leave. I lost several from this cause on one occasion on a boiling hot day.

My friend Mr. L. T. Ford has taken it by beating with a tray early in the day. I have never tried this method but it sounds much more satisfactory if less exciting.

Practical Hints

One usually associates *Agrotis trux* Hüb. ssp. *lunigera* Steph. with steep, and often dangerous, cliffs where sugaring can be a somewhat risky business, especially on a dark overcast night. Fifty years ago, however, this moth used to be taken in plenty by sugaring posts and flowerheads along the river Camel at Polzeath, Cornwall, some distance from the sea, and perhaps it is still to be had there. At dusk it could be netted while flying at the wood sage on the hillsides. It is on the wing during the first fortnight of July. We should be interested to hear if *lunigera* still occurs in that place.

The full-grown larva of *Brephos parthenias* L. can usually be collected from birch during the third week of June. It is easily found by searching the outermost twigs about five feet from the ground, mostly on the south and west sides, resting by day on the underside of a leaf, though sometimes found crawling about. It is a handsome larva and very easy to rear. A block of rotten wood, well baked to destroy predators, must be provided for pupation. The pupal stage usually lasts two, sometimes three, and occasionally more, years.

Female *Deilephila elpenor* and *D. porcellus*, which may now be netted at rhododendrons, etc., will usually lay eggs without ado if placed in a cardboard gauze-lidded box. Imagines of these species which are required for the cabinet should never be killed by ammonia or cyanide, both of which chemicals dull the bright greens and pinks of their fore wings. Stupefy with chloroform (50% chloroform, 50% surgical spirit) and either keep "under the influence" till dead or else prick under the wings with nicotine or some other lethal substance when insensible.

The books recommend one to search the trunks of orchard apple-trees, in June, for the imagines of *Chloroclystis rectangulata* L. Oddly enough we have never found a specimen on the trunk though we have occasionally found one on the undersides of the lowest big branches. In this situation they take a deal of finding. If the branch is jarred they fly off—invariably upwards among the branches or just too high for one's net. An aggravating insect when on the wing but to be boxed readily enough when found resting.

Mid-June is a good time to search for the three oak-eating Prominents, *Notodonta anceps* Göze (*trepida* Esp.), *Drymonia ruficornis* Hufn. (*chaonia* Hüb.) and *D. dodonaea* Schf. (*trimacula* Esp.). The habits of larva and moth of each species were dealt with in three articles in this magazine a few years ago, and since many of our present readers will not have access to these articles we will quote certain paragraphs which are germane to the present season.

N. anceps (*Ent. Rec.*, June 1947, Vol. 59, pp. 71-75) is very easy to find in the larval stage. The eggs, usually in pairs, are laid on the under side of an oak leaf either well inside the lowest overhanging branch or, if the oak is a young one, on a leaf borne by a short branch or shoot springing from the trunk two to five feet from the ground. The larva

prefers a warm and sunny situation, though, like most caterpillars, it avoids the glare of the sun, and I do not remember finding one on a bough on the south side of an exposed tree. Practically every larva and egg that I have found (and I have found many over several years) has been in a sheltered spot, either on a tree in a glade, the bough facing east or west, or on trunk-shoots on young oaks fringing a woodland path on the west side of a wood. Only once have I found a larva on an isolated tree in a park, and that tree was just outside a wood and well sheltered from north, south, and east.

The infant larvae are easy to find, for their trademark is unmistakable. They start to eat the *edge* of the leaf and eat towards the midrib, but they eat *only the parenchyma*, eating right through the leaf and leaving the 'veins' of the leaf intact; so that presently there is a little patch of network, about a quarter of an inch square in area, at the side of the leaf, which looks like a tiny sieve. So whenever you see this trademark on the edge of a leaf during the last week of May or first week of June you may lawfully anticipate the presence of a young *anceps*; for I know of no other larva which eats an oak leaf like this at that season. The trademark may be at any place in the perimeter of the leaf.

Needless to say it is infinitely preferable to search for the larva of *anceps* when it is young than when it is in the last or penultimate stadium. Apart from the fact that the survival-average of a brood in the wild is only about one per cent., and that therefore they diminish in number every day, the larva climbs higher as it increases in size and then, of course, becomes more difficult to find. Never on any account attempt to obtain this larva by beating: it is extremely easy to find when young, and larvae that fall into a beating-tray are not usually reared; they are delicate and therefore easily injured; moreover, as a rule only parasitized larvae of this species remain within reach of the beating-stick when they are three-quarters or full grown.

D. ruficornis (*Ent. Rec.*, February 1948, Vol. 60, pp. 15-19) also is very easy to find in the larval stage. Unlike *N. anceps* it does not climb higher as it increases in size and may be found when full grown on the lowest branches. It is a lover of dense shade and is to be found only—in my experience—on trees which face west or, more usually, north. I have found it fairly commonly on young oaks fringing the north and west sides of steep well-wooded hills. A path which the sun did not reach until latish in the afternoon was a favoured spot, and several times I have found larvae on trees whose lower branches never received the sun at all. Direct sunshine is therefore unnecessary to this species. The moths favour the same tree year after year, though quite often trees perhaps only twenty years old are chosen. On such small trees, trunk-shoots are often worth searching (and this applies to Essex no less than to West Wales). This larva is extremely beautiful in all its instars, a bright emerald with brilliant canary stripes. When first the adult plumage is assumed the dorsal line is a delicate mauve. It is not too easy to rear and we recommend intending breeders of this species to consult the article mentioned at the beginning of this paragraph.

D. dodonaea (*Ent. Rec.*, December 1951, Vol. 63, pp. 282-285), which

is perhaps a more common species than *ruficornis*, is far more difficult to find in the larval stage, for the eggs are laid higher than one can reach and it favours large oaks, usually isolated trees such as grow in parks and glades in old woodlands. I have found it only occasionally, usually when searching for other species. It is three weeks later than *ruficornis* and may be found up to the end of July. Occasionally it feeds on beech, but always, I think, on tall well-grown trees. It has the same habit as *ruficornis*, that is to say it rests, between meals, along the midrib on the underside of the leaf. Few lepidopterists have found the larva of this species by searching, though the pupae are easily enough obtained in and after September.

Notes and Observations

EUPROCTIS CHRYSORRHOEA L. : A CORRECTION.—With reference to my reported capture of *E. chrysoorrhoea* near Newbury on 8th October 1953 (*Ent. Rec.*, 66: 83) I am afraid that the Editor's suggestion is correct and that the insect which I had always believed to be *E. chrysoorrhoea* turns out, on closer examination, to be the brown-tailed form of *E. similis* Fues.—H. SYMES, 52 Lowther Road, Bournemouth. 22.iv.54.

THE COLD SPRING.—I have not done much field work yet this year. Larvae of *A. villica* were scarcer than usual here, and I had difficulty in finding a dozen of them. Yesterday I went to the New Forest with the Rev. F. M. B. Carr: our total bag was 1 *X. areola*, 1 *A. rumicis*, 1 *A. punctulata*, 4 larvae of *A. caja* (not a common species in the Forest), and 1 of *L. quercus*. No *O. carmelita* were seen in their usual haunts, and a freshly emerged *S. pavonia* ♀ failed to attract a male. I think this cold East wind is keeping everything back.—H. SYMES, 52 Lowther Road, Bournemouth. 22.iv.54.

FIELD WORK AT CHESTERFIELD.—The cold East winds continue to keep the temperature down, but I was able to pay a visit to Hardwick Wood on 8th and 9th April and search the larch wood during the first hour or so of darkness. I found nine specimens of *Ectropis bistortata* Göze on the first night and eleven on the second. *Aglais urticae* L. was not seen until 31st March, but has appeared commonly on most sunny days since then. *Pieris rapae* L. appeared on 11th April, but there has been no sign of any other butterfly so far. I paid a visit to fallow blossom on 8th April but found nothing on the huge male bushes which were standing in the open. At the catkins on a small sickly straggling female bush almost buried by a Scots pine I took 19 *Orthosia stabilis* Schf., 4 *O. incerta* Hufn., 2 *O. gothica* L., 5 *O. gracilis* Schf., 4 *Conistra vaccinii* L., and 2 *Cerastis rubricosa* Schf. The larvae of *Arctia caja* L. seemed to leave their winter quarters all at once on the morning of 19th April. I saw groups of three or more feeding together on large numbers of dock plants in the shelter of a large clay-pit.—J. H. JOHNSON, 1 Berry Street, Hephthorne Lane, Chesterfield. 26.iv.54.

IRREGULAR DATES OF SPRING INSECTS.—On the night of 3rd May my m.v. lamp trap contained a curious mixture of early and late insects. The early ones were a worn male *Cerura vinula* and a fresh male *Agrotis puta*, whilst the late ones were perfectly fresh ♂ *Selenia bilunaria*,

♂ *Xylocampa areola*, and ♂ *Orthosia incerta*, the rest of the bag being *O. gothica* and *O. stabilis*, many in good condition. It is six weeks since I saw the first *X. areola* and five weeks as regards *S. bilunaria* and *O. incerta*.—H. C. HUGGINS, 65 Eastwood Boulevard, Westcliff-on-Sea. 5.v.54.

EARLY MOTHS IN HERTFORDSHIRE IN 1954.—With two exceptions, Spring moths came to my m.v. light-trap in Bishop's Stortford rather earlier this year than in 1953. Some were remarkably early. *Spilosoma lutea* Hufn. came on 28th April; it did not appear until 29th May in 1953. Other early arrivals were *Cerura vinula* L. on 1st May (21st May in 1953) and *Apatete rumicis* L., also on 1st May (24th May in 1953). *Pheosia gnoma* was another species which came on 1st May as against 19th May the previous year. *Alsophila aescularia* Schf. and *Selenia bilunaria* were both about a fortnight early, 21st March and 15th April respectively. The two exceptions were *Lycia hirtaria* Cl., 4th April (25th March 1953) and *Cyenia mendica* Cl., 25th April (21st April 1953). In 1953 nineteen species had visited the trap by 1st May, in 1954 twenty-four.—C. CRAUFURD, Galloway Road, Bishop's Stortford. 8.v.54.

[Commander G. W. Harper records (*in lit.*) a *C. vinula* in his light-trap in Inverness-shire on 26th April last.—P.B.M.A.]

LATE OCCURRENCE OF *THERIA RUPICAPRARIA* SCHF.—The freak weather of last winter seems to have upset the emergence of some species of moths in South Devon this spring. *Celama confusalis* H.-S. was taken on a street lamp on 16th April 1954, nearly a month before its usual emergence, but in the opposite direction is *Theria rupicaprarica* Schf., of which a fresh specimen was found flying with the common *Lampropteryx suffumata* Schf. round sloe blossom in a hedgerow on 17th April. Have any other readers noticed an unusually late occurrence of *T. rupicaprarica*?—A. H. DOBSON, Sunningdale, Millbrook Park Road, Torquay. 25.iv.54.

DECLINE OF *LYSANDRA BELLARGUS* ROTT.—With reference to Mr. Bowden's note on the decline in numbers of *L. bellargus*, this may very well be true in certain localities. On a certain stretch of the North Downs in Surrey where this species occurs, there is always considerable fluctuation in abundance and scarcity, as may be said of course for most species. I am inclined to the view that scarcity and abundance are almost entirely controlled by climatic conditions. On referring to my diary I find for the past ten years that *L. bellargus* at the place mentioned occurred as follows: 1944, very common. 1945-46-47, not so common. 1948, distinctly scarce. 1949, abundant once again. 1950, also abundant. 1951, a late cold year, very scarce. 1952, also very scarce. But in 1953 it was in surprisingly good numbers; but in the autumn, as in the autumn of 1949, it was very scarce indeed. Last year this scarcity in August and September may have been due to the abnormally cold spell (Coronation time) when usually ovipositing would take place. Given a good summer after the exceptionally fine autumn it would not be surprising if the species once more became common. The above of course is true of many species: *Celastrina argiolus* L. in particular is almost non-existent in some seasons and then suddenly swarms.—J. M. K. SAUNDERS, 27 Canonbury Avenue, Pinner, Middx. 16.iv.54.

SCARCITY OF *LYSANDRA BELLARGUS* ROTT.—The reports of the scarcity of *Lysandra bellargus* Rott. are interesting to me because in 1952 I sent a report on the incidence of this species in two localities on the Chilterns and near Luton to the *Entomologist* (85: 237).

The 1953 season was little better. On 18th May the Chilterns produced one male but no females; on 6th June there were again a few males but the females were conspicuous by their absence in spite of the fact that my wife had taken one there a week earlier. One female was found on the 9th. In the same locality *bellargus* made an appearance on 27th August but my diary notes them as 'very few and far between'. There was no sign at all of the summer brood at a place on the North Downs where they are alleged to occur.

It would indeed be a pity if this fine insect was to disappear completely from its present haunts in the Chilterns; we can but hope that this is only a temporary set-back and that it will soon re-establish itself in its former numbers.—W. A. C. CARTER, Briarfields, Sandels Way, Beaconsfield, Bucks. 19.iv.54.

EXTRA SPOTTED SPECIMENS OF *EUMENIS SEMELE* L. IN IRELAND AND WALES.—I was interested to read of the fine extra spotted female taken on the Burren by Mr. Huggins (*Ent. Rec.*, 66: 105). It reminded me that in August 1919 I took an aberration of a male of this species at Chwilog, Caernarvonshire, which was apparently the exact counterpart of Mr. Huggins's female. It had four eye-spots on each forewing, all of equally large size, the extra two being placed between, and resembling exactly, the normal pair just as described by Mr. Huggins. The specimen was slightly damaged and, in the enthusiasm of a youthful spring cleaning of the cabinet, I relegated it to the dustbin a year or two later. (I was still at my prep. school!)—J. ANTONY THOMPSON, Milton Lodge School, Wells. 17.iv.54.

ODONTOSIA CARMELITA ESP. IN NOTTINGHAMSHIRE.—I should be glad to know whether any readers of the *Record* have any records of taking *Odontosia carmelita* Esper in Nottingham. I ask because I took two males at light on Saturday, the 8th May, and a further male on the 10th May in the Sherwood Forest near Ollerton cross-roads, in spite of clear skies, and on the Saturday a very cold east wind. Appearances on both nights were before 10.45 p.m.—W. REID, 6 Whirlow Park Road, Sheffield.

PYRAUSTA NUBILALIS HUEBN. IN SURREY.—During May 1953, when searching old stems of Mugwort (*Artemisia vulgaris* L.) on some waste land in Old Lodge Lane, Purley, a number of full grown larvae of the above moth were found in the base of the stems. These pupated in a few days and the moths emerged from mid June to early July. The occurrence of this species at Purley appears to be of particular interest as previous records (from Essex) have been from coastal areas. So far as I am aware this is the first record for this insect in Surrey.—H. BRITTEN, 21 Tollers Lane, Old Coulsdon, Surrey. 30.iii.54.

A NOTE ON *NOMOPHILA NOCTUELLA* SCHIFF.—It may be of interest to students of migration to report that I took a specimen of *N. noctuella* in my light-trap in Kendal on 12th April this year. This species appears

to make an early migration to this country—a fact borne out by my other early record of its occurrence here on 9th March 1952. I saw no signs of it in the early months in 1953. Up to 1939 apparently only six records existed of its occurrence in March and none in April (C. B. Williams *et al.* in *Trans. R. ent. Soc. Lond.*, 92, Pt. 1).—Dr. NEVILLE L. BIRKETT, 3 Thorny Hills, Kendal. 23.iv.54.

HABITS OF *APATURA IRIS* LINN.—Mr. Symes' interesting article on this species and Mr. Hyde's subsequent comments were much appreciated. One or two points, however, have struck me when searching for *A. iris* larvae. I have almost invariably found the larva well within reach and on the North and East side of the bush and almost always on a female sallow. The species of *Salix* chosen varies but usually the broad-leaved (large or small leaves) plant is chosen. Also the grey-stemmed species is favoured. I have never yet found a larva on the red-stemmed variety. This may be coincidence but it seems strange and may be due to procrypsis during hibernation. Old and decrepit-looking bushes are often chosen but unlike Mr. Symes I have often found larvae on very small bushes. Finally I fully agree with both contributors—never beat for this species. It is very satisfying to search and to find this larva.—J. M. K. SAUNDERS, 27 Canonbury Avenue, Pinner, Middx. 16.iv.54.

PROCRYPISIS IN LARVA OF *APATURA IRIS* L.—I have read with interest the recent notes and articles on *Apatura iris* L. Have you noticed what an excellent example of procrypsis appears in the over-wintering larva of this species? I plunged a number of young larvae into a killing-bottle: they were attached by silk to brown, red, and yellowish twigs of sallow, and each larva was exactly the same tint as the twig on which it rested. After death they did not change colour and now they look as fresh, and their procrypsis as convincing, as they did when killed. I have had them now for 60 years.—P. A. H. MUSCHAMP, 35 Upperton Road, Leicester. 20.iv.54.

CERURA VINULA L. TWO YEARS IN PUPA.—In his book of British Butterflies and Moths the late Mr. L. W. Newman states that the Pusmoth very rarely remains in pupa until a second year. If this is so, it may be of interest to record that of half a dozen small larvae of this species found on poplar towards the end of June 1952, which pupated during July, five moths emerged normally between 16th and 28th May 1953 (3♂, 2♀), whilst the sixth remained in the pupal state for a further year, producing a male moth to-day, 11th May 1954. The cocoons were together on Virginian cork and there was no apparent reason for the late emergence of one moth.—J. L. ATKINSON, 76 Northwood Road, Tankerton, Kent. 11.v.54.

CETONIA AURATA LINN. IN BOURNEMOUTH.—Last year I reported finding a specimen of *C. aurata* in Bournemouth on the unusually early date of 7th April (*Ent. Rec.*, 65: 185). This year I found another in exactly the same place on 10th April.—H. SYMES, 52 Lowther Road, Bournemouth. 22.iv.54.

DIPTERA

ECHINOMYA FEROX PANZ. AND RHINGIA ROSTRATA LINN. IN N.W. KENT.
—On the 28th August 1953 I took a female *Echinomya ferox* on the outskirts of Farningham Wood, feeding at Scabious flowers. Returning to the same spot on 6th September, 1953, five more specimens, all females, arrived in the space of half an hour and were taken. Mr. H. W. Andrews, who collected in the area for fifty years, has two more records of this fly: Joydens Wood, Bexley, 1 ♀ 20.ix.31, and 3 ♂♂, 3 ♀♀ at Beesfield Valley, 21.vii.34. There is no mention of this fly in the Woolwich Surveys, 1907, nor in the *Insects of Kent* section (Diptera: J. W. Yerbury) of the Vict. Co. Hist. Kent, I (1908).

At Shoreham, Kent, on 30.viii.53 I took 1 ♂, 1 ♀ of *Rhingia rostrata* at Scabious, and again, in the same place, on 6.ix.53 1 ♂, 1 ♀. Mr. H. W. Andrews records (*in lit.*) that he first took this insect on 5.ix.42 (2 ♂♂, 2 ♀♀) at Bexley Wood and subsequently not uncommonly in the same wood each autumn.—K. H. BOBE, 19 Hengest Road, Lee, London, S.E.12.

[These two records of *E. ferox* by Mr. Bobe are the only ones I have from N.W. Kent. I took it also, in 1934, at Bembridge, Isle of Wight. Wainwright (*British Tachinidae*) gives Devon and Cornwall and odd records from other South of England localities. *R. rostrata* seems to frequent Scabious: almost all my captures were at this plant. In Mr. Bobe's second paragraph Bexley Wood=Joydens Wood.—H.W.A.]

CTENOPHORA ORNATA MEIG. IN THE NEW FOREST.—On 30th April, while searching for *Odontosia carmelita* Esp. on old birch trunks near Brockenhurst, I found five specimens of *Ctenophora ornata*, one of each sex on two trunks, and a female on a third. They were from one to three feet up the trunks, and appeared to be making their way up from the base of the trees. During the past fifteen years I have searched many birch trunks in the New Forest during April but have seen only two specimens of this handsome crane-fly with its wasp-like markings, one in the same locality as the above-mentioned five, and one in Denny Wood, near Lyndhurst. I have never seen the insect anywhere else. I know little about Diptera, but have been told that the species is rather rare. Has it any particular associations with birch trees?—H. SYMES, 52 Lowther Road, Bournemouth. 1.v.54.

Fifty Years Ago

(From *The Entomologist's Record* of 1904)

A PROBABLE DOUBLE-BROODED EREBIA.—In the summer of 1902 I spent the month of July in the Picos d'Europa, a rather singular district of northern Spain, consisting of a chain of high limestone mountains running east and west, parallel to, and about 25 miles from, the southern coast of the Bay of Biscay. This chain is cut sharply through by three considerable rivers, flowing from south to north, and forming the most tremendous gorges or cañons that I have ever seen, excepting the Tara gorge in the Balkans. These gorges rise in one sheer precipice from the growth of chestnut, oleander, and bay along the riverbank, right to the snow level, and a great variety of insect life is produced by the

rapidly varying climate and vegetation. I encamped, July 10th, at a height of nearly 5,000 ft., on the southern face of this chain, and found the mountain pastures, just above this level, swarming with *Erebia stygne*. Both sexes were out, and in good order, though some of the males were slightly worn. I caught a good many, and kept a few; they were quite typical specimens, perhaps a trifle larger than those from Dauphiné and the Pyrenees. I remained in the high mountains till the 19th, by which time *E. stygne* was nearly over. I then turned westward and encamped much lower down and further west, near a village called Posada de Valdeon, in a beautiful well-wooded valley, still on the south side of the mountains. Here I remained four days, and saw no Erebias, though it was an excellent place for butterflies On 22nd July I started westward across low-wooded hills, forming spurs of the high mountains, to the gorge of the Sella. On this day's march, at a height of from 3,000 ft. to 3,500 ft., I saw several large Erebias, quite fresh out. I caught six or seven specimens, all males, and considered them to be *E. aethiops*, and therefore only kept a couple. But when I returned home and had them set, they turned out to be very large specimens of *E. stygne*. I now possess only one of these specimens, either Mr. Elwes or Dr. Chapman had the other. My specimen measures 2 in. across the wings, and is very like *E. aethiops*, though, on examination, it is evidently a very large *E. stygne*. I greatly regret not having made the discovery when I took the insect, as it would be most interesting to possess a good series, and particularly some females, of which I never saw one, nor did I see the *Erebia* again on my return journey along the northern side of the range. Perhaps some enterprising entomologist may explore the Picos district this summer, and ascertain whether the big, low-country *E. stygne* which I took on 22nd July is a second brood or not.—MARY DE LA B. NICHOLL.

[There can be no doubt that the large Erebias which Mrs. Nicholl took in 1902 were the species taken a little further to the west in 1904 by Dr. Chapman. He later described this species as *Erebia palarica*. This was the second occasion when Mrs. Nicholl had the good fortune to discover an unknown European species of *Erebia*. There is no confirmation, however, that *E. stygne* has two generations in the season anywhere. There have been records of a few specimens of a second generation of an *Erebia* being bred in captivity, but to my knowledge there is no authentic record of a second generation in nature.—B. C. S. WARREN.]

OBSERVATIONS ON *COSSUS COSSUS* L.—In nearly every case about here the *Cossus*-infected trees are found in small groups of three or four close together; even in one large wood where there are a number of such trees they are arranged in four distinct groups. One often finds that one of the trees in a group is more severely attacked than the others, and is no doubt the original "source of infection". It is probable that, as a rule, the ♀ moth very seldom travels far before laying its eggs, generally laying them on the same tree it has been bred from, or at any rate on an adjacent tree. This would account for this grouping of infested trees. One also occasionally finds an old tree very much eaten, with no others in its vicinity. . . . I have noticed in every case that trees that have only recently been attacked have already got a large num-

ber of dead branches on them, and so no doubt are already on the down grade, and I have never yet seen a really healthy tree showing signs of attack. I believe that, as a rule, the moth lays its eggs on the tree from which it has itself bred, and here the young larvae have a good chance of living under the already weakened bark, but that if the eggs are laid on a young and healthy tree the vitality of the bark resists the attack of the very young larvae.—NORMAN H. JOY.

Current Literature

LEPIDOPTERIST'S NEWS, 1954, 7, 139-145. "Two new genes 'whitish' and 'blonde' producing pale males and females of *Colias philodice*" by C. L. Remington.

I do not think the author has established the existence of the gene 'whitish'. He bred only two and the second was crippled and blotched with white and was probably pathological. The gene for 'blonde' appears to be recessive, though the ratio 1: 82 is far from the 1: 3 expected. The colour pale or light chalcedony yellow (Ridgway) is similar to that of *C. croceus* ab. *helice* Hbn. The author gives a list of parallel aberrations in other species of *Colias* affecting both sexes and amongst them places Warriar's *croceus*, which was an albino as the description, figures, name, and the reference to Oberthür's coloured plate clearly showed. He favours English descriptive names like those used in the genetics of *Drosophila*, but I do not think these are easier to remember or index than scientific aberrational names.

E. A. C.

In *Nachrichtenblatt der Bayerischen Entomologen*, 1953, 2, 20, J. Wolbsberger gives an account of the spread of *Biston betularia* Linn. ab. *carbonaria* Jordan and ab. *insularia* Th. Mieg. in Europe from Manchester to the limestone mountains of the Tyrol. At page 23 of the same publication is a description of *Pelosia muscerda* Hufn. ab. *umbratu* Urbahn. This aberration is exactly like ab. *simonensis* Legrand except that the fore wing is darkened, the costa, fringe, thorax, and abdomen remaining pale. Saleskar Moor, 1935. The ab. *simonensis* Legrand of this species was described in *Amat. Papillons*, 1936-1937, 8, 120, Pl. 1, fig. 10. The spots are prolonged along the nervures towards the margin; the two spots nearest the costa are bifurcated and doubled. Aisne.

E. A. C.

PROC. S. LOND. ENT. NAT. HIST. SOC., 1952-1953. With nine plates (two coloured) and 18 text figures. March 1954.

In spite of the increased cost of production we are glad to see little change in the size of the Proceedings and Transactions thanks to a generous grant from the Royal Society. The two coloured plates are beautifully executed and reproduced, the first by S. N. A. Jacobs to illustrate L. T. Ford's paper on the Glyphipterygidae and allied Families and the second by Lt.-Col. F. C. Fraser to illustrate S. C. S. Brown's paper on the British Lyonetiidae. By comparison most of the black and white plates are disappointing; perhaps the reproduction is to blame. The *Pieris brassicae*, Pl. 2, fig. 1, is very clear, but Miss McDermott's tentative suggestion that it is homoeotic cannot be correct. If it were, part of the apical black mark and both the black spots

of the fore wing would be reproduced on the left hind wing. It must be a gynandromorph. The small pale moth, Pl. 3, fig. 12, attributed by the Rev. F. M. B. Carr to *Peridroma porphyrea* Schiff. (*saucia* Hbn.) looks like *Apamea sordida*, but the figure may be misleading.

Here and there the nomenclature of specific names is puzzling. *Ortholitha mucronata* is used for *plumbaria* and vice versa throughout; *epomidion* Haw., p. 9; I thought it was agreed that *characteria* Hbn. must replace *hepatica* Clerck. Whichever name has priority the observation of Mr. Hawkins is interesting; three cocoons under loose bark produced three females; it reminds me that many years ago I bred a moth from a cocoon found in a similar situation, but I have never heard of *Apamea crenata* pupating in this way. *Aquilina*, p. 30, must be *tritici*.

The records of exhibits, particularly of insects shown at the Annual Exhibition, will be a mine of information in the future, and there are now very few of the old fashioned records stating that Mr. X showed a rare form or a beautiful variety of *A . . . b . . .*, which formerly wasted so much valuable space.

The papers are fewer and smaller than usual; L. Parmenter contributes an interesting one on the courtship of flies; M. Niblett gives an account of more of his original work, this time on the life history of *Cynips (Diplolepis) folii* L., a gall maker on oak; Dr. C. A. Clarke gives a preliminary paper on Pupal Coloration in *Papilio machaon* L. and there are Interim Notes on *Pieris napi* by J. Antony Thompson. The Presidential Address on Separation Characters of some British Noctuid Moths, i.e. characters by which they can be distinguished, is valuable. I think some people will still find some of them more difficult than the author appears to do, but I agree with him that there is no good reason why collectors should make no attempt to separate them.

Lastly I must mention the excellent photograph of Dr. K. G. Blair and the sympathetic obituary notice by Mr. C. N. Hawkins, who saw so much of him in his later years.

E. A. C.

Obituary

"MR. EDWARD AUGUSTUS BOWLES," wrote *The Times* on 8th May last, "who died yesterday at the age of 89 will be affectionately remembered by a host of amateur and professional gardeners to whom, at Myddleton House, near Enfield, he acted as guide, philosopher, and friend." The notice goes on to recount Bowles's activities in the sphere of gardening, but makes no mention of his interest in the Lepidoptera. He appears to have 'taken up' entomology when an undergraduate at Cambridge (where he took a degree in Theology in 1887) and when 26 contributed a paper on "The Variation of the Markings of *Papilio machaon*" to the *Entomologist* (1891, 24: 130). Thenceforward he sent Tutt frequent Notes on collecting in various parts of the country with observations on life-histories and variation, and in 1898 printed a paper on "Variation of *Nonagria cannae*, with Descriptions of three new Aberrations" in the *Record* (10: 286). He was elected a Fellow of the (Royal) Entomological Society in 1894. Bowles was one of the little

band of collectors who took *Nonagria sparganii* Esper at the deep pits, Dungeness, when that was the only known locality. He was also a prolific writer on gardening subjects, and scrupulously accurate in all that he wrote, being able to illustrate his articles with his own brush. He was unmarried.

Lepidoptera in North-East Derbyshire, 1953

By J. H. JOHNSON.

(Continued from page 146.)

Xanthorhoe montanata Schf. (50) (20). 13th June-4th July. This species was taken in large numbers among nettles on 24th May. It was abundant in woods until August. No variation noticed.

Procus strigilis Cl. (298) (38). 14th June-29th August. Forty-three at sugar. Several black and white specimens obtained.

Apamea monoglypha Hufn. (728) (148). 24th June-13th September. This seems to be the commonest species of noctuid in this district and the most variable, pale fawn and smoky brown specimens are equally common.

Apamea lithoxylea Schf. (66) (3). 25th June-17th August. Fifteen at sugar. Seems to have returned to its former abundance.

Triphaena pronuba L. (593) (8). 25th June-25th September. Ordinary electric light seems to have little attraction for this species judging by the present figures, although formerly it was one of the moths usually captured at house lights. Extremely variable.

Leucania pallens L. (349) (28). 27th June-6th September.

Leucania impura Hb. (165) (47). 27th June-20th August.

Sterrrha aversata L. (65) (24). 1st July-21st August.

Cryphia perla Schf. (48) (21). 4th July-13th August. Two larvae were seen feeding on algae growing on concrete walls near the gas works in April.

Itama wauaria L. (55) (22). 19th July-5th September.

Cerapteryx graminis L. (74) (8). 21st July-30th August. Large numbers of this moth were seen flying about in various fields before noon on most sunny days throughout the summer.

Amathes baia Schf. (59) (13). 21st July-29th August.

Apamea secalis L. (*oculea* L.). (253) (66). 21st July-15th September. Seven at sugar. A large number of melanics were obtained.

Crocallis elinguaris L. (50) (21). 23rd July-20th August. Every specimen was a male. Although many are still pale in colour a few are showing signs of a brown stippling on all four wings.

Luperina testacea Schf. (280) (85). 31st July-25th September. This species is equally attracted by 100-w. and m.v. lights. Two very small pale grey specimens were taken.

Triphaena ianthina Schf. (89) (0). 2nd August-24th August. None taken by any other method.

Amathes xanthographa Schf. (261) (23). 2nd August-9th September.

Amphipyra tragopoginis Cl. (399) (0). 5th August-30th September.

Triphaena comes Hb. (*orbona* Guen.). (74) (0). 7th August-14th September.

Hydraecia micacea Esp. (357) (0). 11th August-10th October. Several of the smaller brown form were taken.

Tholera cespitis Schf. (109) (0). 13th August-7th September.

Anchoscelis litura L. (61) (0). 2nd September-23rd September.

Agrochola lychnidis Schf. (*pistacina* Fab.). (289) (0). 7th September-25th October. Extremely variable.

Allophyes oxyacanthae L. (66) (0). 11th September-10th October. The ab. *capucina* Mill. is much more numerous than the typical form.

Oporinia dilutata Schf. (56) (0). 17th September-18th November. Usually large, dark specimens.

B. Common.

Orthosia incerta Hufn. (18) (0). 5th to 31st May.

Selenia bilunaria Esp. (15) (5). 5th May-15th August. There are two distinct broods. The female comes to both lights as freely as the male.

Cyenia mendica Cl. (10) (3). 5th May-12th June. The male only comes to light, and this year (1953) this sex has shown an inclination towards stronger looking fore wings splashed with buff. Two females were picked up sitting on grass under birches at dusk among dozens of *Cabera pusaria* L.

Cilix glaucata Scop. (38) (13). 25th May-24th August. A few large specimens were taken this year.

Hadena trifolii Hufn. (24) (0). 26th May-30th August. This species avoided the 100-watt electric light completely, but two were taken at sugar. The larva was common on plants of Good King Henry (*Chenopodium bonus-henricus* L.) as late as 10th October.

Phalera bucephala L. (26) (0). 26th May-8th June. Another species apparently not attracted to the 100-w. electric light. The larva was not as common as usual.

Callimorpha jacobaeae L. (13) (9). 26th May-11th July. I noticed a few larvae feeding on groundsel.

Caradrina clavipalpis Scop. (24) (4). 26th May-22nd October. Only one specimen was taken in May and this was badly tattered and worn. The next one was not seen until 10th July, from which date until 29th August they occurred fairly regularly; then there was another break until 23rd September, when one was taken, and 22nd October, when the last one was caught. This may point to three broods, but I think the first one was a migrant.

Eumichtis adusta Esp. (36) (2). 25th May-9th July. Common at sugar.

Diarsia rubi View. (16) (0). 26th May-6th September. Occasionally taken at sugar.

Apamea crenata Hufn. (*rurea* Fab.). (33) (0). 5th June-28th June. The first imagines of this species were found on 20th May hiding under fence posts lying on grass. 21 were taken at sugar. A female was observed one night laying eggs *inside* the flowering heads of common rye-grass growing near a very tall hawthorn hedge. Several forms were seen, ab. *alopecurus* Esp. and ab. *combusta* Haw. were commoner than the typical form.

Ochropleura plecta L. (20) (0). 10th June-7th September. This is not a common species, although its foodplants are abundant. Only one was taken at sugar.

Graphiphora augur Fab. (11) (6). 10th June-6th September. This species, like the last one, is not so common as might be expected. Only one was seen at sugar.

Agrotis segetum Schf. (35) (4). 13th June-28th September. The last specimen taken on 28th September was completely unexpected. The previous latest date was 21st July. Only one was taken at sugar.

Melanchra persicariae L. (19) (4). 13th June-9th August. This fine moth prefers to rest near the trap. It may be commoner than these figures suggest. Only two were seen at sugar.

Apatele psi L. (38) (2). 13th June-21st July. Two taken at sugar.

Eupithecia succenturiata L. (27) (5). 13th June-10th August. There has been a noticeable increase in the amount of yarrow in the field in front of the m.v. trap. This no doubt explains the sudden appearance of this species.

Apamea remissa Hüb. (*obscura* Haw., *gemina* Hüb.). (14) (0). 14th June-8th August. This species is more attracted to sugar, at which seven were seen.

Plusia pulchrina Haw. (18) (0). 18th June-3rd August. None was taken at the 100-w. light.

Eupithecia centaureata Schf. (*oblongata* Thun.). (21) (10). 24th June-9th August.

Amathes c-nigrum L. (28) (4). 24th June-22nd October. The first brood ceased to fly on 8th August; the second appeared on 2nd September. The first brood was rather more numerous than the second, but there were few of the larger type.

Mamestra brassicae L. (10) (4). 24th June-7th September. This species first appeared at sugar on 12th June, but only two were taken by that method. It seems probable that there are two broods, although single specimens are taken in almost every week between the two dates given.

Perizoma alchemillata L. (10) (4). 23rd June-30th July.

Plusia chrysitis L. (30) (13). 25th June-11th August.

Petilampa minima Haw. (*arcuosa* Haw.). (36) (24). 25th June-13th August. The female is attracted to light quite often.

Eupithecia linariata Schf. (11) (2). 26th July-13th August.

Arctia caja L. (22) (9). 1st July-14th August.

Leucania lithargyria Esp. (25) (0). 4th July-30th August. This species is fond of sugar, twelve were taken by that method.

Leucania conigera Schf. (22) (0). 13th July-9th August. This species prefers willowherb and ragwort flowers to sugar or 100-w. electric light.

Eupithecia icterata Vill. ssp. *subfulvata* Haw. (28) (6). 26th July-29th August.

Amathes sexstrigata Haw. (*umbrosa* Hb.). (23) (8). 27th July-20th August. Not taken before this season in this area.

Pelurga comitata L. (15) (0). 29th July-10th August.

Colostygia didymata L. (31) (0). 4th August-18th August.

Hydriomena furcata Thun. (*elutata* Hb., *sordidata* Fab.). (18) (0). Specimens were seen in Hardwick Woods on 10th July but none appeared at m.v. light until 5th-29th August.

Ecliptopera silaceata Schf. (19) (0). 6th August-5th September.

Hydraecia oculea L. (*nictitans* L.). (17) (0). 6th August-6th September.

Deuteronomos alniaria L. (*tiliaria* Bork.). (16) (0). 7th August-3rd October.

Gortyna flavago Schf. (*ochracea* Hb.). (31) (0). 2nd September-21st September.

Phlogophora meticulosa L. (14) (0). 6th September-23rd October. I have never seen the imago in any month other than the two mentioned.

Colotois pennaria L. (20) (0). 11th October-14th November. All attracted to light were males. One female was seen resting on a tree trunk.

C. Rarely taken in traps, common in the district.

Eupsilia transversa Hufn. (1) 18th November.

Orthosia advena Schf. (*opima* Hb.). (1) 27th April, (1) 2nd May.

Erannis marginaria Fab. (*progemmaria* Hb.). (1) 4th May, (1) 5th May.

Gonodontis bidentata Cl. (1) 26th May, (1) 9th June.

Orthosia gracilis Schf. (8) 5th May.

Cerura vinula L. ♂ 24th May, ♀ 23rd June, ♂ 14th June.

Lithina chlorosata Scop. (1) 25th May, (2) 26th May. Myriads seen in Hardwick Wood up to 15th June.

Hadena cucubali Schf. (1) 25th May, (2) 14th June, (1) 2nd August, (1) 16th August, (1) 21st August.

Hadena serena Schf. (1) 25th May, (1) 28th May, (1) 1st July, (1) 15th July.

Perizoma albulata Schf. (1) 25th May, (1) 5th August, (1) 20th August.

Epirrhoe alternata Müll. (*sociata* Bork., *subtristata* Haw.). (2) 14th August, (1) 19th August, (2) 20th August, (1) 11th September. Common in Hardwick Wood in May and June. Apparently there is a second brood which has a tendency to migrate.

Jodis lactearia L. (1) 2nd July.

Hepialus lupulinus L. (1) 11th June, (1) 12th June, (1) 13th July, (3) 14th July, (3) 15th July. Scores were seen in the field immediately in front of the m.v. light trap on 27th May, but none entered the trap. Every evening throughout June and July myriads of this species were seen flying over the grass, and visiting windows; very few entered the trap, perhaps because it was too high for them.

Incidentally not one *H. humuli* L. entered either trap, although its larvae were found by the score in the garden.

Calothyssanis amata L. (*amataria* L.). (1) 20th August, (1) 29th August. Specimens first taken in lanes on 28th May, apparently another case of migratory second brood.

Cabera pusaria L. (2) 13th June, (1) 24th June, (2) 26th June, (3) 4th July, (1) 6th August, (1) 8th August. This species is always abundant wherever birch grows, but this is the first season when I have had evidence of a second brood.

Eupithecia absinthiata Cl. (1) 13th June.

Bupalus piniaria L. (1) 4th July. This species is always abundant in Hardwick Wood.

Lomaspilis marginata L. (1) 23rd June.

- Lophopteryx capucina* L. (*camelina* L.). (1) 6th June, (1) 13th June, (1) 24th June.
- Deilephila elpenor* L. (2) 10th June, (2) 24th June, (1) 25th June, (1) 27th June, (1) 28th June, (1) 3rd July, (1) 10th July.
- Drepana falcataria* L. (*falcula* Schf.). (1) 10th June, (1) 13th August, (1) 20th August.
- Euplexia lucipara* L. (1) 14th June.
- Meristis trigrammica* Hufn. (*trilinea* Schf.). (1) 17th June.
- Ortholitha mucronata* Scop. (1) 2nd July, (1) 3rd July. Common on the old pit tip at Clay Cross.
- Euproctis similis* Fues. (*auriflua* Fab.). (1) 4th July, (3) 1st August, (1) 4th August, (1) 5th August, (3) 13th August. This species seems to be on the increase.
- Ourapteryx sambucaria* L. (1) 4th July.
- Nola cucullatella* L. (1) 7th August, (1) 8th August.
- Ortholitha chenopodiata* L. (*limitata* Scop., *mensuraria* Schf.). (1) 29th July, (4) 7th August. Apparently not fond of travelling, but very common on every waste land.
- Abraxas grossulariata* L. (1) 23rd July, (1) 2nd August.
- Campaea margaritata* L. (1) 6th August.
- Cidaria fulvata* Forst. (1) 9th August, (1) 11th August.
- Hypena proboscidalis* L. (1) 1st August, (2) 7th August, (1) 8th August, (1) 19th August, (1) 20th August, (1) 6th September.
- Cosmia trapezina* L. (1) 6th August, (1) 13th August, (2) 16th August, (1) 2nd September.
- Antitype chi* L. (1) 13th August, (1) 14th August, (1) 23rd August, (1) 25th August.
- Cirrhia icteritia* Hufn. (1) 21st August, (1) 5th September.
- Nonagria typhae* Thun. (1) 29th August.
- Lampra fimbriata* Schreb. (*fimbria* L.). (1) 6th September.
- Arenostola pygmina* Haw. (1) 6th September, (1) 8th September, (1) 14th September, (1) 15th September, (1) 16th September.

(To be continued.)

Accidentals

By AN OLD MOTH-HUNTER.

It is human to err. It is also human to have 'accidentals'. We all have them, no matter what our pursuit or pastime may be. I was never a great cricketer—though I am second to none in my love of the game—but my cricketing career (if it deserves such a description) was illumined, every season, by accidentals. The ball which by rights should have knocked my off stump out of the ground hit the edge of my bat and went for four. Two of the fieldsmen who rushed for the ball that I skied collided and sustained concussion of the brain, and I and my partner took three runs before they recovered. And there was that never-to-be-forgotten occasion when, fielding at point—point, mark you, not cover—I threw down the wicket of a Cambridge blue who was playing against my home side and thereby morally won the game. It happened early on and it staggered the enemy to such an extent that they fell easy victims to our bowlers' prowess. And once, when sitting in the cockpit of a small yacht in a choppy sea, I aimed

with a .22 rook rifle and fired at a gannet swirling high overhead and, unhappily, hit the bird plumb in the chest. These are things that happen to all of us now and then; but we can never repeat them. Indeed, it would be improper to do so; besides, a fluke which occurs twice lays its perpetrator open to grave suspicion.

Even the most intelligent of men, to wit lepidopterists, are not immune from accidentals. Perhaps we have been beating sallows in vain for an hour and the very last bush we decide to beat, a tall, a noble bush, has a branch just out of reach. "Oh, well, I may as well have a whack at it", we think; so we leap into the air and just manage to smite the branch with the tip of our stick. Whereupon a full grown larva of the Purple Emperor falls into our tray.

At sugaring of course accidentals are not uncommon. And they happen in cages, too. My friend Mr. Castle Russell once collected a small number of *machaon* larvae in Norfolk. All the butterflies which eventually emerged from them were quite ordinary *machaon*—except one, one that was as black as a hat, as black as a coal-cellar on a dark night. It was in fact as black as the inside of a black cow. You can think of nothing blacker than that? Good. And of course, being bred, it was, and is, in immaculate condition. Never have I set eyes on such a butterfly. Every day when staying with him I came down to breakfast early, so that I could pull out the drawer and have another look at it. I looked at it several times a day. I looked at it every night before going to bed. It was a super-accidental, an accidental *in excelsis*, such a superlative accidental in fact as is granted only to those for whom the gods have an especial affection.

Accidentals, like poets, are born not made. You cannot compass or contrive them by any means in your power. They just happen. So an important question arises: are we morally entitled to attribute them to our intelligence or prowess, or must we accept them with humility as gifts of the benign gods? I remember very well that when the captain of our side, after I had outed the Cambridge blue, came up to me as we were going back to the pavilion for lunch, patted my back and said: "That was a marvellous chuck-in of yours, old chap", I replied nonchalantly: "Oh, it's nothing to write home about". But I was very young at the time or I am sure I would never have been guilty of such a flagrant *suggestio falsi*. For by every accepted canon of human behaviour it was a beastly fluke.

But the man who, with no thought of *iris* in his head, beats a Purple Emperor larva out of a sallow bush had best beware lest he falls into this trap; for if he attributes to his intelligence or efficiency what is by all the rules of the game a pure 'accidental' he will be shunned thereafter by his friends. No man can tell whether there is a Purple Emperor larva on any particular bush. We can tell the kind of bush which is likely to harbour a Purple Emperor and the situation of bushes which the female butterfly usually selects. Beyond that we cannot go. We can beat scores of 'likely' bushes without getting more than a second instar *O. stabilis* or two. At least that has been my experience.

On the whole, then, it is wiser to accept our accidentals with gratitude and humility. Besides, if we claim any personal wisdom or expertness for them the friends to whom we relate them may look at us queerly and say "Huh".

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Additions to the Rothschild-Cockayne-Kettlewell Collection

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

It is more than a year since the last list of donations and accessions to the Rothschild-Cockayne-Kettlewell Collection was published in *The Entomologist's Record*, 1953, **65**: 97, and since then many interesting and valuable gifts have been received and additions have also been made by purchase. The following is a list of the most important.

Mr S. Wakely—2 *Parasemia plantaginis* ♀ with pale hind wings; Mr. W. Reid—4 hybrid *Poecilopsis lapponaria* ♂ × *Ithysia zonaria* ♀; Mrs. David Cunningham—*Erebia aethiops* ab. *inocellata* Owen (type), gynandromorph *Saturnia pavonia* Linn., *Hepialus humuli thulensis* Newman ♂ from Dumfries; Baron de Worms—*Argynnis aglaia* Linn. remarkable aberration with rayed margins, *Lithostege griseata* ab. *scripta* Ckyne.; Mr. Peter Robinson—*Eublemma ostrina* Hbn.; Mr. Austin Richardson—2 *Euphyia luctuata* Hufn., 2 *Hadena caesia* Schiff. (blue form), *Diarsia dahlii* (dark), 2 *Procus versicolor* Borkh., 2 *Anaplectoides prasina* Schiff (black), 32 *Sarrothripus revayana* Scop. from Ireland; Mr. Ronald Demuth—1 *Arctia caja* ab. *stygia* Ckyne.; Mr. H. N. Michaelis—1 *Earophila badiata* ab. *eckfordii* G. Smith, 1 *Epirrhoe alternata* ab. *degenerata* Haw.; Clarenceux King of Arms—1 *Malacosoma neustria* ab. *ochracea-unicolor* Tutt ♂; Mr. W. Reid—2 melanic *Apatele alni* Linn.; Mr. F. W. Lees—10 aberrant Heterocera; Prof. A. D. Peacock—4 *Amathes alpicola* ssp. *alpina* H. & W. from the Angus Mts.; Mr. S. N. A. Jacobs—1 *Eublemma parva* Hbn.; Mr. Peter Bell—1 *Plusia gamma* ab. *gartneri* Skala, 1 *Selidosema brunnearia* ab. *bellaria* Ckyne., 1 *Nola cucullatella* ab. *nigrofasciata* Ckyne.; Mr. Douglas E. Newman—*Abraxas grossulariata* ab. *nigra* ♂; Mr. Eric Classey—10 *Cryphia perla* including a melanic form from Feltham; Mr. M. W. G. Tweedie—1 *Hydraecia hucherardi* Mab. ♀; Mr. H. S. Robinson—33 Heterocera including 11 *Thalera fimbrialis* Scop. 2nd brood, 5 *Euphyia luctuata* 1 ab., 1 *Hydraecia hucherardi* Mab. ♂, 4 *Eublemma parva* Hbn.; Mr. J. H. Payne—1 halved gynandromorph *Argynnis aglaia* Linn.; Mr. Thomas S. Robertson—1 albino *Carterocephalus palaemon* Pal.; Major A. E. Collier—2 *Melanargia galathea* ab. *aperta* Rebel; Mr. W. E. Minnion—1 *Achlya flavicornis* Linn. with black stigmata and 1 with orange, 1 *Orgyia recens* Hbn. pale ♀ possibly sex-linked recessive; Mr. Dudley Westropp—2 *Euphyia bilineata* r. *isolata* Kane, *Cryphia muralis* ab. *castanea* allotype; Mr. J. H. Johnston—15 *Ectropis bistortata* Goeze from Derbyshire; Mr. R. L. E. Ford—19 aberrant Heterocera including 1 *Sterrha degeneraria* ab. *lactea* Ckyne., 1 *Mesoleuca albicillata* ab., 1 *Deuteronomos erosaria* with very narrow median area, 1 *Xanthorhoe munitata* with transverse lines touching; Mr. Robin Mere—2 *Leptidea sinapis* ssp. *juvernica* Williams 2nd brood.

Amongst the insects presented by Dr. H. B. Williams are the type of *Aglais urticae* ab. *subtuspuncta* Reuss, the type of *Gonepteryx rhamni* ab. *decora* Oberthür, the type of *Thecla betulae* ab. *pallida* Tutt, and a number of paratype of *Leptidea sinapis* ssp. *juvernica* Williams.

Amongst others I have purchased the following:—

28 aberrations of Rhopalocera from the Shepherd collection including

6 melanic *Euphydryas aurinia* Rott., 6 unusual aberrations of *Melitaea athalia* Rott. and an extreme striated under side of *Polyommatus icarus* Rott., 45 aberrations of Heterocera from the Milman collection including the type of *Leucania l-album* ab. *o-album* Milman, and the only recorded *Hypena obesalis* Hbn., 36 *Gonodontis bidentata* including the type and allotype of ab. *bowateri* Ckyne. and the others figured *Ent. Rec.*, 1952, Pl. 14. 20 aberrations of *Rhopalocera* including an albino *Argynnis euphrosyne* L., an albino *Coenonympha pamphilus* L., extreme rayed under side of *Lysandra bellargus* Rott., gynandromorph *Strymon pruni* L., gynandromorph *Thecla betulae* L., and the type of *Aglais urticae* ab. *subtusornata* Reuss., 8 aberrant Heterocera including an albino *Polychrisia moneta* F. and a *Leucania loreyi* Dup., the type of *Saturnia pavonia* ab. *flaviocellatus* Wild, 4 *Melanargia galathea* ab. *mosleyi* Oberth., 27 aberrations of Macrolepidoptera including a gynandromorph *Trichiura crataegi* L., 2 *Mesoleuca albicillata* L. abs., 1 *Calothysanis amata* L. ab., 1 *Epirrhoe alternata* Müll. remarkable ab., 1 *Itame wauaria* L. melanic, 2 *Sphinx ligustri* ab. *lutescens* Tutt, 9 aberrations of *Arctia caja* L., 1 melanic *Drymonia dodonaea* Hbn. ♂.

A Breeding Experiment by Alfred Hedges with *Lygris testata* Linnaeus and its Recessive Mutant ab. *hedgesaria*

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

Lygris testata Linnaeus ab. **hedgesaria** ab. nov.

The ground colour in both sexes is a uniform orange; on the upper side of the fore wing of the male this is overlaid with glossy leaden grey especially towards the termen and in the darkest specimen it extends all over the wing; in others a streak of orange near the costa, another across the median area, and a third near the inner margin remains. The hind wing is not so dark as the fore wing but dark enough to make the normal dark border almost invisible. In the female the leaden overlay tends to be less extensive and not so dark. In both sexes the normal white markings are absent and the variegated appearance is lost. The under side of both fore and hind wings is very dark. The head, thorax, and abdomen are also darkened, especially the ventral surface of the abdomen. In brood 2/52 there are a male and female with no leaden overlay and a paler orange ground but the white markings are absent and the colour on both surfaces is very uniform so that they are sharply differentiated from normal specimens.

Type ♂: Ham Street, Kent. F4 3/52 bred by E. A. Cockayne.

Allotype ♀: same data: paratypes ♂ and ♀ F3. brood 2, ♂ and ♀ F4, ♂ and ♀ F4 2/52 both pale. ♂ basal marking asymmetrical 2/52 F4 bred E. A. Cockayne, ♂ under side F4 3/52 bred E. A. Cockayne. All from Ham Street, Kent (A. Hedges's stock).

Of the *testata* figured on Plate VII, figs. 1 and 2 are heterozygotes from a pairing between a male *hedgesaria* and a normal female, both F4 gen., and are apparently normal, but rather lighter than the average wild specimens from Ham Street. Fig. 5 is a male of F3 gen. brood 2, in which *hedgesaria* first appeared, and shows the three orange streaks

running from the orange base along the costa, the inner margin, and into the median area respectively, the darker outer part of the wing being overlaid with leaden grey. Fig. 3 is a male of the F4 gen. brood 3/52 darker than any of the F3 gen. and almost completely overlaid with leaden grey. It was bred from one of the newly hatched larvae given to me by Mr. Hedges. It is possible that the paler colour of most of those of broods 3/52 and 2/52 bred by Mr Hedges himself is due to the fact that he kept them very warm and forced them to emerge before he came to England giving them insufficient time to lay down their full complement of pigment in the pupal stage. Figs. 9 and 10 are specimens of F4 gen. brood 2/52 and have no leaden overlay at all. I bred none like them from my part of the same brood. Their pupal development may have been so rapid that they had no time to lay down any leaden pigment at all.

Light patches in the outer border especially noticeable in Fig. 11 are caused by the reflection of light from the somewhat metallic surface. In reality the border is uniformly dark.

A wild ♀ taken at Ham Street, ix.1949, gave a brood F1 of about 50, all normal, v-vi.1950.

F2 one pairing, brother and sister, gave a brood, all normal, 1951.

F3 Two brother-sister pairings taken gave in 1952

(Brood 1) 31, all normal.

(Brood 2) 28, 21 normal: 7 (4♂, 3 ♀) mutants.

Three brother-sister pairings taken gave

F4 (Brood 1/52) ♂ mutant of brood 2 × ♀ normal of brood 1.

(Brood 2/52) the same ♂ mutant × ♀ mutant of brood 2.

(Brood 3/52) ♂ mutant × ♀ mutant, both of brood 2.

F4 Brood 1/52 gave 42 all normal and rather lighter than average 1953

Brood 2/52 gave 45 (29♂, 16♀), all mutants.

Brood 3/52 gave 40 (23♂, 17♀), all mutants.

From newly-emerged larvae given to me by Mr. Hedges I bred 10 (4♂, 6♀) of the 45 in brood 2/52, and 9 (3♂, 6♀) of the 40 in brood 3/52. Eggs from three pairings of F4 mutants were all infertile.

Clearly the mutant *ab. hedgesaria* is recessive to the normal and is determined by a single autosomal gene, *i.e.* a simple recessive. The original wild ♀ must have been a heterozygote and the pairing that gave F2 must have been between a heterozygote and a homozygous normal, DR × DD. The pairings taken in 1952 that gave the F3 broods were brood 1, DD × DD, and brood 2, DR × DR, and the expectation in the first was all normal as actually happened and in the second was 3 normal: 1 mutant, the actual result being 21 normal: 7 (4♂, 3♀) mutant = 21 DD and DR: 7 RR.

In broods 2/52 and 3/52 the expectation was all mutants and the actual result was all mutants, RR. Even without the other pairings that might have been taken there can be no doubt about the interpretation of the results.

Mr. Hedges says that he bred from the original female because it was the only one he took in 1949 and he persevered with his inbreeding because of his success with *Manx testata* which led to his breeding *ab. contraria* Heydemann with its broad white band on either side of the median band. Most breeders would have given up the experiment when they saw no change in the F2 generation, but Mr. Hedges seems to be guided by some remarkable intuition to take the correct pairings.

I do not think this mutant is the same as the one occurring not rarely in the north of England and in Scotland in the purplish subspecies *insulicola* Stdgr., which, I believe, is ab. *obscura* Bretschneider. Orange females of this aberration occur occasionally just as ordinary orange females occur in this subspecies apparently as a recessive to purple. I think ab. *hedgesaria* is rare. In spite of the amount of collecting done in Ham Street I have not heard of the capture of a wild one.

EXPLANATION OF PLATE VII.

- Fig. 1. *Lygris testata* normal ♂. F4 1/52.
 Fig. 2. Normal ♀. F4 1/52.
 Fig. 3. Ab. *hedgesaria* ♂. F4 3/52. Type.
 Fig. 4. Ab. *hedgesaria* ♀. F4 3/52. Allotype.
 Fig. 5. ♂ F3 brood 2.
 Fig. 6. ♀ F3 brood 2.
 Figs. 7, 8. ♂ and ♀ F4.
 Figs. 9, 10. ♂ and ♀ pale form. F4 2/52.
 Fig. 11. ♂ Basal lines asymmetrical. F4 2/52.
 Fig. 12. ♂ underside. F4 3/52.
 Figs. 5-12. Paratypes.
-

The Life History of *Thaumetopoea jordana* Staudinger

By TREVOR TROUGHT, M.A.

On taking up residence in the Jordan Valley on 23rd October 1951, among the first moths to be caught at light that evening were specimens of the male of this species, then unidentified.

The locality is a bluff above the Zerqa River (the Biblical "Jabbok River") where the river gorge opens out into the Jordan Valley plain. The Zerqa River delta is an irrigated and cultivated area, and has been such from time immemorial. I have named the cluster of diverse dwellings on this bluff, which is about 100 metres below sea level, the Zerqa River Colony. It is the residential headquarters of the Jordan Government's Department of Land and Surveys Irrigation Section. The offices are in the Valley 100 metres below. Between the houses and the offices a footpath runs down a wadi (or valley) which I have christened "Simansky's Wadi" after Mr. Simansky, the irrigation expert.

The lighted windows of the house proved attractive to moths. Many *Th. jordana* males were attracted and, after a series had been taken, were ignored.

An interesting record is that on 4.xi.51 a female was captured at light *in cop*. The import of this was not realised till too late, but in the event, it did not matter.

On 26th December 1951 my wife found a clump of caterpillars, about sixty in number, on a sumach bush (*Rhus tripartita* D.C.) in a small wadi about half a mile from the Colony. Later, numerous other clumps were found on sumach bushes in Simansky's Wadi at about 150 metres below sea level. Although many bushes were examined outside this wadi during the season, only two clumps, including the one found on 26th December, were found away from, though not far from, this wadi, which is clearly the breeding centre for this locality.

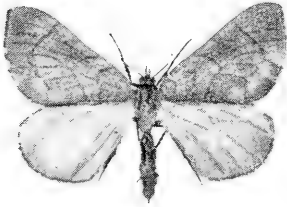
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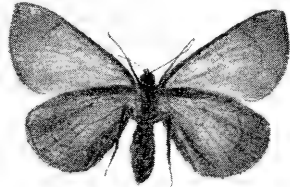
10



11



12





Male and female *Thaumetopoea jordana* Stgr.



Larvae of *T. jordana* on *Rhus tripartita*.

The eggs are laid in a batch on the stem or even fully encircling a twig of the *Rhus* bush and are covered with the female's light brown anal hairs. Although it was easy enough to find batches of eggs which had hatched out, it was not till 5th November 1953 that an unhatched batch was found.

The eggs were pale in colour, spherical in shape, with white streaks inside. As the embryo develops, they become dark internally with a white circle (? air space) at the top. Hatching started on 21st November 1953.

The newly hatched larvae of *Th. jordana* are yellowish in colour with a black head. A black transverse mark on the first segment. Paired black dots are on the central line of segments 4-10, with smaller dots laterally, all of which carry black hairs. The anal plate is black and there is a lateral black striation. There is little change in appearance after the first ecdysis.

In the 3rd instar the larva acquires the "black and silver" appearance which it retains till pupation. At this stage the ground colour is dark. The head is black and there is a velvety transverse mark on segment 1. The 2nd and 3rd segments have transverse rows of six dots, instead of a transverse mark. On segments 4-11 similar prominent black transverse marks occur; at each end of these marks a larger and a smaller dot continue the marking. A light spiracular line, in which the spiracles show as black dots, lies below a dark lateral line. The underside is yellowish in front; the prolegs are pinkish with a dark mark distally on each proleg.

The whole larva is covered with long fine white hairs arising from the dots and tubercles which give it a silvery appearance. At a later stage it was noted that white hairs arise at the edge of the elliptical velvety black prominence dorsally on segments 4-11, which are themselves without hairs. Also that the anal plate is dark, triangular, covering the claspers, which are brown and fringed. The prolegs are black with white tops. There were also one or two pink tubercles above each of the prolegs. Between the segments the coloration is pale green and small crescentic white marks are seen, when the animal is walking, between the individual segments 4-10.

These larvae behave, when disturbed, in a manner similar to that reported by Wiltshire* for *Th. solitaria*, dropping to the ground. They were observed to congregate again fairly quickly and march back in single file to the bush.

Reverting to the original batch of larvae found on 26th December 1951, which were bred on, there was a heavy mortality among them. As the weather during January 1952 was both cold and wet the possibility of fungous infection was suggested; it is a curious fact that no more deaths occurred after the larvae were given a sunning whenever the sun shone. But only 12 larvae survived to pupate on 9th February 1952. It is possible, in view of the larval habits in the wild, that lack of sun was a contributing cause, if not the actual cause, of this mortality. By day the wild larvae sit quiescent on a naked branch in a tight bunch, exposed to the sun and all the elements, and do not diminish appreciably

*E. P. Wiltshire: *The Butterflies and Moths (Lepidoptera) of Iraq*. Bulletin No. 30, Directorate General of Agriculture. Government Press, Bagdad.

in numbers. At night they walk in procession to feed on a part of the bush which still has leaves.

To get more specimens a clump was marked down with the idea of bringing it in to pupate at nearly the last moment, and was brought in, in time, on 15th March. They duly pupated on 19th and 20th March 1952.

These larvae were given a layer of earth and dry leaves to pupate in. On 19th March, after they had been processing round the box—a largish wooden box—for a day they were observed to dash into the earth “like children dashing into the sea on holiday” as my wife said. Fourteen or fifteen remained out till the next day. (Exact counting of the larvae was extremely difficult when they were clumped up). After the moths had emerged it was found that the larvae had spun silken cocoons under the surface of the soil, incorporating soil particles with the silk to make a moderately firm cell. All the cocoons were clustered together. The gregarious habit was retained even in pupation.

TABLE OF EMERGENCES.

From 1951/52 brood.			From 1952/53 brood.		
Year	1952.	Males. Females.	1953.	Males.	Females.
Oct.	12th.	1 —	Oct. 23rd.	5	—
„	13th.	2 —	„ 24th.	3	—
„	14th.	1 —	„ 26th.	1	4
„	15th.	2 —	„ 27th.	2	7
„	17th.	— 1			
„	18th.	3 —			
„	19th.	— 1			
„	27th.	30 2	Nov. 6th.	—	1
„	29th.	3 11			
Nov.	5th.	1 1	„ 8th.	7	4
„	6th.	— 3	„ 9th.	3	6
„	8th.	— 7	„ 10th.	—	7
„	9th.	1 —	„ 11th.	—	3
„	11th.	— 1	„ 12th.	—	2
„	17th.	— 2	„ 13th.	—	1
„	29th.	1 —	„ 15th.	—	1

Several direct observations were made of emergences which all took place in the afternoon between 12.45 p.m. and 4.30 p.m. As the moths fly vigorously at night, they damage themselves badly if left overnight in the breeding-cage.

No moth of this species were recorded at light in May 1952, but two wild males came to light early in May 1953, presumably from the 1952/53 broods. Amsel* records two males caught at Allenby Bridge on the 4th May. But in spite of these stray late spring records, I feel sure that the moth is univoltine and not bivoltine in habit. One wild male appeared at light as early as 29th September in 1953.

I wish to make my acknowledgments to Mr. E. P. Wiltshire for help and encouragement and to the officials of both the British Museum (Nat.

**Weitere Mitteilungen über palästinensische Lepidopteren*; H. G. Amsel. Veröffentlichungen aus dem Deutschen Kolonial- und Uebersee-Museum. Bremen. 1. Band. 2 Heft, 15.12.1935.

Hist.) and the Commonwealth Institute of Entomology who have been most interested and helpful.

Plate I shows pictures of the male and female moths above and below of a clump of larvae on a *Rhus tripartita* branch.

An Entomologist in Argentina

VII. Agricultural Entomologist

By KENNETH J. HAYWARD, D.Sc. (Hon.), F.R.E.S.

One of my principal reasons for leaving the Concordia Experiment Station for Tucumán was that after working almost entirely on citrus for more than six years I was beginning to get a little tired of the sight of a citrus tree and wanted to increase my knowledge of general agricultural entomology.

Tucumán is the smallest of the Argentine provinces, being little more than two-thirds the size of Holland. It is divided north to south into roughly equal parts, the western section a jumble of high mountains, the eastern portion a level plain, fertile in its centre but covered with xerophilous scrub-forest to the north and south and along its extreme eastern border. Boasting the proud name of 'Garden of the Republic' it is intensely cultivated, a fact best appreciated when one looks down from an aeroplane on to the patchwork of multitudinous small rectangular areas into which it is divided, their number intensified by the custom of planting cane in blocks with intervening roadways that facilitate collection of the harvest.

The Experiment Station was a provincial Institution and did not come under the direction of the Argentine Ministry of Agriculture. It lay just beyond the city to the north and possessed fine well lighted modern laboratories and perhaps the best agricultural library in South America. The grounds, which extended to rather more than two hundred and fifty acres, although mainly planted with sugar cane (there being at the time of which I write about fifteen hundred varieties under observation), contained a great number of miscellaneous crops grown on a small scale for experimental purposes. Some idea of their variety will be gathered when I add that apart from the cane and several large citrus groves we grew cotton, rice, forage of many kinds, sweet and ordinary potatoes, fruit and especially subtropical varieties, oil, rubber and fibre-producing plants, date palms, forest and ornamental trees and vegetables and flowers in addition to a great number of plants introduced from other countries so that their behaviour under Tucumán climatic conditions could be studied. The local plants already had their own special insect enemies and it was not long before those that we had introduced were adopted by one or other of the 980 species of injurious insects I listed for the province during the four years I remained at the Experiment Station. Thus I found in Tucumán all the diversity for which I craved.

I was fortunate in being able to live on the Station itself and to avoid the daily journey from and to the town. This enabled me to keep more elastic working hours, and after the hot days of summer it was pleasant to be able to wander through the canefields in the relative coolness of the evening. Later on as dusk fell I would collect the hawkmoths that

came in great numbers to the flowers of the *Plumbagum* hedges that lined our drives, sometimes taking five or six species in an evening, remaining at this task till it was too dark to see them and only the whirl of their wings and the movement of the flowers from which they fed betrayed their presence. Every morning when I crossed to my laboratory I saw laid out before me a vista of green canefields merging into the forest covered slopes of nearby mountains behind which the higher barren ranges would be tinted by the first rays of the rising sun whilst to the south mount Aconquija reared its 18,000 feet towards the sky. Though they were always before me, I looked forward daily to my first early morning view of the mountains, nor with the passing of time did it ever pall.

It was perhaps more for my knowledge of citrus than for any other reason that I had been invited to Tucumán and at first most of my work was concerned with this crop, but it possessed a novelty in that I was dealing with plantations growing under different climatic conditions to those that had lately been my care and I commenced to find new insects, and new problems arose. I also continued with my fruitfly investigations and began to study the local parasites of *Anastrepha* and breed them for biological control; I even sent a consignment of 11,500 of these tiny parasitic wasps to Peru for trial; but they apparently failed to reproduce as I do not think any were ever recovered after the first liberation.

The Tucumán Experiment Station had been used for several years as the headquarters of the entomologists sent to Argentina by the Commonwealth Prickly Pear Board and it was from here that the first consignment of the Phycitid *Cactoblastis cactorum* had been sent to Australia to effect what has proved to be the most outstanding case of biological control of a noxious weed by an insect achieved up to the present. Within about ten years of the introduction to Australia of this moth, its larvae had succeeded in clearing 60,000,000 acres of agricultural land that had been so densely overrun by two introduced species of *Opuntia* (*stricta* and *inermis*) that it had been abandoned. To quote Dr. Dodd*: "Its introduction brought a complete change in the outlook within a few years. Its progress has been spectacular, its achievements border on the miraculous . . . The prickly-pear territory has been transformed as though by magic from a wilderness to a scene of prosperous endeavour".

As I occasionally received requests for eggs of *Cactoblastis*, especially from Mexico, I decided to keep a colony going, and in order to save myself the trouble of having to collect material every time I needed it for my laboratory breeding-cages in which parasite elimination was assured, I planted *Opuntia* in outdoor cages where, after the first introduction of a considerable number of larvae, the moth maintained itself without any further care on my part. The large orange coloured larvae live gregariously within the fleshy sections of the cactus, hollowing them out, and the cuticle becomes dry and parchment-like so that attacked plants are easily singled out, even from a distance. Like the moths of two other small genera of Phycitids, the *Cactoblastis* females lay their eggs in chains, perhaps better known as 'egg-sticks'. The eggs are

**The Biological Campaign against Prickly Pear*. A. P. Dodd. Published 1940 by the Commonwealth Prickly Pear Board, Brisbane.

circular and their diameter about three times their thickness, and after the moth has fastened her first to a cactus spine, she proceeds to lay egg upon egg with such precision that the finished 'stick' is smooth and for all the world resembles part of the antenna of some giant insect. These egg-sticks vary in length and are generally curved; in extreme cases they may exceed two inches and contain more than two hundred individual eggs.

On one occasion I sent a few thousand adults of the Carabid beetle *Calosoma argentinensis* to the States to be tried out as an enemy of cutworms. I had seen a case in Concordia where the larvae and adults of this beetle had in a few days cleaned up an invasion of a Noctuid larva that had eaten all vestige of foliage from some ten acres of ground-nuts. In this instance their intervention had come too late to save the crop, but this is almost always so when dealing with *natural* biological control where there is generally a lag between the appearance of the injurious insect and the peak activity of its natural enemy.

I also sent eighty of the toads *Bufo arenarum* and *Bufo paracnemis* to Florida at the request of a sugar company for liberation in their canefields after they had made an unsuccessful trial with *Bufo maritimus* which failed to become acclimatised. This was during the war when it was extremely difficult to obtain plane transport, but somehow or other the company had induced the United States Government to grant these toads a first class priority, a rating reserved almost exclusively for urgent war material. This fact, coupled with the idea of toads flying, aroused the interest of the country and these was scarcely a publication from the cheap 'comic cuts' to the more sedate dailies and magazines that failed, each in its own style, to make reference to this sending. What was perhaps more to the point, many schools devoted a class to the study of frogs and toads, which was all to the good as both children and adolescents seem to take a delight in stoning and otherwise maltreating these useful animals whenever they come across them. The published articles were of a most diverse nature, from semi-scientific to those that referred to the toads as heroes who had left their native land to fight for Democracy. Even verses were written in their honour and for some years afterwards I was known as the man who had sent the toads to the States.

During my years at Concordia I travelled frequently but here in Tucumán I was confined to the limits of the province, seldom going further afield unless it was to visit some fruit plantations in which we had an interest in Salta or Jujuy or when I attended one of the periodical fruit congresses. Consequently I felt rather like a wild animal confined to a garden after having had the run of the countryside; my longer journeys had served to interrupt the monotony of routine whilst now I was able to reach the limits of my area and return within the day.

Tucumán is perhaps most beautiful in late July and August when the *lapacho** is in flower. One sees these lovely trees everywhere, whether in the gardens or lining the streets and avenues or standing in solitary splendour, their load of blossom pink against the deep blue of the late winter sky. Later their flowers are replaced by the mauve-blue of the *jacarandá**, both trees flowering before the new leaves appear.

**Tabebuia avellaneda* and *Jacaranda mimosifolia* (Bignoniaceae).

The lower slopes of the mountains are covered with forest which in the centre of the province is subtropical but to the north and again to the south is of a more xerophilous nature. At 5,000 feet the subtropical forest gives way to a wide belt of alder which continues till the tree-line is reached about fifteen hundred feet higher and beyond lie the upland valleys covered with short grass and sprinkled with tiny flowers. In these valleys are many interesting insects and their fauna is not yet fully known. It was here at 10,000 feet that after many years of search I came across the small *Colias blameyi* which is common once its haunts are found. It flies rapidly about two feet off the ground and looks a simple butterfly to catch, but when I first encountered it to my surprise and I may say disgust I consistently failed to net them. After a time I discovered the reason for my lack of success. As I started my forward stroke with the net they would nose-dive vertically to the ground and then dart off at an angle to their original line of flight. Once I had seen through their stratagem I had no further trouble. Still higher, at around 15,000 feet, there is a *Phulia* to be had but it takes some finding and there are several most interesting high altitude Satyrids which are rare, even in our local collections.

Where the forest is xerophilous the undergrowth is sparse and is in part replaced by many species of cacti, and here the trees are often loaded with those curious *Tillandsia* air-plants that seem able to flourish equally on branch or aerial wire. On the other hand in the damper subtropical forest the trees are loaded with parasitic growth, with mosses and lianas, giant *Bromeliaceae* and trailing *Rhypsalis* and other parasitic cacti and are at times smothered with the bright flowers of creepers or an *Oncidium* orchid droops its yellow sprays. Where the sunlight penetrates there are flowering bushes, and often the eye is gladdened by the sight of clumps of splendid Easter lilies.

Unfortunately I was seldom able to visit the forest as my work lay on the plains, but they presented a serious problem in pest control as on the lower slopes large numbers of peach and bitter orange trees were growing, trees that no doubt owed their origin to bird dropped seeds and which were a rich breeding place for fruit flies. It was interesting to note that no matter how near these forest encompassed trees grew to badly infested plantations, they were free from scale, but one more illustration of how the advance of civilisation is upsetting nature's balance in favour of the injurious insect.

One of the interesting jobs that fell to my lot as Chief of the Entomological Department was the preparation of a stand for the various fruit and agricultural-produce shows arranged periodically by the Experiment Station. Noting from the first the great interest shown by the public in our entomological and pest control exhibits, and especially by the younger generation who in this country are not natural history minded as they are in Europe and especially in England, I took every opportunity that presented itself to collect suitable material, photographs and other items, to make our show as interesting and illustrative as possible and from small beginnings our display soon attained considerable proportions. On more than one occasion we were honoured by being invited to take it to similar exhibitions held in neighbouring provinces.

As at Concordia I continued to search for scale insects and it was here that I began to realise the possibilities offered by the drier xero-

philous regions. It was not long therefore before I had greatly increased the number of species known from the province, and from the eleven recorded up to the date of my arrival the list has now reached fifty-two, with about fifteen or twenty still awaiting determination.

The Experiment Station possesses a fair collection of local insects but it was for an experiment-station collection woefully short of species of economic interest, whether injurious or beneficial. In consequence most of my collecting efforts went to remedying this defect. I also spent a good deal of my time breeding parasites, especially from scale, amongst the latter being nine species of microlepidoptera whose larvae are entomophagous, all but one of these proving to be undescribed. It was through my scale parasite breeding activities that two species of Coccids previously thought to be the same were eventually separated, host preference of their parasites leading to further investigation, whilst amongst other characters it was found that these two scales could also be separated by their host plant preference although both attacked plants of the same genus. My studies in insect parasites whilst merely superficial led me to take an interest also in galls and gall makers, but my want of suitable literature and reference collections prevented me getting very far ahead with them and in the end I confined myself to those galls caused by lepidoptera.

My short term contracts with the Province were renewed each time they terminated and my current contract still had eighteen months to run when I was offered the post of research entomologist at the Miguel Lillo Foundation in Tucumán at a very greatly enhanced salary and with the offer of complete freedom in my activities. The Board of Directors of the Experiment Station not wishing to stand in my way of advancement very kindly allowed me to accept this offer under a mutual arrangement with the Foundation by which I was to spend one day a week at the Experiment Station and be at its disposal on any occasion when in their opinion I might be of service, this arrangement to continue till the date of expiration of my contract. My last six weeks were occupied in putting everything in order and at the end of August 1944 I left to take up my new duties at the Foundation.

Current Notes

It is absurd that Wicken Fen should have to pay dues to the Ouse Drainage Board and, in addition, have to pay out of their own Fund to prevent the fen from being drained. The late Sir John Fryer told me many years ago that the Ministry of Agriculture and Fisheries was very sympathetic but the matter was too small for a special Act of Parliament. It was intended that when suitable legislation was put in hand a special clause would be added to exempt Wicken Fen from paying the Ouse Drainage Board. Have the floods necessitated legislation of the kind contemplated by Sir John Fryer and, if so, has the Wicken Fen Committee seized the opportunity to remove this unfair burden from the Wicken Fen Fund? A statement from it would be appreciated by entomologists all over the country.

The Nature Conservancy has declared Castor Hanglands Wood, Northamptonshire, a nature reserve. This Reserve is in the parishes

of Ailsworth and Marholm, about 4 miles west of Peterborough. The Reserve at present consists of two parts: an area of $12\frac{1}{2}$ acres of mixed woodland known as Blacklands, and Ailsworth Heath, an area of some 93 acres of rough grassland and bushes. The Conservancy are arranging with the Forestry Commissioners for a lease of the western portion of Castor Hanglands Wood, which adjoins Ailsworth Heath, and this will be incorporated in the Reserve later in the year. This wood, on oolitic limestone, is well known to lepidopterists as a locality for *Strymon pruni* L. and *Carterocephalus palaemon* Pall. In future, permits to collect will be required and these may be obtained from the Nature Conservancy at 19 Belgrave Square, London, S.W.1.

A month or two ago we remarked on the lack of information (to put it no more unkindly) about insects occasionally displayed by persons who would claim to be "well educated". According to *The Field* of 6th May 1954 a Queen's Counsel stated at the Crichel Down Enquiry that "The possibility of dissembling had the evanescence of a mayfly. It started and it never went on". We ourselves have not yet come across mayflies that dissolve in the air (though we fished for trout in May and June for more years than we care to remember) and they certainly do go on. This kind of thing reminds us of the classic remark attributed to Sir Boyle Roche in the Irish House of Commons, that he "could not be in two places at once, like a bird".

There will be another change in our staff presently. Mr. P. B. M. Allan, who took over the production of the *Record* during the last illness of Fleet Paymaster T. Bainbrigg Fletcher, will be relinquishing this task at the end of the present year. Although on account of his age and business activities he has never considered himself to be more than a stop gap until other arrangements could be made, Mr. Allan has had the pleasure of seeing the *Record* assume a new lease of life, so that to-day its circulation is probably as large as it ever was before. We hope to be in a position to announce his successor shortly.

As in previous years, this issue of the *Record* contains the material received for the months of July and August. The next number will be published on 15th September.

Notes on Microlepidoptera

By H. C. HUGGINS, F.R.E.S.

Mecyna asinalis Hübn. The larva of this moth may be found on madder towards the end of July, making bare patches on the leaves, which it does not usually eat through. The moth is unusually secretive and difficult to take by day, but at night it comes out of the masses of food-plant or cracks in the rocks in which it hides and flits over the madder-covered bushes and walls. It usually has two broods, one at the end of June and beginning of July, and one in August and early September. Both these broods, however, tend to drag on, so that one almost runs into the other. Last year I took it in good condition in the Burren up to the end of July and it was still good in the Isle of Wight in October.

M. asinalis has a westerly distribution with us. I have never seen it east of the Isle of Wight, but I should expect it anywhere in the South-West where *Rubia peregrina* is abundant. In Ireland it appears to be confined to the Burren.

Crambus fascelinellus Hübn. This local grass moth is on the wing in its few localities, all, I believe, on the East Coast, at the end of July. It is very difficult to obtain by day, as it hides in the grass-roots on its chosen sandhills and cannot be dislodged, though isolated specimens may be found sitting on the sand. In 1933 I spent a whole day near Winterton in Norfolk searching and obtained only five, all of which were useless as cabinet specimens from sitting exposed to the sun's glare; but after dark I netted a score of good ones in half an hour by walking over the flat ground the moth prefers with a petrol-vapour lamp. Its favourite haunts are the spaces between the hummocks which have a sparse covering of grass and a hair-like rush about four inches high. It sits on these stems but flies at once towards the lamp and may easily be netted.

Platyptilia ochrodactyla Hübn. At the end of July this rather sluggish plume moth may be found at night sitting on the flowers of tansy. It appears to be well distributed where tansy grows wild and is not a garden escape, but from its somewhat secretive habits it is easily overlooked. It fades rather quickly after emergence and the better plan, after marking a few clumps it infests, is to take the larva at the end of the following May. The larva may easily be found from the frass exuding from the stem, and is easy to rear. *P. pallidactyla* Haw. has also been said to feed on tansy; I have, however, never found it on this food-plant and believe the statement is due to an error of identification.

The "schalleriana" group of *Peronea* is on the wing at the end of July and in early August. I have always blessed my old friend W. G. Sheldon for clearing up the accepted names as I fancy no one else would have been patient enough to work out the problem. However, I suppose we must follow him and discard *schalleriana* Linn. for this species and make the rare and beautiful *latifasciana* Haw. the type. I have only once seen this at all common and that was on the Woodbastwick estate at Horning. Anyone working in this district would do well to beat the shallows, particularly those in the alder carrs. Both *latifasciana* and the old type *schalleriana* (grey with a purple costal triangle) are common there together with ab. *comparana* Hübn. (fawn with a black triangle) and ab. *perplexana* Barrett (purplish-brown with darker markings). Ab. *perplexana* was of course described as a species and includes two forms, one with the usual costal triangle, and one with the wide band as in *latifasciana*. I do not think this second form has ever been named.

P. "schalleriana" is accompanied at Horning by *Peronea caudana* Fabr., which appears in large numbers and with a fine range of aberrations. The name *schalleriana* Linn. properly applies, of course, to the long-suffering *Viburnum* feeder, previously known as *logiana*, *tristana* etc.

Notes and Observations

HOW TO TAKE *CUCULLIA GNAPHALII* HÜB.—A friend asked me how to find larvae of *C. gnaphalii* in a wood where it occurs. I replied "Walk amongst the golden-rod in the rides, and then pick the larvae off your trousers." I don't know how he took it, but it was true!—CAPT. R. A. JACKSON, R.N. (*in lit.*).

EPICNAPTERA ILICIFOLIA LINN. AT CANNOCK. — The mention in the *Record* of May 1954 (66: 152) of the possible spraying of insecticide on the plantations at Cannock prompts me to ask if there are genuine records of the occurrence in that area of *E. ilicifolia* in recent years. More especially I ask on the following grounds. Some five years ago I was discussing with an entomologist now dead, who had for many years taken no interest in anything but the British butterflies, the various frauds which had been perpetrated and mentioned that there seemed to be in British collections a suspiciously large number of *ilicifolia*. His reply was that even at that time, five years ago, he knew of an entomologist who was still finding it in that area though he was under promise not to give the collector's name. This seems most unsatisfactory, but if what was related to me was true, and I believe it may be, can one appeal to the collector, even under anonymity, to tell us the real facts?

I may add that I have two *ilicifolia* in my collection, unlabelled, which were given to me years ago—I have, regretfully, no record of the exact date of the gift—and which were stated to be genuine Cannock Chase specimens. They may, of course, be very old, but are set, English style, on black pins, and I cannot see any trace of repinning. As they are without data I shall see that they never pass into private hands but are eventually disposed of in a suitable way. Comments would be welcome.—A. H. SPERRING, Slindon, Fifth Avenue, Warblington, Hants. 16.v.54.

EARLY RECORDS AT BATH, MAY 1954.—Although hot dry weather at the end of April held back the leaves on many trees hereabouts it does not seem to have discouraged the moths in any sense. My m.v. trap was operated first on the 8th May, with the result that *Pheosia tremula*, *Notodonta ziczac*, and *Drepana cultraria* appeared among numerous *Orthosias*. On the 9th *Mimas tiliae*, *Cilix glaucata*, *Apatele psi*, *A. rumicis*, *Agrotis puta*, *A. cinerea*, *Ochropleura plecta*, and *Lobophora viretata* came, and the 10th revealed *Perizoma affinitata*, *L. halterata* and *Drymonia ruficornis*. The 11th was a poor night, but *Perizoma flavofasciata*, *Lithophane socia*, and *Plusia gamma* may be of note. The 12th was better with *Diarsia oleracea*, *Colocasia coryli*, *Agrotis exclamationis* and *Biston betularia* coming for the first time. The 13th was my best night so far this season. There were 46 species in the trap, amongst which were *Smerinthus ocellata*, *D. ruficornis*, *Pheosia gnoma*, *Clostera curtula*, *Thyatira batis*, *D. cultraria*, *Nola confusalis*, several *A. puta*, *Hadena bicruris*, *Euplexia lucipara*, and *Apamea crenata*. This was the end of a hot spell, and cold windy weather set in for a few days. On the 19th the weather looked up a little and 30 species visited the m.v. lamp: *Diarsia festiva* made its first appearance, and further *exclamationis*, *puta*, *rumicis* and *flavofasciata* were taken. (This night

was also notable for 1 *Geotrupes* sp., 1 *Cantharis pallida*, and 50 *Melolontha melolontha*!) *A. puta* continues to come to the lamp each night.—J. E. THORPE, Kingswood School, Bath. 23.v.54.

PARARGE AEGERIA LINN. IN EAST ESSEX.—On the 9th May Mr. A. E. Ellis, a member of the South Essex Natural History Society, netted a specimen of *Pararge aegeria* on the wooded slopes at Hadleigh between the castle and Benfleet. So far as I can ascertain this is the first definitely authenticated capture in the Hundred in this century. In the booklet on Butterflies of the Hundred written by Dr. Stovin and published in August 1935 it is stated that Mr. C. P. Pickett reported taking three specimens in Belfairs Wood in June 1933. No others were ever seen there and Pickett never mentioned them to me or showed the specimens to anyone and they were not in his collection when I went through it after his death. So I fancy this 'record' arose from a verbal misunderstanding, a possibility which those who remember Pickett will realise. I believe that *aegeria* was taken last year in Epping Forest, but the Hadleigh butterfly is the first in East Essex. From its spread in Kent and elsewhere I have been anticipating its appearance here for some time.—H. C. HUGGINS, 65 Eastwood Blvd., Westcliff-on-Sea. 24.v.54.

EUCOSMA SUBSEQUANA HAW. IN SOUTH GLOUCESTERSHIRE.—I feel that the discovery of this rare Tortrix is worthy of report, particularly as Mr. H. C. Huggins states in the April issue of this Journal that it has probably not been taken this century.

On 19th April 1954 I took a single specimen of *E. pygmaeana* Hüb. and in another wood three miles away I took another on 20th April. It was not until 8th May that I was free to go and search for more. This was a glorious sunny day and as soon as I arrived at one spruce tree (*Picea abies*) I found it swarming with what I believed at first to be *E. pygmaeana*. On closer examination, however, I knew I had another species and wondered if it could possibly be *E. subsequana*. Unfortunately I was late as most specimens were worn, but by selection from a large number I was able to get a fairly good series. Later I examined the genitalia of over twenty specimens and was convinced that I had *subsequana*. It was interesting to note that F. N. Pierce (*The Genitalia of the Tortricidae*, by Pierce & Metcalfe) describes the valva in the male as having two strong spines on the outer margin near the apex, because, although this is true in most of the males I examined, I did have one or two with three spines.

Although Mr. Huggins says the species is confined to silver fir this was not so in my experience as I searched several of these trees in the near vicinity but never saw a specimen. I found *subsequana* in numbers on three spruces which I examined. I sent two specimens to Mr. Huggins and he has kindly confirmed my identification.—J. NEWTON, 11 Oxlease Close, Tetbury, Glos. 6.vi.54.

A STAGGERED EMERGENCE OF NOTODONTA DROMEDARIUS LINN.—Last autumn I reared a small brood of *N. dromedarius* from the egg and succeeded in obtaining about 25 pupae. These have emerged in a most peculiar manner: a male on 10th May, and two males and two females on the 11th. After this none emerged for a fortnight and just as I

was fearing the rest were dead three emerged on the 25th and 10 more to date (28th), so that it seems as if most will come through. Most 'Prominents' have a fairly long emergence period but I do not remember ever before having had a complete blank for so long a period after the hatch seemed to have fairly begun. All pupae were kept under exactly similar conditions.—H. C. HUGGINS, 65 Eastwood Blvd., Westcliff-on-Sea. 28.v.54.

POLYOMMATUS ICARUS ROTT. AB. ARCUATA WEYM.—In July 1953 I captured a female *P. icarus* ab. *arcuata* in a Yorkshire locality where this form is quite rare. About forty eggs were obtained and of the resulting brood two fed up rapidly to give imagines in late August, while the others stopped feeding at the usual hibernation stage. The two second brood specimens were both females and both were well marked *arcuata*. The hibernating brood fared badly and only five larvae survived the long drawn out winter. These fed up successfully and produced four males and one female. All were ab. *arcuata*. They were caged together and the female was soon paired, but then came disaster. The female refused to lay. She lived for a fortnight but in spite of every encouragement—small cage, large cage, potted foodplants, flowers and syrup for feeding, sunshine, artificial light and warmth—no eggs were obtained.—T. D. FEARNHOUGH, 13 Salisbury Road, Dronfield. 4.vi.54.

AGROTIS IPSILON HUFN., PLUSIA GAMMA LINN. AND NOMOPHILA NOCTUELLA SCHIFF. TOGETHER IN A LIGHT-TRAP.—On 1st June 1954 Mr. A. L. Goodson found in his m.v. light-trap at Dancer's End near Tring, Hertfordshire, a very large number of *Plusia gamma* Linn. and a considerable number of *Agrotis ipsilon* Hufn. and *Nomophila noctuella* Schiff. none of which had appeared before. Evidently they were migrating together. I think this should be recorded because of the uncertainty about what happens to *ipsilon* during the winter. I still think it cannot hibernate here as a moth.—ED.

LYSANDRA BELLARGUS ROTT. AND OTHER SPECIES IN DORSET.—Recent numbers of the *Record* have contained several rather depressing reports of a decrease in the numbers of *L. bellargus* in various localities during the last two or three years. In view of this, I am glad to say that the species is more plentiful at Hod Hill, Dorset, than in 1952 and 1953. I visited the locality with Brigadier Warry, from Upwey, on 3rd June, and we found *bellargus* in good numbers, and still emerging. On arriving at the top of the hill about 11 a.m., one of the first things we saw was a male *bellargus* that had only just begun to expand its wings, on a gress stem. Later in the day, about 3 p.m., we saw another with its wings not fully expanded. Males were much more in evidence than females, but two or three pairs were found *in cop*. Much of the area was brightly carpeted with the beautiful fragrant flowers of the food plant, *Hippocrepis comosa*, which I have never seen in greater profusion. *Euphydryas aurinia* Rott. was abundant, and I noticed one pair *in cop*. close to the empty pupa-case of the female, attached to a grass stem. Four or five belated larvae of this species were also found.

Of other butterflies, the most plentiful was *Aricia agestis* Schf., and there were a good many *Polyommatus icarus* Rott., *Coenonympha*

pamphilus L., *Pyrgus malvae* L. and *Erynnis tages* L. Three *Hammaris lucina* L. males in fine condition, were taken, and two or three *Pararge megera* L., *Cupido minimus* Fues., and *Callophrys rubi* L. were seen. Of moths, one *Procris geryon* Hub. was seen, and two or three *Ectypa glyphica* L. and *Euclidimera mi* Cl., and of course a few specimens of the inevitable *Plusia gamma* L.—H. SYMES, 52 Lowther Road, Bourne-mouth. 10.vi.54.

ARCTIA VILLICA AB. BRUYANTI DUFOUR IN SOUTH-EAST ESSEX.—On the night of 14th June 1954 a rather remarkable *villica* came to Mr. David More's m.v. lamp-trap at Hockley, Essex. The fore wings agree almost exactly with Fig. 5, Plate XII, in the *Record* for 1952, described in the text as "Trans. ad ab *bruyanti*", whilst the hind wings agree with those of the true *bruyanti* figured as No. 7. The moth is a male and I notice that both the insects figured are of that sex, and also that the ab. *bruyanti* is an Essex insect from Harwich. Through Mr. More's generosity the insect is now in my possession.

A. villica is very common in this district and the males are almost a nuisance at light but so far this is the only local variation I have seen. I have always hoped that ab. *wardi* might turn up.—H. C. HUGGINS, 65 Eastwood Boulevard, Westcliff-on-Sea. 18.vi.54.

STERRHA RUSTICATA SCHIFF. IN NORTH-WEST KENT.—My information concerning *rusticata* in Kent dates back some forty years, but from my knowledge of its habits and favourite surroundings I see no reason why it should not still occur in all localities where its haunts have not been actually destroyed.

Prior to 1910 *rusticata* was to be found sporadically, frequently very commonly, from Plumstead to Sittingbourne and Sheerness. Its favourite habitat was a tall, somewhat hollow, bank, covered with rather open elm suckers and ivy and preferably half shaded by large elms. Here the moth loved to sit on elm leaves, either alive or dead, and ivy, and I have always believed that its larva fed to a large extent on the withered elm leaves which accumulated in such places.

Places where it was particularly common were between Erith and Slades Green, between Greenhithe and Northfleet, near Southfleet, in several places almost (now quite) within the town of Gravesend, and at Higham. In some places it was amazingly abundant. There was a steep rather hollow bank on the side of a lane on the lower slopes leading from Windmill Hill, Gravesend, to the south of the town where on a July afternoon as many *rusticata* could be seen as anyone could wish for. The bank was about ten feet high, sparsely covered with elm and ivy, and large quantities of leaves accumulated between the elm suckers. It was a favourite route for farm carts and all the leaves were usually smothered in dust, but *rusticata* did not mind this at all. I should say that in the two hundred yards of high bank a hundred *rusticata* could always be seen; if I wanted any for friends or correspondents I simply put the required number of boxes in my bag and walked out and filled them.

This place has long since been destroyed by building and I cannot even remember its name. It was colloquially known as "Cut-throat Lane" owing to a gentleman having performed that friendly office for his girl there. We were of course, in Victorian and Edwardian days,

forbidden to use the name, so naturally used nothing else, and now the true name has escaped me.

There is a record for *rusticata* from St. Kilda which puzzles me and of which to be quite frank I am exceedingly sceptical. Apart from the enormous gap in the range, that misty damp island seems to me the last place in the world where this little moth, which I always associate with dry dusty banks, could possibly flourish. Do any of the specimens said to be taken there still exist, and has their identity been checked?

S. rusticata is found in several places near Southend but is decidedly scarce, as also is *S. trigeminata*. *S. seriata* swarms throughout the district.—H. C. HUGGINS, 65 Eastwood Boulevard, Westcliff-on-Sea. 18.vi.54.

HADENA BOMBYCINA HUFN. (GLAUCA HÜB.) AT WESTON-SUPER-MARE.—With further reference to my note on page 218 of Volume 64 of the *Record* for 1952 it may be of interest to mention that I took a fine female specimen of this moth in my moth trap in this garden on 13th May last.—C. S. H. BLATHWAYT, 27 South Road, Weston-super-Mare. 16.vi.54.

NYCTEROSEA OBSTIPATA FAB. AT WESTON-SUPER-MARE.—The only species of interest (in addition to the above-mentioned *H. bombycina*) which I have to record so far this year is a specimen of *N. fluviata* (now generally known as *obstipata*, The Gem) which I saw in this house on 29th May last. The species is of course a migrant, and probably it had been attracted to the light.—C. S. H. BLATHWAYT, 27 South Road, Weston-super-Mare. 16.vi.54.

MINUCIA LUNARIS SCHIFF. IN HAMPSHIRE.—I have to record the capture of a single specimen of *Minucia lunaris* Schiff. in fine condition at my m.v. lamp here on 29th May 1954. I have not heard of the occurrence of this moth in Hampshire since its recent appearance in numbers in Kent.—Rear-Admiral A. D. TORLESSE, Old Place, Lee-on-Solent. 12.vi.54.

MOTHS AT A M.-V. LAMP-TRAP AT BISHOP'S STORTFORD.—I thought you might be interested by a report on the working of a m.v. lamp-trap which Mr. Charles Mellows and myself have been running on the College Upper Field since 24th March. I am afraid that we gave up the attempt to keep the exact numbers, for the commoner species came really in numbers that defeated us. The total number of species taken is, I think, 108 or 109, the last three being *Plusia festucae* L., *Procus fasciuncula* Haw., and *Polia nitens* Haw. (*advena* Fab.). The best single insect was, I suppose, a nice Maple Prominent, but there were several whose imagines I had never taken before. Amongst them were *Drymonia ruficornis* Hufn. (7), *Pheosia gnoma* Fab., *Notodonta dromedarius* L. (3), *Achlya flavicornis* L., *Polyploca ridens* Fab., *Plagodis dolabraria* L. (5), and *Boarmia punctinalis* Scop. (*consortaria* Hb.). The biggest number of species on one night was 42 on 9th June, but last night there were at least 39.

It's a queer thing that I used to net quite freely, on that very same land, *Apamea caracterea* Hb. (*hepatica* L.) and *A. crenata* Hufn. (*rurea* Fab.), with its ab. *combusta*; but so far we have taken only one *rurea*. There have been plenty of *Abrostola tripartita* Hufn. but not a single *A. triplasia*. I have my doubts whether it occurs in the district.

The Upper Field is not a bad place for a trap. There are a few birches, a line of Lombardy poplars, a small oak wood, and a long avenue of lime, all close at hand, and lots of Clematis.—C. S. COLMAN, 42 Hadham Road, Bishop's Stortford, Herts. (*in lit.*, 17.vi.54).

HIBERNATION OF SCOLIOPTERYX LIBATRIX LINN.—In 1939 I went to stay with some friends at a chateau at Quintin (Cotes-du-Nord). Standing in the same grounds is an older house and between the two there is an underground passage. This passage had not been discovered very long before I went to Quintin in 1939 and the owner had found that *Scoliopteryx libatrix* hibernated there during the winter. The passage is quite dark, low, extremely damp, and about 150 metres long; also a cold wind whistles continually through it even on a warm day. I was of course taken through it and by the light of a torch one could see the gleaming eyes of the moths. They were settled on the roof at the coldest corner and where the wind was worst. In the autumn of 1953 the owner went to count the moths and found 30. During the cold spell in 1954 he went again to see how they were getting on. Icicles hung from the roof, the wind was bitter, and some of the moths were encased in ice. On 20th March 1954 he paid another visit to the passage and counted them once more; the 30 were still there and all of them alive!—VERA MOLESWORTH MUSPRATT, St. Jean-de-Luz.

GRYLLOTALPA GRYLLOTALPA LINN. IN SURREY?—I have recently been reading Mr. Eric Parker's *Surrey Naturalist* with great pleasure. I was particularly interested in an allusion on page 8, where he quotes L. E. Newman as stating that mole crickets were very abundant on Ockley Common in the old days; but Mr. Parker thinks they are no longer found in Surrey. In spite of their size, subterranean churring and massive crashing when they fly to light in May, they are rather elusive creatures, usually asserting their presence by chewing the roots of grass and plants in moist gardens. Is there any modern record of their existence in Surrey, or indeed elsewhere in England?—MALCOLM BURR, Istanbul. 2.vi.54.

APAMEA EPOMIDION HAWORTH.—In my review of the *Proc. and Trans. S. Lond. ent. nat. Hist. Soc.* 1952-53 (1954), p. 9, I questioned the use of *epomidion* Haw. for *characteria* Hbn. Mr. Hawkins says that Mr. Tams has pointed out that *characteria* Schiff. 1775 is said to feed on *Orobus (Lathyrus) niger*, the black pea, an inhabitant of rocky mountainous districts and, though it has not been identified with certainty, it cannot be the same species as *characteria* Hbn. 1800-1803, a grass feeder. *Characteria* Hbn. is a homonym and cannot be used. This leaves *epomidion* Haw. 1809 as the earliest available name for the *Apamea*.—ED.

COLEOPTERA

HAS CETONIA AURATA LINN. COLOUR SENSE?—For many years now *Cetonia aurata* L. has lived in my garden. When I first noticed them about 35 years ago I was pleased to see that this beautiful beetle had adopted it, and for some years now, in spite of their bad habit of eating and spoiling roses, I let them be. But my small garden at present seems

to have become far too popular with them and they are now a perfect pest. Apart from the roses being very much spoilt they eat the lilac and iris of all sorts as well. Last year, 1953, they were bad; this year they are a plague.

I have only three different species of *Iris* but 16 different sorts of the bearded iris, all of them beautiful and named varieties. Amongst them is 'Golden Hind' which, as its name implies, is a brilliant golden yellow. My clump of it this year had eleven spikes of flowers, but I never saw one perfect flower—they were all eaten by *aurata*. Next to the 'Golden Hind' is another large clump of iris called 'Amigo': it has pale violet standards and deep violet velvety falls. *C. aurata* did sometimes land on it, but for ten *aurata* on 'Golden Hind' I would find only one on 'Amigo'. All the other iris were visited by *aurata*, but the beetles only spoilt an iris here and there.

I could not detect any difference in the scents of these iris; in fact there seems hardly any scent at all in them to me.

The same thing occurred on the lilac. One bush is white, the other a deep purple; they are close together. Here there was more discrimination; I found only one *aurata* once on the purple lilac but lots on the white, so that I think it must be the more showy flowers that attract this beetle and that it has nothing to do with scent or taste.

At present I have a brilliant blue iris in bloom called 'Sensation': it is only now in full flower whilst most of the others are going over. For the last 48 hours I have found a certain number of *aurata* on them, and here again another clump of beige iris, 'Jean Cayeux', which is next to the blue, has had only one *aurata* on it.

I must add that this year I have killed unmercifully all these beautiful beetles which I have managed to catch. Unfortunately the very unusual cold weather we had here last winter and which killed, much to my delight, masses of slugs and a great number of snails, does not seem to have made any impression on *C. aurata*.—VERA MOLESWORTH MUSPRATT, Aice Choko, St. Jean-de-Luz, B.P. 27.v.54.

Current Literature

ENTOMOLOGISCHE ZEITUNG, 1954, 64, 115, Text Fig., contains an account by B. Alberti of Berlin of a mutant of *Boarmia (Ectropis) bistortata* Goeze ab. *albolimbata* Alberti. In April and May 1942 in a large wood at the edge of Stalino in the Donetz basin of Russia *B. bistortata* occurred in vast numbers. The wood consisted of *Robinia* in one part and a mixed growth with a good deal of aspen in another. There was great variation and a form new to Alberti formed almost one-third of the total, of the remainder about half were normal light forms and half various gradations of ab. *defessaria* Frr. The new mutation, ab. *albolimbata*, has the wings very dark in sharp contrast with the broad border of cream colour more or less sprinkled with grey. The figure shows the border 5 mm. wide with black dots along the edge of the wing and cream coloured fringes. The thorax and abdomen are blackish. It occurs in both sexes but is more clearly defined in the females. The form was not seen in the scarce summer generation. Conditions were such that an exact statistical study was impossible and it could not be bred to ascertain the genetics.

E. A. C.

ENTOMOLOGISCHE BERICHTEN for June 1954 (Vol. 15, No. 6, p. 161) contains a paper by W. M. Docters van Leeuwen on the gall-midges *Asphondylia sarothamni* H. Lw. and *A. mayeri* Liebel which the author considers to be two alternating generations of the same species. These must bear the older of the two names, viz. *sarothamni*. The same applies to *A. ononidis* F. Lw., which causes a bud gall on *Ononis spinosa* L. in spring, and a second *Asphondylia* sp. which causes another gall in the pods of the same plant in September.

Fifty Years Ago

(From *The Entomologist's Record* of 1904)

APATELE STRIGOSA SCHIFF. IN GLOUCESTERSHIRE.—Last Thursday . . . insects came freely to light in the house, and have continued to do so to the present time. The list of captures include . . . two *Acronycta strigosa*. Many years ago I captured three or four examples of the latter species here, but had never seen it since until last Thursday, when I noticed one sitting on the wall of my hall, and my daughter took a second in the same place the following night. It appears strange that an insect should occur again after so long an interval.—E. C. DOBRÉE Fox, Castle Moreton Vicarage, Tewkesbury. *July 14th, 1904.*

[Castle Moreton is on the edge of a former ancient fen. It is interesting that *A. strigosa* should have lingered so long after the area was drained.—P.B.M.A.]

NONAGRIA TYPHAE AND MICE.—This season has been a most remarkable one, the earlier species being fully a month later, while since July the reverse has been the case, and now, I may say, in this district the season is virtually over. With me nothing of note has turned up in numbers . . . Sugar has been very unsatisfactory, but my most remarkable experience has been with *Nonagria arundinis (typhae)*. A correspondent wishing for a few pupae, I went to a spot where thirty or forty has been a not unusual return for an hour's work, but this year I found I had been forestalled by mice or voles, which had started at the entrance-hole of the larva, and had then ripped up the rush until the pupa was reached. In this manner they had cleared the ditch, about 200 yards long; not a pupa was to be found.—J. OVENDEN, Rochester. *31st August 1904.*

COLLECTING AT WITHERSLACK.—Looking through the magazines one finds many notes from Wicken, the Broads, and the New Forest, and, although kept rather quiet, one knows of many a trip to north Cornwall. Even Forres and Rannoch get their full share of attention, but a careful search reveals scarcely a note on the 'mosses' from the pen of a south countryman . . . Mr. C. F. Johnson of Stockport . . . spoke so highly of Witherslack that I resolved to try it. The result was that July 6th found me settled at the Derby Arms, for six days' work. From the expense point of view one could scarcely have a cheaper holiday . . . the accommodation and catering are such as are rarely found in a country inn, albeit the tariff is the very moderate one of 5s. per day, inclusive of everything . . . The moss commences some quarter of a mile back from the inn, and other fine collecting ground is situated immediately at the

front door. The first morning on the moss was very windy, but in sheltered parts I found *Coenonympha typhon* in great abundance and lovely condition . . . A week could be devoted to *C. typhon* alone, as the variation shown is most interesting. With so many other things to do, however, I could not give up too much time to the one species, but the 150 odd specimens I brought home with me are an extremely variable lot . . . With *Hyria auroraria* the moss form . . . is most striking. The nearest approach to the type among my captures has a rather large golden spot on each wing, but many are entirely purple, with no trace of gold anywhere. I got two or three most days, but on one morning without a breath of wind I got two dozen. For such small insects they are strikingly conspicuous upon the wing.—RUSSELL E. JAMES.

Lepidoptera in North-East Derbyshire, 1953

By J. H. JOHNSON.

(Continued from page 183)

Erannis defoliaria Cl. (3) 25th October, (1) 28th October, (1) 1st November, (1) 17th November.

Erannis aurantiaria Hb. (2) 18th November.

D. Rarely seen or quite unexpected.

Cucullia chamomillae Schf. (1) 6th May, (1) 15th May. I searched all species of chamomile flowers, and any plant which bore a family resemblance, assiduously throughout the summer for the larva, but saw none.

Abrostola triplasia L. (1) 22nd May, (1) 31st May, (1) 23rd June, (1) 7th August.

Harpyia hermelina Göze. (1) 28th May, (1) 10th June.

Hadena lepida Esp. (1) 28th May.

Hadena nana Hufn. (*dentina* Esp.) (1) 15th June, (1) 25th June, (1) 1st July. Bladder campion has been particularly abundant this year (1953).

Smerinthus ocellata L. ♂ 10th June, ♂, ♀ 26th June. The female laid 24 eggs. A ♂ on 28th June.

Harpyia bicuspis Bork. (1) 10th June.

Cucullia umbratica L. (1) 13th June.

Hadena conspersa Schf. (*nana* Rott.) (1) 13th June, (1) 25th June, (1) 26th June. Hayward (1926) says that larvae were reported in the *Zoologist* 1853 as found in Derbyshire. He had no other record. The large clumps of *Silene cucubalis* which have appeared in the area after many years of scarcity due to some disease may have led to the increase of those species which feed on campion seed-pods.

Chiasmia clathrata L. (1) 13th June, (1) 8th August. This is a new record.

Tethea ocularis L. (1) 25th June. Another one was taken at sugar.

Apatele megacephala Schf. (1) 27th June, (1) 24th June. A completely black specimen was taken.

Notodonta ziczac L. (1) 18th June, (1) 24th June.

Apatele leporina L. (1) 26th June. Another one was taken at sugar, and one larva was found on birch.

Notodonta dromedarius L. (1) 23rd June.

Pheosia tremula Cl. (1) 24th June, (1) 25th June, (1) 2nd July, (1) 5th July. A female laid 50 eggs from which 35 imagines were reared in September. There is no sign of a second brood in the wild.

Heliophobus anceps Schf. (1) 24th June.

Thera obeliscata Hb. (1) 25th June, (1) 14th September. I have not taken this species anywhere else in the district, but it appears to be double brooded.

Plusia iota L. (1) 26th June, (1) 27th June, (1) 2nd July. The first I have ever taken here.

Perizoma flavofasciata Thun. (*decolorata* Hb.). (1) 27th June.

Apamea infesta Ochs. (*anceps* Hb., *sordida* Bork.) (1) 28th June, (1) 2nd July, (1) 16th July. Another one was seen at sugar.

Zanclognatha grisealis Schf. (*nemoralis* Fab.). (1) 28th June.

Lycophotia varia Vill. (*porphyrea* Schf., *strigula* Thun.). (1) 2nd July. This was completely unexpected. There is no heather, except an odd clump or two, within a radius of four miles.

Phalaena typica L. (1) 7th July. This is a puzzling species. The larva is easily found on dock after hibernation in April, usually near walls; yet the perfect insect is rarely seen.

Cucullia absinthii L. (1) 7th August. The larva was abundant, but once again only one imago was taken.

Polychrisia moneta Fab. (1) 2nd August, (1) 7th August, (1) 9th August. This species, of course, is restricted by the incidence of its foodplant.

Plusia festucae L. (1) 23rd July. Not taken previously.

Sterrha seriata Schreb. (*incanata* Schf., *virgularia* Hb.). (1) 29th July.

Euxoa tritici L. (1) 31st July.

Triphosia dubitata L. (1) 9th August, (1) 10th August, (1) 14th August. Buckthorn does not occur here, bird cherry is very rare.

Euxoa nigricans L. (2). 5th August, (1) 7th August, (1) 13th August, (1) 14th August, (1) 17th August.

Habrosyne pyritoides Hufn. (*derasa* L.) (1) 6th August. Not seen since 1937.

Pseudoterpna pruinata Hufn. (*cytisaria* Schf.) (3) 7th August. None was taken on any other date by any other method. I was surprised to learn later that another collector had taken several specimens in flight over waste land about two miles away on the same date.

Bombycia viminalis Fab. (1) 9th August.

Eremobia ochroleuca Schf. (1) 13th August. This is a new record for the county. Hayward (1926) made no mention of it.

Procus furuncula Schf. (*bicoloria* Vill.) (1) 13th August, (3) 16th August.

Enargia paleacea Esp. (*fulvago* Hb.). (1) 16th August. Recorded in *Ent. Rec.* 65: 325.

Atethmia xerampelina Esp. (1) 20th August, (1) 28th August, (1) 30th August, (1) 2nd September, (1) 5th September. The first season I have seen this species. One female laid a few eggs.

Ortholitha bipunctaria Schf. (1) 24th August. There is no chalk or limestone nearer than five miles.

Ennomos quercinaria Hufn. (*angularia* Hb.). (1) 6th September.

Omphaloscelis lunosa Haw. (1) 7th September, (1) 9th September.

Dryobotodes protea Schf. (1) 8th September, (1) 15th September.

Agrochola lota Cl. (1) 18th September, (1) 2nd October, (1) 11th October, (2), 13th October.

Amathes glareosa Esp. (1) 22nd September.

Chloroclysta miata L. (1) 17th November.

Catocala nupta L. (1) 26th September. (*Ent. Rec.* 65: 325).

This list contains all the moths which were taken in the two traps previously described. There were, on several nights, unfortunate accidents, for example some moths were completely scorched by the lamp; on another occasion a Sexton beetle destroyed many insects in the trap, and so I had to discard many unrecognisable moths which *might* have been new records. Apart from these instances the list is as near complete as I can make it.

The locality in which the traps were operated may be described as rapidly becoming industrial, with varying amounts of temporary waste land. An analysis of the meteorological conditions may be useful for purposes of comparison. The instruments were placed close to the traps but not too close to prevent them conforming to the regulations for setting up a Stevenson screen.

	Temperature °F.					Rainfall	Prevalent Wind
	Min.	Max.	1953 Av.	30 Year Av.			
January ...	25	51	38.1	38.3	.96"	N.W.	
February ...	25	60	38.9	38.7	2.59"	S.W.	
March	21	75	41.0	42.1	2.01"	S.E.	
April	31	66	44.9	46.5	3.10"	S.W.	
May	32	82	55.5	52.1	1.87"	N.W.	
June	40	82	58.3	57.6	2.81"	N.E.	
July	49	79	60.3	61.3	2.59"	N.W.	
August ...	46	89	61.8	60.2	1.83"	N.W.	
September	44	80	55.4	56.1	1.89"	S.W.	
October ...	29	77	50.7	49.2	2.26"	S.W.	
November ...	33	58	46.9	42.8	2.17"	S.W.	
December ...	31	56	44.4	39.3	1.44"	S.W.	

Apart from the rainfall, which was rather below usual, and the mild November and December, the weather in North-East Derbyshire has been normal.

In the next instalment of this paper I shall deal with butterflies and diurnal moths.

(To be continued.)

CORRECTION.—Vol. 64 (1952), Plate X (facing page 238). The numerals of Figs. 7 and 9 have been transposed: *i.e.* the insect numbered '7' should be 9, and the one numbered '9' should be 7.



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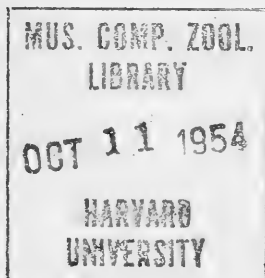
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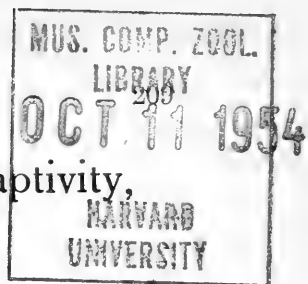
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Breeding the Large Blue Butterfly in Captivity, 1953-54

By C. A. CLARKE.

In 1952-53 an attempt was made to rear the Large Blue (*Maculinea arion* L.) in a specially prepared 6 ft. × 4 ft. greenhouse, in the hope that the butterfly might be bred on a large scale. This was a failure, as also was the use of various glass observation nests. It was therefore decided in 1953-54 to try to breed a few individual butterflies by the "walnut" method described in detail by Purefoy in 1915 and recorded in Frohawk's *Natural History of British Butterflies*. This proved successful and the notes which follow indicate the special points of interest which arose during the experiment:—

1. The female *arion* laid readily on wild thyme and the eggs were placed in 1" diameter tins. Under a hand lens the eggs could be seen to darken after a few days and fresh thyme was then put in. When the larvae hatch they are so small that they are difficult to find, disappearing into the thyme buds. The simplest plan for breeding, therefore, is to renew the food-plant every few days and never to throw anything away; by this means no caterpillars are lost. Frass in the tins can be detected about ten days after hatching, and when the larvae become salmon pink, after about a fortnight, they are more visible and can be seen in or around the thyme buds. When, after three weeks, the caterpillars leave the thyme, they crawl rapidly round the tin and are then ready to be transferred to the walnuts. Cannibalism is said to occur but we did not see any and on several occasions three or four larvae were found in different flowerlets on the same bud of thyme.

2. The most difficult period was changing over from the wild thyme to the ants. The caterpillars were introduced into the "walnut" on a paintbrush, but a large number of them then disappeared. Whether they were eaten by the ants or whether they were drowned through entering the water seal is not known, but out of 30 or 40 caterpillars introduced into the nests only 7 successfully established themselves with the ants. Possibly we had too much earth both under and around the walnuts and the caterpillars may have burrowed into this and been lost. Very little earth (about $\frac{1}{8}$ ") seems to be necessary. At no time did we witness the spectacle of "humping", nor did the ants appear to pay any attention to the caterpillars.¹

3. The "walnuts" ($2\frac{1}{2}$ " × $1\frac{1}{2}$ ") were hollowed out of wood and roughened inside. We used *Myrmica rubra* L. (= *M. ruginodis* Nyl.) ants from Cheshire and these proved very satisfactory. Whether this is a new species of ant for *arion* is doubtful, since recent work suggests that *ruginodis* and *M. laevinodis* Nyl. are almost identical.² Nests are found chiefly under stones and the simplest way to remove them is to scoop them up with a spoon and to take the brood off the underside of the stone with a paintbrush. On return home the tin is emptied on to one of the little tables with a walnut and a water seal (see photograph) and the earth well broken up and spread out. The ants then quickly establish themselves under the "walnut". We fed the ants every two or three days with chopped mealworm, and a few drops of water were placed under the shell two or three times a week.

4. When established, the larvae grew quite quickly until hibernation in mid-October, fresh brood from new nests being added as needed. The caterpillars were inspected every day and were kept at room temperature throughout. Even during the winter they exhibited occasional activity but at no time did we see them actually eating. Two died during hibernation. Brood in Nature reappears about April and is then added to the nests. After the winter the remaining larvae grew very slowly and the first chrysalis was obtained on 10th June; before pupation the caterpillars dropped from the roof and lay as if dead for three or four days. The first one to do this was inadvertently destroyed as we thought it was, in fact, dead.

Butterflies emerged as follows: 1st July—male; 12th July—female; 17th July—male. The fourth pupa darkened but the insect never emerged.

We are very grateful indeed both to Mr. N. D. Riley and to the owner of the land for allowing us to take a few *arion* females from a protected colony; also to Mr. Wilfred Lee, University of Liverpool, for the photographs which illustrate this paper.

¹Since writing this paper young larvae of *Maculinea alcon*, a continental Lycaenid, with myrmecophilous habits similar to *arion*, have been studied. *M. rubra* ants have been observed to carry the *alcon* caterpillars on many occasions, particularly when the "walnuts" have been disturbed. The ants appear to deal with the larvae exactly as they do with their own brood, picking either up before escaping from the light.

²Dr. John Carthy (personal communication) states that *M. rubra* L. (= *ruginodis*) and *M. laevinodis* Nyl. can be distinguished biometrically but many individuals are indistinguishable. *Rubra* is a dimorphic species but it seems as though *laevinodis* should be absorbed into *rubra* L. as Linnaeus first said.

REFERENCE.

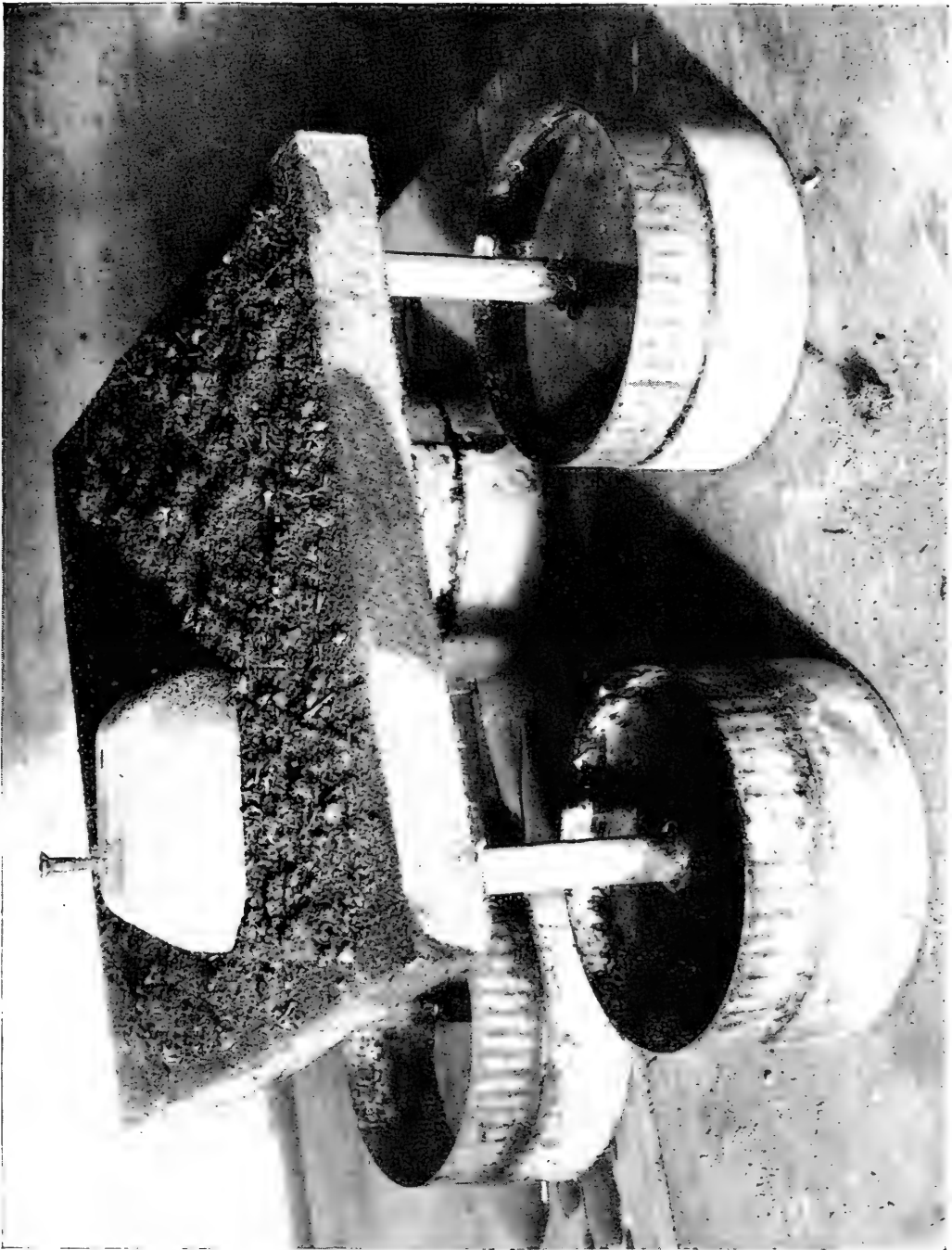
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Clearwings in Essex

By H. C. HUGGINS.

I have so far found four Clearwings in the gardens and streets of Westcliff-on-Sea. They are *Aegeria myopaeformis* Bork., *A. vespiformis* Linn., *A. tipuliformis* Clerck, and *Sesia apiformis* Clerck. Before dealing with the main subject of these notes (which is *S. apiformis*) it may be of interest to say a word or two about the first three, which are living under somewhat unusual conditions.

A. myopaeformis is living in a good many gardens and appears to be least affected by urbanisation. As usual it forms colonies in certain trees and neglects others entirely. There were six apple-trees in my garden at 875 London Road, Westcliff-on-Sea, and three only contained *myopaeformis*, but each had a large colony. One indeed was so large as indirectly to cause the death of the tree, as in the hard winter of 1938-9 a greater spotted woodpecker stripped off nearly all the bark, with the assistance of some great tits, to feed on the larvae, and the tree died the following summer. I used to walk round the trees to take the newly emerged insects at 8 a.m., G.m.t., but it could also be found freely on a sunny morning from 11 till 1 p.m. buzzing up and down the trunks with an ichneumon-like flight. I saw over a score on one tree, both



Wilfred Lee

Unit for breeding *M. arizon*. Shows wooden "walnut" table and water seal.
(June 1954.)

Photograph by



Wilfred Lee.

Inside of 'walnut' showing two *arion* larvae with ants and brood. (Photograph taken in October, 1953. Magnification $\times 3$.)

Photograph by



Wilfred Lee

M. ation pupa lying among ants (*M. ruginotus*) and their brood (June 1955).

Photograph by



Photograph by

Wilfred Lee

M. arion ♂ Home-bred. Emerged 1st July 1954.



Photograph by

Wilfred Lee

M. arion larva on Thyme. Actual size of larva $\frac{1}{8}$ " long (8th July 1954).

males and females, on 20th June 1941 and renewed my whole series on grease-proof pins without difficulty.

A. vespiformis is decidedly scarce but colonial also. At the moment I could not point out a colony, but it occasionally forms one of considerable extent on the bosses caused by injury to the young poplars in the streets. There was for several years a good-sized colony, containing usually at least a score of larvae, in a boss on a poplar in Chalkwell Avenue. The larvae were a little larger than usual and when I first discovered them in May 1935 I hoped I had at last found *Sciapteron tabaniformis* Rott. The tree was quite a small one, of about six inches diameter, and rather sickly. The colony lasted to my knowledge three years and was not new when I found it; but as the tree did no good it was destroyed and replaced. *A. vespiformis* is a much more general feeder than is usually supposed: I have more than once seen the pupa-case and caught the moth on stubs of sweet chestnut in Belfairs Wood. These were the young crowns about three inches in diameter of a coppiced cultivation.

A. tipuliformis is in most gardens where currants grow. These, however, are not much grown in the district as the soil does not suit red currant and the whole neighbourhood is so rotten with big bud as not to favour black. I have taken two specimens on a gooseberry bush in my garden here (65 Eastwood Boulevard) and as I know of no currant bushes in the road I think they are feeding in the gooseberry.

S. apiformis is the commonest of our local Clearwings and is found in almost every road where poplars are grown. This is the favourite local tree for planting on the grass verges beside the pavement, and in nearly every road most trees are more or less infested by *apiformis*. It is not too easy to get, however, as its numbers fluctuate greatly; a road which produces a fair number for a year or so may then have very few or none for a time. The moth emerges from 7.30 to 8.30 a.m., G.m.t., very occasionally a little later. Within an hour of emergence the male flies off and the female if not paired climbs out of sight in the foliage, so the time for collecting is limited.

All the openings to the burrows are just above the surface of the ground. I have never seen one more than three inches from the surface, and at least a quarter of them are of larvae which have fed in the roots of the tree, their exit holes coming up through the ground from a few inches to a foot off the trunk, so that the empty pupa-cases stick out of the soil like those of *Hepialus lupulinus* L. Moths emerging from the ground do not always make their way to the trunk but sometimes climb a grass-stem to expand their wings. As the emergence holes are so near the ground, in the very old bark, they do not close up, so that a stranger looking at a tree might form a very erroneous idea of the size of the *apiformis* population; some of the trees contain a score of exit holes, but these may date back over ten years.

The moth does not climb high up a trunk to expand its wings; I have not found one above three feet from the ground before the wings have hardened. The female ascends as a rule on a sunny day to about three feet before she begins to 'call', which in warm weather she does almost directly her wings are fully expanded (I have found her *in cop.* when they were still imperfectly hardened). The actual pairing is rather interesting and pretty to witness. The female, which is clinging to

the bark head upwards, slightly extends her body towards a horizontal position when calling. The male arrives and after perhaps one preliminary circle flies backwards towards the female, sustaining himself in the air on rapidly vibrating wings, until their extremities meet, when pairing takes place at once with the male still in the air. Directly he has paired he drops on to the trunk beneath her and there remains head downwards. I have seen this procedure take place several times and believe that the male is always hovering in the air at the actual moment of pairing. It is amazing how quickly it takes place considering that he is flying backwards.

The local enemies of *apiformis* seem to be few until it reaches the perfect state, but then both sparrows and tits take a heavy toll of the newly emerged moths which are conspicuous on the bark; the mimicry of a hornet apparently affords little protection against our sophisticated urban bird population. It is, however, a source of danger to the moth from the human element, as a fair number are squashed by people who mistake them for big wasps. On 22nd June 1954 I found a large female with the end of her abdomen reduced to a pulp and put her out of her misery. Two hours later I happened to walk down this road again and found a slightly worn male clinging to the bark in the exact place where she had been, the yellow scaling being still plainly visible there. He had evidently assembled to the place where her abdominal glands had been crushed. I do not know how the exponents of the "wave-vibration" theory of assembling enunciated by Fabre and others would have explained this!

These four are the only Clearwings actually found in the town itself, so far as I can ascertain; but I have also seen *Sphecia bembeciformis* Hübn., *Dipsosphecia scopigera* Scop., and *Aegeria formicaeformis* Esp. in the district; but the last two are I fear almost extinct to-day. I have never seen nor heard of any capture in this century of *A. chrysidiformis* Esp., which was found on Leigh Cliffs a hundred years ago.

Larval Diapause in *Apatura iris* (Linn.)

By F. V. L. JARVIS, B.Sc., F.R.E.S.

INTRODUCTION:—Although the larva of the Purple Emperor (*Apatura iris* Linn.) was recognised in 1758 no complete account of the life history was available until F. W. Frohawk published his accurate description in *British Butterflies* in the early part of the century. By reason, probably, of the difficulty of obtaining eggs and rearing from them in natural conditions the interesting phenomena associated with the larval diapause have not, as far as we know, been closely investigated. The *Apaturidae* are a family whose remote origin goes back to a warmer climate than Europe experiences at present. In the behaviour pattern of the life cycle this beautiful butterfly shows a gradual adaptation to cooler seasonal conditions, not only in association with the food-plant, but more particularly in the complex over-wintering colour changes.

With the object of investigating these phenomena a study was commenced early in 1953. Later in the year I had the invaluable co-operation of Mr. J. Firmin at Colchester whose careful observations left me with a very large debt of gratitude. Altogether over the period we had 29 larvae under observation. Some were hatched from eggs; the

rest were collected as young larvae from localities in the South of England.

As the diapause shows its gradual effects early in the larval history it is necessary to start at the beginning. The eggs are laid from mid-July to early August, usually singly, on the upper surface of a willow leaf. All our specimens (eggs and larvae) were on the broader leaved willows growing in partially shaded positions in extensive oak or mixed woodland. On three occasions the same bush was selected in consecutive years. The inner, or more shaded leaves, are chosen by the female butterfly. I have heard it stated with some emphasis that *iris* selects the female willow for ovipositing, but my experience does not support this view.

In 1953 I took larvae from eight willows in two localities ten miles apart. The bushes were marked, and in April of this year when the catkins were in flower the sexes were checked, with the following results: Locality One; 3 male bushes, 1 female bush; Locality Two; 2 male bushes, 2 female bushes. In July 1953 eggs were found on one of the male bushes in Locality One and on a female bush in Locality Two.

EGG: When first laid the egg is ochreous green and domed: 1 mm. in diameter with 14 or 15 longitudinal ribs and a fine pattern of cross braces. After nine or ten days the colour changes to a dull ochre whilst a reddish purple zone develops inside the basal periphery. Prior to hatching (14 to 18 days after oviposition) the larval head, reddish ochre granulated with black, is visible at the apex, whilst the green body is curved clockwise (in all the specimens examined) in the basal portion of the egg.

INSTAR I.: On hatching at the end of July or in August, the larva eats a portion of the shell—in some cases all except the basal disc—preferring the sides before demolishing the top. Some larvae wander restlessly for several hours but all eventually select the upper surface of a leaf and spin a mat of silk near the tip. From this station the larva moves to either edge to feed, returning to its mat after each meal. It is interesting to note that a silk filament marks out every journey. Soon after hatching (Instar I.) the colour is pale green with a darker olive dorsal line. Each segment is marked above the lateral line with five encircling creases. Two minute black warts occur on the first crease on each segment and two others on each side, each carrying a small black seta.

The lateral line is pale green bearing one or two long whitish setae on each segment. Legs and prolegs are pale green. The anal points are pale bluish green with a light reddish dorsal shield. On each segment there is a sprinkling of purplish blotches giving the faint impression of forwardly-directed diagonal stripes from segment 5 backwards. The head is rounded (with no horns), black and granular with a dull chestnut zone on each side of the median line. A few long white setae are situated behind the mouth. The larval growth is from 3.2 mm. to 6.8 mm. At this stage the larva conforms to a primitive form shown in the *Coliads*, *Pieridae*, *Satyridae* and many genera of moths.

INSTAR II.: The first instar lasts about twelve days, and on moulting into the second instar the typical *iris* pattern appears with horns on the

head. After moulting the size is 6 mm., plus 1.7 mm. for head and horns. This length is practically doubled during the instar.

The larva now has a reddish ochre head, very granular and shaded with dull purple on the sides and on the lower surfaces of the rigid horns. The anal points are long and reddish. The ground colour is medium green tinged with yellow on the back and sides and bluish green on the ventral surface. Oblique stripes, made up from pale yellow and greenish white tubercles, occur on all segments, but are most clearly seen from segments 4-backwards. The lateral line is greenish white. A number of fine black setae are scattered over the dorsum and sides, changing to longer white setae on lateral line and ventral surface. Two larger light yellow tubercles occur on the dorsum of segment 7, giving the effect of a slight hump which is described hereafter as the "dorsal tubercle". It is interesting to note that all of my larvae ate the old skin after moulting. The second instar persists from 27 to 30 days.

INSTAR III.: The moult into the third instar takes place in early September. The larva at this stage is 10 mm. in length plus 2.2 mm. for head and horns. The appearance is very similar to the previous instar, but the tubercles on segment 7 are more prominent and orange yellow in colour. The horns are now dull purplish brown, and the face pale dull ochre.

DIAPAUSE AND PROTECTIVE PIGMENTATION: As this is the instar in which diapause takes place, it is interesting to describe the behaviour of a particular larva. The moult into instar III. took place on 9th September, size being as above. Feeding was slow, from one side or other of the leaf, until it was eaten practically down to the rib. By 30th September the total length including horns was 14.5 mm., but there was no change of colour. The larva would frequently refrain from feeding from periods up to 48 hours.

On 11th October the larva began to turn brownish green. By 15th October the colour change was well marked. There was a shrinkage in length to 12.2 mm. (including horns). The position was maintained on a silk mat on the food leaf, head facing the petiole. Silk extended thinly over the remains of the leaf and on to the main stem. By the next day the colour had become dull orange brown, with the top of the head, horns and anal points purplish. The face mask was putty coloured. The dorsal tubercle became deep orange and semi-transparent. Diagonal stripes, small tubercles and lateral line were dingy white. Short black setae covered the back and longer white setae the sides.

Ground colour over the next few days became dull purplish brown with a rose suffusion. Dorsal tubercles, horns and anal points were considerably darker. Until this change was complete the larva remained on the original leaf although the portion of that still uneaten was yellowish stained with dark brown. On 30th October the larva became active, walked to the base of the sleeve in which it was confined, trailing a fine silk thread, and finally took up a position on a small purplish stem beside a leaf bud, where it spun a silk mat. It then settled down, in diapause for the winter, with its head upwards, horns pressed against the bark.

It is noteworthy that the growth rate slows up after the first instar, which is completed in 12 days. The second instar is spread over four

weeks, whilst the period from the beginning of the third instar to the onset of diapause, which takes place about half way through the instar, is six weeks.

The fall in environment temperature between early August and early October is too small to account for this slowing of metabolism. It seems probable that the onset of diapause is gradual, becoming apparent in lethargy many weeks before the colour change occurs. Support for this view is given by the several recorded instances of *iris* larvae completing their life cycle to the imaginal state of late autumn in normal conditions, clearly indicating that temperature is not the retarding factor.

The foregoing description of growth from the egg to the third instar was typical for all the larvae under observation, but from the visible beginning of diapause notable differences between individual larvae were apparent, and eventually it was possible to describe a behaviour pattern for the diapause.

I had kept my larvae in a fine gauze sleeve covering a branch of a growing willow bush, but Mr. Firmin and Mr. A. D. Blaxill, who kindly allowed us to examine his larvae, used a method more closely approximating to natural conditions. Willow bushes about four feet in height were enclosed by a wood and wire netting cage with a clear air space between the twigs and the netting. Over the netting was stretched muslin. Sufficient space was left for the observer to enter the cage. Mr. Firmin's cage was exposed to the North, whilst Mr. Blaxill's was rather sheltered on that side. My sleeve was partially sheltered from the sun with a northerly exposure.

The larvae at Colchester were about a fortnight later in completing the colour change than those on the Sussex coast—a time lag probably explained by the difference in average temperature between the two localities. We found that in all cases the change was partially completed at the tip of the final feeding leaf, leaving smaller alterations to take place after the final hibernating station was selected. Movement from the leaves to the stems began after the middle of November, in fact it appeared at first that most larvae were going to hibernate on the dead leaves, which had been securely fastened to the twigs with silk. This however, was not so as all except one larva finally moved away.

When the colour change was complete the majority of the larvae were dull greyish olive, with the dorsal tubercles, lateral stripes and horns dusky purple or deep purplish brown. The lateral line became pale drab, which, coupled with the whitish setae, effectively broke up the visible body outline. However, we had several larvae which were entirely different. One was definitely greyish in ground colour, and another greenish olive, both with purplish markings and horns. Two others were a dull rosy purple with the tubercles and horns deeper purple, and the lateral stripes dirty white.

In the exception noted earlier the larva went into diapause on the feeding leaf, which was sufficiently secured to the twig by silk extruded on various wanderings. A thicker silk mat was spun nearer the base of the leaf. The larval colour remained throughout the winter as a fairly bright olive green, with a slight clouding of purple in the head, anal points and tubercles. Early in November this colour harmonised exactly with the green still remaining near the leaf rib. From a total of 19

larvae, this was the only one remaining throughout the winter on a leaf. Furthermore it was noticeably the greenest.

Mr. Blaxill showed us six larvae from another Southern locality. In these the ground colour was greyish sepia, with the markings and horns much darker and browner than those described in the first part of this section. For record purposes coloured drawings were made of all the colour types in their final diapause stations. Before the phase of activity accompanying the search for a diapause station the larvae, with the exception of the purple and bright olive green forms, became a dull faded green with a purplish suffusion spreading towards the centre of the body from the horns and anal points. At this stage the larvae which had been inert for some days moved rapidly towards the roots and, in some instances, traversed the soil to ascend an adjacent bush. A silk thread was left behind to act, if necessary, as a return route. After reaching ground level a fresh ascent was made, with tentative halts, but finally a resting position was chosen which so closely matched the final colour and configuration of the larvae that prolonged searching was necessary to find them. One must assume that Protective Pigmentation has been evolved to guard against birds, as predatory insects and spiders use senses other than sight for obtaining their food.

The exceptional larva has been described, but here again the background was the best possible colour match at the time. When the leaf withered the larva became more conspicuous but curls and tatters gave it physical protection.

Mr. Firmin was making detailed notes at this period. I cannot do better than quote his report: "On 13th December I entered the cage and found that almost all the willow leaves had fallen. The last time (23rd November) seven larvae were still on the tips of leaves and two on the main stems of saplings. At first I was alarmed as I could find only one larva on a leaf, but a close examination revealed an interesting development in the diapause phase.

"I discovered eight larvae on the stems—and each one was in the same type of position. The site chosen in every case except one was on the stem or twigs. The head of the larvae was in line with or slightly above a bud and the body usually at a slight angle. From the position of the larvae it was clear to me that a definite pattern had been adopted. The purplish dorsal mark was in line with the base of the bud—a very good piece of obliterative camouflage. There is no doubt in my mind that *iris* larvae have a special type of pigmentation. In each case the basic colour of the larva was adapted perfectly to that of the leaf, twig or stem.

"On an upper twig one larva was a curious greenish olive, with the typical purplish dorsal mark and lateral stripes. The horns were reddish purple. The toning with the twig background was perfect. Whatever the colour of the background the larval tint was an exact match. One larva had gone down to within four inches of the base of a willow bush where the stem was soiled by mud to a greyish shade. This insect was passed over several times as a piece of mud by my father and I, so effective was the shade of protective colouration.

"Mostly the larvae were of a greyish olive hue, marked with dusky purple where originally there were markings of dark green and yellow.

One chose a position on the reddish brown main stem where there was a slight bulge. This larva was of a striking rosy purple shade completely different from the others, and looked exactly like a bump on the stem. When last seen on leaves the larvae had spun themselves silk pads. In their final positions on the stems they had put down a thicker 'mat'. In fact the greyish, blurred effect of the silk around the anal points assisted in the break up of outline''.

Two olive grey larvae were found on opposite sides of a piece of leaf stalk spun against a twig. Another of a purplish colour rested in the scar where a bud had been accidentally knocked off. But the main point is, that the majority of these larvae assumed a bud camouflage.

The horns were flattened against the bark unless pushed upwards by a slight irregularity. The larvae were always vertical or at an angle—never head downwards. Larvae seemed to favour the southern side of stems and were fairly near the ground, but it must be remembered that the bushes were only four feet tall. In December they were completely unresponsive to pricking with a bristle, and, when drops of water were run on to them from above, the moisture was deflected by the horns and setae, so that the ventral surface remained dry.

We had striking confirmation of the "Protective Pigmentation" theory when six of Mr. Blaxill's larvae were examined. These were from a different locality. The larvae were somewhat smaller than described previously. The final diapause colour was greyish sepia, with dark purplish brown dorsal markings and horns. But the significant point was that they had all chosen diapause sites about a foot from the ground, in or just below forks of branches, or against the scars associated with the division of twigs, and none were associated with buds or leaves. At this height from the ground, the sallow bark is light greyish brown, with darker lines and wrinkles around the forks and scars. With these larvae, the obliterative effect of colour and position was so perfect that no larval outline could be seen until one got within an inch or two of the branch. Why this series of larvae should develop a different diapause pattern from the others is impossible at present to explain—possibly a racial difference, but the final protective effect is equally good.

Earlier in the autumn Mr. Blaxill had obtained a larva from the same locality in which Mr. Firmin had found his. This was put in the cage with the rest of Mr. Blaxill's larvae. When it came to the time of diapause, *this* larvae chose a site near the top of the bush alongside a bud, conforming to the behaviour of the remainder of Mr. Firmin's larvae. More detailed work is necessary to confirm a theory of protective pigmentation, but the consistency of the present observations is a promising foundation to build on.

There seems little doubt that the larval diapause in *A. iris* represents a specialisation developed over a long period of evolution, in conjunction with trees and shrubs of the family *Salicaceae*. In England the larvae are normally found on sallows, but on the Continent poplar is stated to be a food-plant, and I have found that some larvae will, on occasion, accept willow. The close adaptation throughout the life cycle to the colouring of the sallow could be equally well matched with other plants of this family.

(To be continued).

More Notes on Breeding Varieties of *Panaxia dominula* L.

By H. SYMES, M.A.

At the end of my last article on this subject (*Ent. Rec.*, 65: 202) I mentioned that I had obtained three pairings, (a) between two ab. *bimacula*, (b) between ab. *bimacula* ♀ and a type *dominula* ♂ from Kingsdown, Kent, and (c) between ab. *bimacula* ♀ and a type *dominula* ♂ from Ringwood, Hants. The eggs resulting from pairing (b) were infertile: larvae from pairing (a), which were F⁴, proved to be a very weakly brood, probably the result of in-breeding, and most of them died during the late summer; but brood (c) were healthy enough.

Of brood (b), 20 larvae went into hibernation; only four were still alive on 17th March 1954, and these were dead a week later. Of brood (c), 80 went into hibernation, and 40 survived the winter. Taking (b) and (c) together, a much lower percentage came through the winter than in 1935, and as the larvae were kept under exactly the same conditions, I think this must have been largely due to the difference in the weather in these two winters. In the former, we had a long spell of rather cold weather with frost night after night but no really low temperature, and these conditions seem to have been very favourable to hibernating larvae; but this year an exceptionally mild autumn and early winter was followed by a spell of unusual severity (for Bournemouth) between 27th January and 7th February, and another short spell of cold weather at the beginning of March, with one severe frost on the night of 1st March.

Of the forty surviving larvae of brood (c), several died or failed to pupate, and about two dozen pupae were formed: from these, only 11 moths emerged, of which one was a cripple. But the remarkable fact about these moths was that every one was ab. *medio-nigra*: there was not a single type *dominula* or ab. *bimacula* among them. There ought to be some biological significance in this. Anyhow, I obtained a pairing and now have a flourishing brood of young larvae, so I expect ab. *bimacula* will appear again next year.

Among the brood (c) larvae that pupated but did not produce a moth was one that was different from any *dominula* larva that I have ever seen. The lateral yellow and white marks were much reduced in size, and the dorsal yellow marks were reduced to mere pin-points, while the white marks, also greatly reduced, appeared pale blue and almost luminous under a magnifying glass. I was disappointed not to breed a moth from this: when I eventually opened the pupa it was quite hollow.

Abundance of a Species on One Night only at M.V. Light

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

The m.v. light trap is teaching us a great deal about the period of emergence, the distribution, and the arrival of migrants among others, but one interesting fact is only brought out clearly by a trap which catches several hundred moths on a reasonably good night. One species

may come in very large numbers on a single night and on other nights before and after the same species may only be represented by a few individuals or none at all though sometimes the conditions may appear to be exactly the same. It seems probable that such species have a very short optimum period of flight and are so particular that very slight differences in the weather prevent them from flying freely and coming to the trap. Mr. A. L. Goodson has observed the phenomenon on a number of occasions, but his light is started and cut off automatically so that he does not learn the hour at which any given species flies freely in this way nor is he there to observe whether there is a sudden change in the weather, a slight rise in temperature or humidity for example, to account for it, though to the casual observer the night may appear to be exactly like the night or nights immediately preceding or following.

All species fluctuate as their numbers wax and wane during the period of emergence or with obvious differences in the weather, but in most cases such fluctuations are in no way remarkable.

Examples of remarkable abundance on a single night in 1953 are *Polyphoca ridens* Fab. more than 50 one night, but only 1 or 2 on the nights preceding and following. *Pseudoips bicolorana* Fuesl., the scarce silver lines, 50 on one night, but not more than 2 on any other. In 1954 *Dasychira pudibunda* L. vast numbers covering the herbage round the trap instead of the few usually present.

Lepidoptera in North-East Derbyshire, 1953

By J. H. JOHNSON.

(Continued from page 208)

BUTTERFLIES AND DIURNAL MOTHS.

Great power of observation is not required to remark the correlation of sunny days with the number of butterflies flying about field and wood. It would not be surprising, then, when some of the weather records for 1953 are studied closely, to find that butterflies were scarce in that year. On 3rd June the maximum temperature recorded in this district was 47° F.; at the same time and in the same place the minimum temperature was 43° F. On 3rd December the maximum and minimum temperatures recorded were 56.5° F. and 52° F. respectively. These were exceptional of course; the weekly average for the week commencing 4th June was 53.5° F., while that for the week commencing 3rd December was 48° F., so June really was warmer than December; but a very few cold days may have fatal effects on certain stages of the development of insects, especially in the pupal stage shortly before eclosion.

In addition to lack of sunshine in the early summer the year was an exceptionally dry one in the district: the local authorities, in whose care lies the water supply of Chesterfield and Bolsover, have announced that 1953 was the driest year since 1933. Instead of the average 31.8 inches of rain a mere 26.06 inches fell. This had made a considerable difference in the levels of the water in the reservoirs at Press and Linacre; but it is not so easy to measure the difference in insect populations. As I have written before, this is not a favourable area for butterflies even in what are termed "good years", and I find in my diary for 1953 that on 16th August as I walked through North Wingfield

churchyard I was impressed by the abundance of white butterflies there; but I could see no more than five small tortoiseshells, five wall browns and six meadow browns. I made a note that this was far more butterflies than I had seen at any one time until that moment.

Even so this seems to be an improvement on the position in 1926. In his List of Lepidoptera in Derbyshire H. C. Hayward states that *Pararge megera* L. was formerly common but that there were no recent records. This year I first saw it on 23rd May, and between that date and 12th September I was able to observe at least eighty specimens. On 25th August I saw twenty on thistles near the Clay Cross Co.'s Iron Works, all at one favoured spot. I think this species could now be described as abundant since wherever it was searched for it was found.

Of *Maniola jurtina* L. Mr. Hayward said "Generally distributed in the south, but not very common. Not seen north of Matlock." I should describe it now as extremely abundant, probably as abundant as any other species. Between 29th June and 16th August I caught 106 specimens in a vain search for aberrations. Many were small and pale but not extremely so.

Mr. Hayward described *Lycaena phlaeas* L. as scarce or absent in North Derbyshire. Between 22nd May and 12th September I captured thirty specimens on the south-facing banks of old coal tips and railway cuttings, again in hope of aberrations. It appeared to have maintained its numbers at about the level of 1952. I had no difficulty in finding one when I wanted one. It is an elusive insect, not usually noticed by non-entomologists, but small boys seem to prize it for the colour.

Aglais urticae L. emerged from winter quarters on 7th March, and except on the days between 6th June and 24th July large numbers were observed until 18th October.

Nymphalis io L. appeared on 3rd May. No larvae were seen anywhere. Two imagines were seen on Beeley Moors on 18th August and two more were noticed on michaelmas daisies at Tupton on 26th September.

Vanessa atalanta L. was not seen until 18th August and then only on Beeley Moors. In September eight were seen at michaelmas daisies in Tupton Park. The last one was observed on 26th September.

Vanessa cardui L. failed to appear at all.

Pieris rapae L. was first seen 25th March; *P. brassicae* L. on 30th March; *P. napi* L. on 2nd May. All were abundant, but the larvae of *brassicae* were even more devastating than usual. Very few Brassica plants escaped some degree of damage, even stocks were attacked. I was surprised one day to see a large thrush settle on a brussels sprout plant, while I stood quietly in the garden, pick up a large *brassicae* larva in its beak, shake it violently, drop it quietly, repeat the operation with another equally large *brassicae* caterpillar, pause for a while, then shake its feathers resignedly and fly off. It seemed to me that the bird was hoping for an easy meal.

I collected 150 fully grown *brassicae* larvae in September and kept them in a breeding-cage until they pupated. Only 38 produced healthy pupae; the rest were victims of their usual Braconid parasite.

Anthocharis cardamines L. was seen occasionally between 4th May and 25th May.

Celastrina argiolus L. A male appeared in Heath School garden at

noon on 18th May. It was captured while feeding on a daisy. This is the first one I have seen in this district.

Erynnis tages L. was taken on 23rd May on No. 4 Tip. Another one was taken at the same place on 31st May. One male *Pyrgus malvae* L. was seen at flowers in exactly the same place on 26th May. I am afraid that I shall never see either species at that place again since the National Coal Board has decided to begin a mine there. I have recently watched excavators grub up the clovers, vetches and campions searching for a coal seam which my grandfather and uncles "worked" fifty years ago. Their pit closed down forty years since, and Nature had just about obliterated all the wounds. Now they are being torn open once more, and the butterflies have been exiled. These three species had just appeared in the district, although Samuel Hooke saw one *malvae* at Holymoore in 1922.

Ochlodes venata Br. & Grey was by no means common this year. It appeared rarely between 19th June and 29th July, mainly at vetch and campion flowers. I was unable to find more than fifteen specimens. This species was first reported at Chesterfield in 1915 by S. Hooke.

Polyommatus icarus Rott. is never common; but this year I saw forty between 25th June and 12th September. A large number were seen at rest on grass stems at sunset on a railway embankment.

Callophrys rubi L. was abundant on 2nd May on all moors, and persisted until 7th June.

Coenonympha pamphilus L. was common on moors and on waste land in the valley throughout the summer. First seen on 21st May but not observed after 18th August.

That is the full tale of butterflies — a meagre seventeen species. Others may have been overlooked, or their haunts have not been discovered yet.

There are five species of moths which are often seen in company with butterflies in various places and which never seem to appear at light or at sugar, so they may be included here.

Panemeria tenebrata Scop. (*arbuti* Fab.) was seen on 23rd May, and on no other date, in exactly the same locality as last year. Eight were taken quite easily in a few minutes between 4.0 and 5.0 p.m. They rarely move far from their foodplant. This species is not mentioned at all by Hayward, but it may just have been overlooked, since it is such a local species.

Euclidimera mi Cl. appeared in large numbers on No. 4 Tip and waste land between 23rd May and 6th June.

Zygaena lonicerae Esp. was recorded once by S. Hooke at Cutthorpe in 1900. It is now extremely common in all suitable waste places in this area. On 11th July I counted fifty on knapweed flowers in a few square yards of railway embankment. On 26th July I collected a hundred burnet moths and examined them carefully: ninety-one were *lonicerae*, nine were *Z. filipendulae* L., and none was definitely ascertained to be *Z. trifolii* Esp. Last year I stated that this latter species was common here. I fear that I was confusing it with the more common *Z. lonicerae*.

Odezia atrata L. (*chaerophyllata* L.) was once more common in a few fields which have so far escaped the plough. They were seen on the wing between 19th June and 6th July.

I still have to recount my experiences of dusking and sugar in a neighbouring woodland, and with the Editor's permission I will deal with these in the next issue.

(*To be continued*).

An Entomologist in Argentina

VIII. Misiones Revisited. Preparation, Journev, and Arrival

By KENNETH J. HAYWARD, D.Sc. (Hon.), F.R.E.S.

Whilst I was still at the Tucumán Experiment Station and before any question of my joining the staff of the Miguel Lillo Institute had arisen, the Director of the latter had asked me whether I would be willing to conduct an entomological collecting expedition to Misiones for them during my next annual leave. To this suggestion I had agreed in principle, but before the time arrived I was already working at the Institute, a fact that greatly facilitated all arrangements and permitted the trip to be extended far beyond the month to which it would have been restricted under the original conditions.

I chose the national territory of Misiones (now elevated to the status of a province) for our first official expedition, for the simple reason that it was that part of the country which promised the greatest numerical return of insects. We could also count on great variety. In a previous instalment of these notes the printers have made me state (p. 13) that 35% of the country's butterflies are to be found in this area. What I actually wrote was that 35% of our species are so far *only* known from Misiones, and so it is with all orders of our insects. Misiones is a collector's paradise.

I have already mentioned that the entomological collections of the Miguel Lillo Institute were woefully small and in the case of the majority of the orders, non-existent. For this reason I decided that it would be necessary for some years to come for each of us, irrespective of our special interests, to devote all our collecting time to the accumulation of great quantities of insects in general and I laid stress on the obtaining of all possible specimens of the lesser orders, although at the time I saw little chance of this latter material being worked out. The passing years have shown that in this decision I was right. To-day we have a vast store of material on which to draw for study and I am glad to say that almost all the specimens of the lower orders, whose collecting seemed such a waste of time and energy, have now passed through the hands of specialists, often with surprising results. Thanks to the intensive collecting we indulged in during our earlier expeditions we are now able to carry out our field work along more normal lines and devote more of our time to our particular specialities and to the essential biological investigation.

I found the diary of my first journey to Misiones of the greatest help in preparing for our trip, and my previous experience decided me to confine our collecting to the extreme north-western corner of the territory, stopping first at Puerto Bemberg and then going on to Puerto Iguazú as the Puerto Aguirre of my previous journey was now called (the original Puerto Iguazú having been renamed Puerto Iguazú-cuí or 'old' Puerto Iguazú). Actually we varied this itinerary by paying a

second shorter visit to Puerto Bemberg on our way downstream.

I was accompanied on this trip by Dr. Willink, then in charge of the entomological section of the Department of Zoology, and his assistant Mr. Golbach. We left Tucuman on 6th January, proceeding by train to Resistencia in the Chaco territory whence we would have to cross over to Corrientes to take the river steamer. We had with us nearly five hundred pounds of baggage apart from that which had been sent on ahead, but this was perhaps not excessive as we had to take with us everything we should need for the next three months including a certain amount of botanical paper and preserving liquid and containers for small zoological specimens. Amongst our baggage were eighteen cyanide jars of 250 and 500 cc. capacity which may seem a lot for three people, but we had to foresee breakage (plastic jars had not then come into use) and in the humid heat of Misiones a percentage of the jars, however carefully filled, could be expected to 'liquefy'. This latter defect, so common in hot countries, has caused me many a headache, but after years of trial I have found that if one uses cyanide crystals (or powder if crystals are not available) and these are thoroughly mixed with two or more times their bulk of dry plaster of Paris of good quality and the mixture after being well tamped down in the jar is covered with a few layers of blotting paper before being sealed in place by a thin cap of liquid plaster, little trouble will be experienced.

The monotony of our long journey was broken soon after leaving Metán, where we had changed from the north bound passenger to a long mixed train, by a fire that broke out in the luggage van and which was only subdued after considerable damage had been done and at the moment when the flames were beginning to lick at our travelling cases, which however suffered no more than a slight scorching. Twenty-two hours after leaving Tucumán we reached the town of Presidente Roque Saenz Peña in the Chaco, centre of the cotton growing area of the country. As our train was scheduled to arrive just half an hour after the departure of the local for Resistencia there was nothing else to be done but pass the day here as best we could since the next connection did not leave till the evening. At that time the trees that were to adorn the plaza and line the streets had but recently been planted, and as the temperature soared to 113° F. we were far from comfortable.

The evening journey on to Resistencia consumed another five hours. It was intolerably hot so that in spite of the dust we travelled with every window open and this latter fact led to an amusing incident, at least from the spectator's point of view. Further down the compartment one of the window seats was occupied by a priest, who after reading his devotions fell asleep. We were being pulled by a wood-burning locomotive that from time to time belched forth clouds of sparks which occasionally drifted in through the open windows. One of these of more substance than the others must have come to rest on the reverend father, and being fanned by the wind set fire to his clothing which after smouldering for awhile suddenly burst into flames. The fire was put out with little damage to priest or cassock, but I have often wondered what were his waking thoughts!

We spent the night in Resistencia, memorable in that the hotel in which we stayed is the only one in my experience where I have had to share my morning bath with a large leech whose presumably adventurous

journey through the city's water system seemed to have caused it little inconvenience.

Rising early I sallied forth to make arrangements for our transference to Barranqueras from which port the river ferry crosses to Corrientes, a journey of about an hour as the Paraná is here very wide, for it is at this point that it receives the waters of the Paraguay. I was lucky in that the very first person I encountered turned out to be an old friend of Chaco days who was now running a taxi service in Resistencia and offered not only to take us to the ferry but to deliver us and our baggage on the steps of our hotel in Corrientes, thus avoiding the necessity of transferring our luggage to and from the ferry at either end. This arrangement proved so satisfactory that I arranged for him to cross and meet us for our return journey.

At Corrientes we put up at a small waterside hotel to which we had been recommended. It certainly had the advantage of being almost alongside our point of embarkation but we could have done without the insects that shared our beds. As we had the whole afternoon at our disposal, I thought it would be interesting to revisit the forest where I had collected so many years before, but I had failed to take into consideration the rapid expansion that the city had suffered since those days and after walking for a considerable distance I realised that there was little hope of reaching any suitable collecting ground and we eventually abandoned our intention. I do not think we lost much as everything was completely dried up, even the usually verdant cacti had become so shrivelled that they looked as though no amount of moisture would ever revive them. After dark we visited the riverside park where a number of insects were taken round the lamps, but a heavy storm threatening we returned early to the hotel.

The water was so low that for some time the regular steamer service between Corrientes and Posadas had been suspended and it was not till the next morning that we knew for certain whether we could proceed by boat or whether we should have to find road transport by bus or lorry. However, the river was rising and we were informed that a boat would leave for Ituzaingó at the foot of the Apipé rapids and from there on road transport would be provided, but by the time we reached this port there was sufficient depth of water to enable the steamer to proceed direct to Posadas.

We embarked on the *Iguazú* and after waiting for the arrival of the north and south bound steamers plying between Buenos Aires and Asunción in Paraguay, we sailed at eleven. I had already made this trip several times since my first journey in 1933, but it is one that will never lose its enchantment and for my companions it was like entering a new realm of nature. We spent every moment of the day observing the animal and bird life of the sandbanks and the riverain forest that flanks the stream on either side and when night fell sat late on deck watching the reflection of the stars on the water and the silhouette of the trees and tall *tacuara* canes against the sky.

During the day we had searched every part of the boat for insects but with little luck and as we travelled without lights (for reasons I have previously explained), our night catch was little better. One insect which I at first mistook for an Ithomiid butterfly and caught in my fingers as we were idling off the small port of Itatí waiting for the

shore boat to return, undoubtedly influenced our future collecting with somewhat startling results. It proved to be a male of the beautiful *Diastatops intensa* dragonfly and so delighted Dr. Willink and myself that we there and then decided to do our best to catch at least one specimen of every dragon and damsel fly that came our way. The result of this resolve was that during our trip we increased the number of *Odonata* known to occur in Argentina from 99 to 145 and took several new to science.

Owing to the low state of the river we did not reach Ituzaingó till eight the following morning and after successfully negotiating the Apipé rapids we entered the wider reaches of the river which lie between this point and Posadas, twisting and turning from one side to the other as the pilot sought the deeper channel, sometimes skirting some wooded islet, at others far from either bank, often with only a few inches of water separating us from grounding. The day was passed as had been the previous one—watching the herons, ibis, cormorants and other larger birds which with an occasional *yacaré* (here far less plentiful than they had been below the rapids), made up the life of the sandpits and beaches and we occasionally saw monkeys amongst the trees. It was not till late in the evening that we reached Posadas which was in complete darkness owing to a shortage of fuel oil for the generating plant which necessitated rationing of current so that the lights were turned off early. As soon as our light clusters were turned on over gangways and holds they were almost blotted out by countless millions of a creamy white Ephemeroidea and in a few minutes the gutters leading to the scuppers were inches deep in their frail bodies. Immediately on our arrival the steamer *Guayra* on which we were to continue our journey tied up alongside and we transferred ourselves and baggage so as to be ready for an early start next day.

We were up betimes to watch our departure from Posadas. There were few passengers and the trip up-river was uneventful though about tea time we passed through a sharp rainstorm that chilled the air. Apart from this it was a glorious sunny day and we were able to laze and enjoy to the full the ever changing panorama offered by either bank, the more primitive life of Paraguay on the one side, the more up to date and more intensely cultivated settlements of Misiones on the other. We would probably have appreciated the tranquillity of the voyage even more than we did had we foreseen that it was to be our last restful day until, nearly three months later, we began our homeward voyage. What astonished me greatly was the considerable number of new plantations that had sprung up along the Argentine bank in the twelve years that had elapsed since my previous visit. No night fogs delayed us and we reached Puerto Bemberg soon after breakfast, the journey from Tucumán having taken exactly six days.

I had written to the owners of the Bemberg estate asking permission to make use of their small hotel, but when we landed we were met by the manager who informed us that we were to live in the visitor's house and to consider ourselves the guests of the Company for the duration of our stay. In fact we were treated so liberally that we found it difficult to pay for anything except our washing.

It was pleasant to be treading once again the red soil of Misiones and to see all around one the green forests, and keen to be out and

doing we lost little time in unpacking and setting up our small laboratory in a room that had been given us for that purpose. It was in this room that I slept, drawing a sofa-bed across the screen doors that gave on to a vista of Paraguay across the deep trough of the river, the murmur of whose swirling waters was to be my nightly lullaby.

Bemberg had changed but little over the years but there were signs of progress everywhere. At the time of our visit the village was suffering from want of water as little or no rain had fallen during the past six months and the springs on which it depended had dried up. All water had to be pumped up from the Paraná which entailed a lift of more than two hundred feet and the water was so muddy that for household purposes it had to be filtered several times. This shortage of water affected our collecting in two ways. As the engines for the electric light were water cooled, their running hours were curtailed and we were thus deprived of the assistance of the arc lamps that proved such a source of attraction to insects during my previous visit. On the other hand the Company in order to avoid a repetition of these conditions had decided to install running water and to this end were building an intake on the river Uruguayí some fifteen miles back in the forest, and we were invited to make use of the lorry that twice a day took workmen and materials to this spot. This enabled us to visit virgin forest which it would otherwise have been difficult to reach and from which we gleaned a rich harvest.

In the next instalment of this paper I shall describe our collecting experiences.

(To be continued.)

Notes on Microlepidoptera

By H. C. HUGGINS, F.R.E.S.

Mecyna asinialis Hübn. The second brood of this moth is on the wing towards the end of September and in the beginning of October. It is very secretive by day although I have once or twice disturbed it from a hedge containing a mass of the food-plant, the madder, but at night it likes to skip about over hedges or around rocks where the food-plant is climbing. It comes strongly to light also, so it is likely to be seen by the m.v. man who is working for *Leucania l-album* L. and other late western insects. It occurs with the food-plant in suitable places from the Isle of Wight to South Wales, and also on the Burren in Co. Clare. Were I a few years younger I would like to visit the Burren in late September and October; anything might turn up, or if the usual weather prevailed, nothing!

Peronea sparsana Fab. (*sponsana* Auctt.). It is worth while beating for this variable Tortix at the end of September. Woodlands containing beech appear to be its favourites. It is not necessary to burrow into the heart of the thickets for it, as in the case of *cristana*; it may be beaten from the side of a ride in the usual fashion. Its variations are considerable and some are rather pretty. In addition to the usual grey form with darker grey markings there is a form of which the markings are rust-colour or occasionally bright pink, and still another rather striking one in which the ground colour is practically white and the markings are greyish-black.

I suppose nearly everyone still calls this moth '*sponsana*'; it was rather a pity my friend the late W. G. Sheldon ever discovered that this was a copyist's error for '*sparsana*' as we were all quite comfortable in our ignorance.

Pammene nimbana H.S. The late A. Thurnall used to breed this moth regularly from larvae found under moss and scraps of bark on beech trunks in Epping Forest and Lord Walsingham first discovered it in this country in the same way in Buckinghamshire. Thurnall told me it was not difficult to rear if the cocoons were exposed to all weathers and I still have a couple of those he obtained in this way. The moth is found in several other places; it is probably not uncommon at Mickleham, where I have taken it with Mr. L. T. Ford, or rather watched him take it with a thirty-foot pole and been kindly given part of the bag; but it fluctuates greatly in numbers from year to year, probably because of the variations in the crop of beech-mast.

Notes and Observations

IRREGULAR APPEARANCE OF LEPIDOPTERA IN 1954.—The dates of occurrence of some of the residents are still out of order. *Cucullia chamomillae* Schiff. was still out on the 14th June. A fresh specimen of *Ammogrotis lucerneae* Linn. was obtained on 22nd June, which is early for this species as I have not generally found the imagines until the end of July.—A. H. DOBSON, Millbrook Park Road, Torquay, Devon. 8.vii.54.

THE POOR SEASON.—An interesting feature of a late season with prolonged dull weather and proportionately long emergence periods is reflected in my m.v. trap—the ratio of species/individuals is much higher than usual, about 1: 2 on an average, together with poor total numbers. On a recent visit to the Norfolk Broads, however, I did quite well. *P. machaon* had a good year and it was a great joy to see it flying and feeding everywhere. Also *Spilosoma urticae* Esp. was in numbers, and I took a few other desirable insects such as *Simyra albovenosa* Goze, *Zanclognatha cribrumalis* Hub., *Earias clorana* L., *Drymonia dodonaea* Schf., etc. Up here in Inverness-shire there is little to be seen, and not many moths.—G. W. HARPER, Nedaich, Newtonmore. 8.vii.54.

SPRING LYCAENIDAE, 1954.—The worst spring I have ever experienced in 34 years' collecting, including the wettest, coldest, and most windy June, has produced one of the best spring broods of *Polyommatus icarus* Rott. I have known for some years in Surrey and Sussex, and I have examined nearly 1,000 females and many thousand males of this species during the last five weeks. As regards *Lysandra bellargus* Rott. it is quite a different story. I feel that this species is rapidly declining in numbers everywhere I have been. On the North Downs last autumn where it used to be in thousands I saw about ten males and four females in several visits. This spring about 70 males and 15 females. But I have just returned from a fortnight in search of this species on the South Downs where the results have been disastrous. On two grounds, where a few years ago the species was very plentiful, it is now extinct, and on six grounds worked very thoroughly I have met with a sum total of 70

males and 16 females. This constitutes many square miles of *bellargus* country where, in the past, it has occurred in thousands. I can only conclude that this species, left to the ravages of our changeable climate, is doomed to near extinction. As to *Aricia agestis* Schiff. I have seen only six specimens this spring and of *Cupido minimus* Fues. four or five; but I think the scarcity of these two species is entirely due to the cold and wet season generally.—A. E. STAFFORD, 83 Colborne Way, Worcester Park, Surrey. 28.vi.54.

PYRAUSTA NUBILALIS HÜBN. IN SURREY.—With regard to the note in *Ent Rec.*, 66: 173, it may interest Mr. Britten to know that this moth has been taken in Surrey before. Mr. R. W. Parfitt and I took one at Brockham on 30.vii.38 at a paraffin lamp; three came to m.v. light here in June 1952, and one in July 1953. I believe there has been a big increase in the range of this insect.—R. FAIRCLOUGH, Deanoak Lane, Reigate. 3.vii.54.

—With reference to Mr. Britten's letter concerning *Pyrausta nubilalis* Hübn. in Purley, Surrey, in *Ent. Rec.*, 66: 173, I would like to report that I captured a single specimen in Cheam in the latter half of June 1953. This year upon investigation I find that it is breeding in some disused brickfields here where the food-plant mugwort, *Artemisia vulgaris* L., grows in quantity. My friend Mr. D. Ollevant has also taken several specimens of this species at light at Morden this year.—F. M. STRUTHERS, Cheam, Surrey. 25.vii.54.

HADENA COMPTA SCHIFF. IN HERTFORDSHIRE.—On 20th July 1954 I took a fresh specimen of *Hadena compta* Schiff. at a lighted garage window in this town. I believe that this is the first record of this species in Hertfordshire.—C. CRAUFURD, Denny, Galloway Road, Bishop's Stortford. 21.vii.54.

CELERIO LIVORNICA ESP. AND PLUSIA GAMMA LINN. AT TORQUAY.—Migrants this year at Torquay have been rather disappointing so far. As a result of a watch being kept over stretches of spur valerian near the sea it was noticed that *Plusia gamma* Linn. appeared in very small numbers from 26th to 30th May. On 31st May there was an increase which made the species common at the valerian blossom from that date until about 18th June. After the bad weather of Whitsun week I obtained a fine specimen of *Celerio livornica* Esper on 14th June at dusk hovering over the valerian blossom.—A. H. DOBSON, Millbrook Park Road, Torquay, Devon. 8.vii.54.

A NOTE FROM CHESTERFIELD.—Nothing of outstanding interest has occurred so far this season. The weather seems to have favoured the development of aphids. Every birch tree in the neighbourhood is swarming with them, and beating for larvae is an unpleasant occupation. There is no definite evidence, here, that insects are emerging later this year; but *Deilephila elpenor* L., which usually appears in June, has not come to the m.v. light trap yet, nor has it emerged from pupae kept under normal conditions.—J. H. JOHNSON, Berry Street, Hephthorne Lane, Chesterfield, Derbyshire. 4.vii.54.

A NOTE FROM PURBECK.—There is nothing much to report from this part of Dorset. On 11th May a ♂ *Colias croceus* was seen in a lane near

the sea at Studland, and another on 23rd June near Swanage. The last week in June and first week of July there were a few *V. cardui* about and a good number of *V. atalanta*, both in a fresh condition. *T. acteon* is swarming, and *M. galathea*, *L. coridon*, and *A. aglaia* were first seen on 18th July.—LEONARD TATCHELL, Swanage. 20.vii.54.

IMMIGRANTS IN SOMERSET.—On June 14th I was surprised at the sudden sight, outside my study window, of three *Vanessa atalanta* L. within the space of a yard sunning themselves on a bush of Cotoneaster. All three were very worn but I do not think that they had hibernated here because I saw none about the garden last autumn and since these three appeared I have seen several more in different places.

On June 23rd I was still more surprised at the appearance of a large and dreadfully tattered *Colias croceus* var. *helice* Hbn. fluttering weakly over a plant of Cranesbill. There have been, too, quite a number of specimens of *Macroglossa stellatarum* L. about the place recently.—J. ANTONY THOMPSON, Milton Lodge School, Wells, Somerset. 25.vi.54.

A QUERIED IDENTIFICATION.—In the June 1954 number of the *Record* there is a note by the Editor reviewing the *Proceedings* of the S. Lond. Ent. Nat. Hist. Soc., 1952-53. On page 178, in commenting on some of the illustrations, Dr. Cockayne writes: "The small pale moth, Pl. 3, Fig. 12, attributed by the Rev. F. M. B. Carr to *Peridroma porphyrea* Schiff. (*saucia* Hbn.) looks like *Apamea sordida*, but the figure may be misleading". This it certainly is, so much so in fact that I did not recognize it as a reproduction of my exhibit until I saw my name on the opposite page. The original moth has pearly white underwings, as white as those of *Agrotis segetum* Schf. The underwings in the figure are dark. The forewings of my specimen are faintly tinged with pink. The abdomen is white. The thorax has the pale central patch so characteristic of *P. porphyrea*. I must confess that I found this moth a puzzle owing to its small size and very pale colouring, but the patch on the thorax led me to the conclusion that it must be *P. porphyrea*. It emerged on the 13th May from a pupa found in his garden at Parkstone, Dorset, by the Rev. F. G. Britton. I hope that one of these days I may have an opportunity of getting Dr. Cockayne to pronounce on the original.—F. M. B. CARR, Martin's Close, Mudeford, Christchurch, Hants.

MELANISM IN *TETHEA OCULARIS* LINN.—Following the article on melanism in *Tethea ocularis* Linn. by H. C. Huggins (*Ent. Record*, 1953, 65: 277) in which he suggests that it may be a recent migrant, I wrote a note saying I did not think the melanic *ocularis*, which were spreading so rapidly in England agreed with the description of ab. *franki* Derenne (*Am. Pap.*, 1935, 7: 285). Naturally I thought this was the original description, but this is not so. The aberration is ab. *frankii* Boegl (*Mitt. Munch. ent. Ges.*, 1920, 10: 20, 21). Boegl says that Herr Frank caught an asymmetrical female in 1916, which had the stigmata separate on one side and confluent on the other, and saw two more. He compares it with *T. or* ab. *albingensis* Warnecke, but says it differs by having the transverse lines on the fore wing visible, the stigmata are greenish white filled with blackish brown (in the figure they are much too conspicuous). On the hind wing the border is blackish with light

lines along the inside as is usual in *ocularis*, but never found in *or*; they are less visible than usual because of the general darkening of the wing (in the figure this appears too pale). The Supplement of Lhomme's *Catalogue* merely mentions the article in *Amateur de Papillons*, 1935, and gives no more recent information of the state of affairs in Belgium and Northern France.—ED.

The Annual Exhibition of the AMATEUR ENTOMOLOGISTS' SOCIETY will be held at Buckingham Gate Schools, Wilfred Street, London, S.W.1., on Saturday, 25th September, 1954, from 2 p.m. to 5.30 p.m. All entomologists and their friends will be welcome.

Our contributor in Argentina, Dr. K. J. Hayward, writes: "I have just finished reading the very interesting May number of the *Record* . . . With regard to the Note, on page 150, on the butterfly mentioned by Fawcett in *Exploration Fawcett*, it was undoubtedly a specimen of a *Copiopteryx* (probably *semiramis* Cr.) seen through the eyes of a non-lepidopterist, hence the "orange antennae", though why, if the rest of the description is somewhat vague, he saw these (which are relatively small) so clearly I cannot imagine. I have just measured the 'tails' of some specimens. From wing base to tail end they vary between $5\frac{1}{2}$ to $6\frac{1}{2}$ inches and from wing margin to tail end about $1\frac{1}{2}$ inches shorter. The long tail certainly *begins* to spiral towards the end, generally for about half a turn. Though *semiramis* and forms do not correspond to the colours mentioned exactly, they are not far off if one allows for a certain 'author's licence'".

It was with deep regret that we learned of the death of Dr. Malcolm Burr, D.Sc. (Oxon.), which occurred at Istanbul on 13th July last. He had been a member of the advisory board of this magazine since 1898 and was a world authority on the Dermaptera. A memoir of him by his friend Dr. B. P. Uvarov, F.R.S., appears at page 231 of this issue and we hope to record some personal reminiscences about him, with a portrait, in a future number.

Those of our supporters whose subscriptions are now due will find an Order Form in this issue of the *Record*. Our Treasurer will be glad to have their remittances forthwith.

COLEOPTERA

LEISTUS MONTANUS STEPH.—Records for this insect dated about the middle of the last century give its only English habitat as over 3,000 ft. on the mountains of Cumberland, and the main locality appears to have been the summit of Skiddaw. There were few or no records of its capture in England until recent years, when Mr. W. A. North and I took three specimens on Brownrigg Fell, near Plumpton, Cumberland, at the low elevation of *c.* 750 feet. That was in 1943.

In 1946 I took a single insect in Grainsgill, Caldbeck Fells, at about 1,000 ft. On 4th July of this year (1954) I again took a specimen in Brandy Gill, Caldbeck Fells, at 1,600 ft.

There is a remarkable similarity about the terrain on which the beetle was caught. At Plumpton the situation was among small mounds of thin slabs of sandstone, quarried years ago, and at the other two

localities the beetles were under hand-sized pieces of quartz, on old mine dumps.—W. F. DAVIDSON, 9 Castlegate, Penrith, Cumberland. 5.vii.54.

Obituary

DR. MALCOLM BURR.

The death on July 13th at Istanbul of Dr. Malcolm Burr, D.Sc., A.R.S.M., is a great loss to entomology, to which he was passionately devoted though it was never his profession. He was trained at the Royal School of Mines and as a practising geologist took part in the early development of the Kent coalfield, at the beginning of the century. Later, his work and his unquenchable thirst for travelling took him to nearly every country in Europe, to Siberia, Caucasus and Africa. While the reasons for these wide travels were professional ones, their main interest for Burr was undoubtedly in the opportunities they offered him for observing and collecting insects. His knowledge of natural history, if somewhat superficial, was extremely wide and covered not only insects, but all forms of life. He was able both to see and to understand new landscapes and the live creatures in them, always comparing them with what he saw elsewhere and drawing striking zoogeographical and ecological comparisons. Although Burr's interest in insects must have developed when he was a boy, it is interesting, and later proved to be most fortunate, that he chose very early to specialise in a group which was then sadly ignored—namely, Orthoptera (including Dermaptera). When only 20 years old Burr knew enough of British Orthoptera to publish in the *Naturalist's Journal* keys to the group, reprinted in 1897 by the Economic and Educational Museum, Huddersfield, as a booklet. His continual interest in British Orthoptera culminated in the publication in 1936 of a little book "British Grasshoppers and their Allies" which has served as a stimulus to the present new generation of British orthopterists.

In 1898 Burr went on a holiday trip to the Balkans and also visited Vienna where he met Brunner von Wattenwyl, a leading orthopterist of the time, who encouraged Burr to the extent of inducing him to revise the genus *Acrida* (1902). It might also have been under Brunner's influence that Burr undertook the first revision of the family *Eumastacidae*, published in 1899, following it in 1903 by a revision of its classification in the *Genera Insectorum*. Burr's Articles on the systematics, biology and distribution mainly of European Orthoptera are too numerous to be mentioned, but it is of interest to note that his *Synopsis of the Orthoptera of Western Europe*, published in the *Entomologist's Record* in 1903-1910 (and separately in 1911), still remains the only comprehensive, if out of date, work on that fauna.

Burr's principal contribution to entomology was, however, by his studies of Dermaptera, a group on which he became a world expert. Apart from numerous papers, he produced a volume on earwigs in the *Fauna of British India* (1910), a revision of the general classification of the group in the *Genera Insectorum* (1911) and further improved the systematics of the group by investigations on the male genital armature, published in the *Journal of the Royal Microscopical Society* in 1915.

Burr's collection of Dermaptera, containing many types of species described by himself and by de Bormans (whose collection he purchased) has been presented by him to the British Museum (Natural History) while his collection of European Orthoptera is at the Hope Museum, Oxford University.

My personal acquaintance with Malcolm Burr dates back to 1919, when he, in his capacity as a mining engineer, visited the Caucasus, and it led to a life-long friendship when I came to England a year later. A most delightful period of that association was when Burr went for two years (1927-28) travels in Angola and Northern Rhodesia, searching for fuel supplies for the cross-Africa railway then being built. Whatever the geological results of this journey may have been, his entomological interests found a fertile new field in tropical Africa. The story of his travels is told in his lively book *A Fossicker in Angola* (1933), and absorbing pictures of landscape and of the insect life of the country will be found in a series of *Field Notes* published in the *Entomologist's Record* (1927-1930). When Burr was leaving for Africa, I rashly promised him to work out any Orthoptera he might collect there, but his enthusiasm and skill in collecting these insects resulted in a flood of specimens, representing a fauna which had been almost unstudied. It took me many years before only a part of Burr's collection could be worked out. This resulted in a volume of 217 pages (published by the Companhia de Diamantes de Angola) containing a list of Acrididae, with numerous notes on their ecology and habits provided by Burr, and including descriptions of 23 new genera and 80 new species collected by him. It was a matter of deep satisfaction to me that Burr was able to see at least a part of his results in print, but vast numbers of Orthoptera of other families collected by him are still awaiting a specialist to work them out.

Burr was not fortunate in his career and was finally forced to become a journalist, a writer of books on travel and natural history, of which *The Insect Legion*, just appearing in its second edition, is the best known. For the last few years he was earning a modest living as professor of English at Istanbul. This was a not unexpected achievement, since he spoke all the European languages, including several Slavonic, Greek and Turkish. "A knack of picking up languages quickly is a gift for which I have to thank Providence" wrote Burr in *A Fossicker in Angola* and I had a personal experience of this when, at Tiflis I heard him attempting to speak in Georgian after a few days in the country, although that language is reputedly most difficult and one which I was unable to master in a few years. Having once "picked up" a language, Burr never forgot it. On his recent visit to London, in June, he spoke to me fluently in Russian, and his last letter from Istanbul, dated eleven days before his death, was in the same language which he had never really learned, and had no occasion to use for some 30 years.

When we last saw him in London, he was, in spite of his 76 years, as full of life and of burning interest in everything as ever before. Only an accident could extinguish this indomitable spirit and close a life so rich in experience, which Burr was always delightfully and generously eager to share with others.

B. P. UVAROV.

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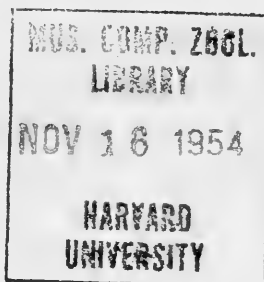
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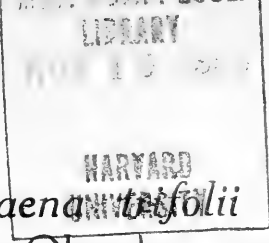
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Notes on Variation in *Zygaena trifolii* Esper,
Z. trifolii ssp. *palustris* Oberthür, and
Z. filipendulae Linnaeus

By W. G. TREMEWAN.

Late in June 1953 I found, in Cornwall, a colony of *Zygaena trifolii* Esp. situated in a damp grassy meadow facing North. It proved to be very interesting as regards the variation in the spots of the fore wings.

South mentions (*Moths of the Br. Is.*, 2: 337) that specimens with spots 3 and 4 joined represent the type. I found many with these spots separated. The next aberration that I found was with spots 3, 4 and 5 combined to form a blotch. These were fairly common. I also obtained several with all the spots combined to form a red blotch across the whole of the fore wing. I noticed one or two with the usual red replaced by pink in the fore wings only and came to the conclusion that this was not the true pink form but was caused by sun and rain. I might mention that I also took a male which has the left fore wing reduced to half the normal length and is transparent. Another specimen, which has the five spots confluent, has the left hind wing dwarfed.

I visited the colony again this year and found to my dismay that the meadow had been taken by a tenant who now uses it for keeping poultry, pigs, etc. With permission I looked for *trifolii* and found under a dozen. However, one of these was, again, an aberration. It is amazing how a certain species can be exterminated in a certain locality from one season to another.

Regarding the Marsh Five Spot Burnet, *Z. trifolii* ssp. *palustris*, I found two colonies this year. One of these is situated on a marsh about two miles from here and about a mile from the sea. The other colony is to be found on a marsh which lies in a hollow on the top of some granite hills a few miles from here. Both colonies were found to contain considerable aberrations, these being much the same as in the colony of *Z. trifolii* above mentioned.

Zygaena filipendulae is widely distributed in my district and common on waste ground where the foodplant (*Ornithopus*) grows. I might here mention that *filipendulae* is of a 'wandering type', hence its distribution over a wider area than the other two insects. However, I found a 'true' colony on the sand dunes at Gwithian. Here the species does not seem to fly far from the dunes nor has it the stimulus to wander. I more or less proved this as I liberated over a dozen examples, which emerged from pupae, in my garden, and they were to be seen feeding on the Buddleia bushes two or three weeks later.

Variation does not seem to be so common in *filipendulae* as it is in the other two insects. The commonest is with spots 5 and 6 combined to form a blotch. Several were also taken with spots 3 and 4 combined as well. I took only one example in which all the spots were beginning to combine. My wife found one with the usual red in the fore and hind wings replaced with clear yellow. It is in perfect condition. I also took three examples with the usual ground colour replaced with dull purplish grey, giving the insect, when set, a semi-transparent or translucent effect.

As I have indicated, *filipendulae* larvae were found feeding only on

Ornithopus, whereas *trifolii* and *palustris* seemed to prefer *Lotus corniculatus*.

Zygaena purpuralis Brun. is also supposed to have been found in Cornwall. Although I have not yet come across it I intend to look for it seriously next year.

Larval Diapause in *Apatura iris* (Linn.)

By F. V. L. JARVIS, B.Sc., F.R.E.S.

(Continued from page 217.)

PIGMENTATION: It would appear that the first indication of diapause is shown in the second instar by a slowing of metabolism persisting over several weeks until the second phase commences with colour changes in the third instar. Up to this point there appear to be three pigments visible in the cuticle: a bright green basic colour; yellow in tubercles, and reddish purple localized in the head and anal regions. In autumn, preparatory to complete diapause, the yellow pigment changes to purple and suffuses in varying degree into the cuticle. At the same time bright green tones to an olive shade. These changes are similar to those taking place in the food-plant, so it is within the limits of possibility that the two processes are of similar chemical nature. In the bark cells of sallow two pigments are present; one reddish purple and the other orange yellow, but it is not possible at this stage to relate these pigments to those of similar colour in the larva although in some respects there appears to be an affinity.

SUMMARY OF DIAPAUSE BEHAVIOUR IN AUTUMN AND WINTER: The biochemical changes associated with diapause become visible when the larva ceases to feed at the middle point (as far as growth is concerned) of the third instar about the end of October. Food material extracted from the sallow leaves may be stored under the cuticle.

This process is accompanied by shrinking and a colour change in which bright green turns to tones of olive, and yellow in the dorsal tubercle through orange to dull purple. The amount of purple varies between individual larvae but its relative intensity in mixture with the olive green which has replaced the bright green of earlier stages can explain all the observed diapause colourings. Diapause is a definite pattern of behaviour inherent in the genetic formula of the species, built up by progressive adaptations, to enable the individuals to survive the winter. It is quite distinct from a lethargy induced by cold.

Probably the most remarkable phenomenon discovered during this investigation was the final adjustment of larval colour to the diapause stations selected. The choice of site so that larval colour and pattern agree closely with leaf or bark tint and markings has the appearance of a reflex actuated by photo- or chemo-tropism. In the final stage all larvae but one descended to soil level before climbing either the original bush or an adjacent one. Some stops were made on the ascent, but in every instance larval colour was adjusted in a day or two to a close match with the environment. On these permanent sites the silk mat was spun, larvae became inert, and no further colour change was observed during winter inactivity. It is assumed that some form of

colour stimulus was received through the ocelli. Alternatively touch or smell was involved, but speculation beyond this point seems unwise at this stage.

Two aspects of diapause behaviour are clear. Firstly the site chosen depends on the relative amounts of olive and purple pigments, and secondly, these proportions are an inherent property of the individual, and not necessarily related to the quality of leaf consumed.

Several larvae on the same bush moving freely and uncrowded developed widely differing diapause colouration. Some may have been more shaded than others. It should be mentioned that green larvae other than *A. iris* exhibit a colour change during winter diapause. *Colias hyale*, *Polyommatus icarus* and *Heodes phlaeas* all change from bright green to a dull olive shade, renewing the original colour in the spring. The outstanding example is the Scarce Silver Lines moth (*Pseudoips bicolorana* Fues.) whose change from yellow green to purple brown and back again to green closely parallels the reactions of *iris*.

TERMINATION OF DIAPAUSE: From the middle of November until late in March the larvae rest motionless, exposed to the weather. They are unaffected by extreme cold or periods of sunshine and show no response to external stimuli such as stroking with a fine brush. There is a further small shrinkage in length and a 'dimpling' above the lateral line. No more colour changes occur until early March when the purple commences to fade, leaving any residual green slightly brighter.

On 18th March one of the olive green larvae was withdrawn from the outdoor cage for observation under controlled temperature conditions. The stem on which it was resting was placed in a bottle of water embedded in damp sand in a flower-pot and the apparatus was covered in muslin. On this date the larva was 10.2 mm. in length (including horns), having shrunk from 11 mm. on 17th December. The ground colour was dull olive green with the dorsal tubercle on segment 7 light red. In December the tubercle was deep purple. Short blackish setae on the dorsum were set in colourless globular tubercles; head dull red ochre with purplish suffusion at base of horns; black granulation on anterior and lateral surfaces of horns; anal points olive.

The larva was kept at an average temperature of 55° F. until 24th March, when it was raised to 60° F. and maintained subsequently as near as possible to that figure.

The awakening from diapause is best described from the daily notes. All measurements of length include the horns and were made when the larva was at rest.

20th March (55° F.)—Length 10.5 mm., probably due to absorption of water from atmosphere. No colour change.

25th March (60° F.)—Length 10.5 mm. Dorsal tubercle pale orange red, and green paler. Larva responded to stroking with brush by raising its head. It appeared to absorb water from a droplet by mouth movements.

26th March—Walked one inch up the stem.

27th March—Length 11 mm.

28th March—Active when temperature was raised to 65° F., moving upwards over a bunch of twigs, leaving a silk filament in its path. Rested eventually beside an opening bud but made no attempt to feed.

Colour had changed to light olive brown, with the dorsal tubercle colourless and the head much paler. It was noticed that the horns were covered with grey hairs arising from small tubercles.

30th March—Very active, particularly in sunshine. Attempted to feed on opening willow buds, but the leaves were too small and hairy for the larva to reach the surface. A sprig of willow with smooth leaves was substituted, and on this feeding took place at night. The larva rested at the leaf tip facing the stem, after a day or so.

After four nights of feeding on willow the length was 12 mm., and a definite bright green tone was appearing, particularly in the segmental divisions.

4th April—By this time the larva had returned to willow—the common small leaved form whose leaves were now $\frac{1}{2}$ " in length. It fed by day as well as night on the inner leaves of a shoot, resting on an outer leaf with the head facing the stem. Length 13 mm.; colour medium green with a trace of olive. Nine whitish diagonal stripes were now visible, the most prominent starting from the dorsum of segment 7 and sloping into segment 6. These stripes appeared first as a pale cloudiness spreading from the tubercles.

7th April—Ground colour a similar green to that of the leaves. Stripes were more obvious, and the length 15 mm. Larva now feeding on outer leaves and eating from both edges.

10th April—Larva was now fully grown for third instar and preparing to moult. Length 17 mm., breadth at segment 7, 3 mm. Colour was bright green with 10 well defined greenish white lateral stripes and two whitish sub-dorsal lines on segments 1 to 3. The region of the lateral line and anal points was white. The head was ochreous grey, shaded with black tubercles. The dorsal tubercle was colourless. The ventral surface was very pale green. It should be noted that there was no sign of the yellow pigment in the tubercles which was a prominent feature before the diapause. This colour reappeared in Instar IV.

The important observation regarding colour sequence is that any remaining green and purple pigments disappear from the cuticle as soon as the larva becomes active, leaving a nondescript brown. At this stage it feeds by night, and rests at first on the stems during the day. After several days, as the green colour and white stripes appear, the larva remains permanently on the leaves, blending perfectly with the bright surface and silvery hairs.

On 13th April the moult into Instar IV took place, the length being 19 mm., of which the horns comprised 3.9 mm. Ground colour was bright green, paler on ventral surface and whitish on the spiracular line. There were now six creases in each segment. There was a close pattern of tubercles over the upper surface, colourless except for those on the dorsum, including the dorsal tubercle, which were filled at their bases with a bright golden yellow substance. Short black setae arose from the upper tubercles, longer white setae from those in the spiracular region. Anal points were green and lateral stripes whitish green. The head was light ochre, pale green on the anterior surface. The prominent black stripes on the horns were noticeably smaller than in Instar III. Growth proceeded rapidly reaching 25 mm. including horns by 19th April.

On 23rd April the moult into Instar V took place, length being

28.2 mm., including horns, 7 mm. The upper surface of the body was closely covered with pale yellow tubercles each bearing a dark red seta. The dorsal group of tubercles on segment 7 was colourless. The prominent diagonal stripe on segment 7 and the sub-dorsals on segments 1 to 3 contained similar tubercles slightly reticulated at their bases with dark red. The head was pale green, and the horns were tipped with orange and decorated with a few dark brown tubercles on the anterior surface.

When fully grown in the first week of May, the length (*ex* horns) when resting was 39 mm. Ground colour was brilliant golden green on the upper surface quite distinct from the deep apple green of the summer larvae. The under parts and anal region were pale bluish green. Even at maturity the dorsal tubercles were only partially filled with yellow pigment. I ascribe these colour effects to an abnormal diet of young sallow leaves in which the full chlorophyll quota was not developed. It is interesting to record that this larva fed readily on the small and medium leafed sallows but refused a downy form which develops large coarse leaves. Pupation took place on 10th May. The situation chosen was the muslin sleeve, after the larva had spent four restless days trying to settle on leaves which obviously were too small to give support.

It was now possible to trace more clearly the pigmentation sequence in the thin walled dorsal tubercles. In the second instar and early phases of the third instar these structures were filled with a thick yellow fluid. At the end of October the colour changed in a few days through orange red to dull purple. Purple persisted with a little change through the inert winter phase but began to fade early in March. When activity was resumed at the end of March the colour rapidly paled to light red, which was finally discharged before feeding commenced. The last traces of olive green disappeared at the same time. Yellow did not reappear until the next moult after a period of feeding, but bright green was restored by the end of the third instar. The visual evidence supports the view that yellow is changed to purple but that the process is not reversible. Neither green nor yellow can reform until an appreciable amount of sallow has been assimilated. The amount of insoluble yellow stored in the dorsal tubercles appears to be related to the maturity of the leaves.

The behaviour of larvae in natural conditions was observed by Mr. Firmin, who had eight larvae on bushes in his large cage. Events followed the same course as with the experimental larva but at a slower tempo because of the lower average temperature. On the 29th March all the larvae except three were appreciably paler and a rosy purple specimen had faded to pale flesh pink. By 4th April three, now light brown in colour, had commenced to feed a little at night, resting during the day on the twigs close to opening buds. On 20th April these larvae had increased in length to 13 mm. They were feeding actively, resting at the leaf tips between meals; the colour was pale green with whitish diagonal stripes and reddish ochre heads. Two other larvae had become active but the remaining three were still on diapause sites although they had regained sufficient sensitivity to move their heads when examined. The colour change to a slightly brighter olive green had begun.

The fact that larvae did not emerge simultaneously from diapause was not surprising as the colour change and movement to winter sites was spread over two or three weeks in November and early December, depending doubtless on the dates of oviposition. The true diapause, as distinct from the showing up of growth in Instar II, commences with the autumnal colour change and persists until activity is resumed with the fading of the winter colouration. As near as could be measured the period was 19 weeks. Altogether Instar III persists in natural conditions approximately 215 days divided as follows:

Pre-diapause (mid September: October) ...	35 days
Diapause (November: March) ...	133 days
Post-diapause recovery ...	22 days
Active growth (mid April-early May) ...	25 days

These figures are summarised from all the larvae under observation.

By the first week in May all eight larvae were active and feeding. Two moulted into Instar IV on 6th and 8th May and the remainder during the next fortnight. The natural sequence is a moult into Instar V in early June; pupation towards the end of that month followed by emergence around the middle of July.

DISCUSSION: Observations of growth for two larvae, measured by the length of body when at rest, are given in the following table which covers the period from 31st July to 23rd April.

<i>Period</i>	<i>Length of body (minus head and horns) (growth)</i>	<i>Duration of Period</i>	<i>% increase (+) or decrease (-) in length</i>	<i>Average Temperature (degrees) F.</i>	<i>Notes</i>
July 31- Aug. 12	2.7 to 6.3 mm.	13 days	+10.0	61	Instar I. Moult on Aug. 12.
Aug. 12 Sept. 9-	6.0 to 10.5 mm.	28 days	+ 2.7	60	Instar II. Moult on Sept. 9.
Sept. 9- Sept. 30	10.5 to 12.8 mm.	21 days	+ 2.2	58	Instar III.
Sept. 30- Oct. 15	12.8 to 10.0 mm.	15 days	- 1.9	55	Instar III. Colour changes. Formation of purple pigment.
Oct. 15- Oct. 30	No meas- urable change	16 days	0	53	Moved to branch site end of Oct.
Oct. 31- Dec. 17	10.0 to 9.0 mm.	47 days	- 0.24		Completely inert. Outdoors, exposed to winter conditions.
Dec. 17- Mar. 18	9.0 to 8.2 mm.	91 days	- 0.11		

Controlled Temperatures Indoors.

<i>Period</i>	<i>Length of body (minus head and horns) (growth)</i>	<i>Duration of Period</i>	<i>% increase (+) or decrease (-) in length</i>	<i>Average Temperature (degrees) F.</i>	<i>Notes</i>
Mar. 18- Mar. 27	8.2 to 9.0 mm.	9 days	+ 1.0	60	Purple fading. Activity begins. Purple and olive disappeared.
Mar. 27- Apl. 4	9.0 to 11.0 mm.	8 days	+ 2.75	61	Began to feed on March 31.
Apl. 4- Apl. 7	11.0 to 13.0 mm.	3 days	+ 6.0	62	Feeding actively. Green re-appearing.
Apl. 7- Apl. 13	13.0 to 15.0 mm.	6 days	+ 2.6	60	Moult into Instar IV, April 13.
Apl. 13- Apl. 23	15.0 to 21.2 mm.	10 days	+ 4.1	62	Moult into Instar V, April 23.
Apl. 23- May 10	22.2 to 39.0 mm.	17 days	+ 5.0	62	Pupation, May 10. Male insect emerged May 24.

Had it been possible to weigh the larvae the percentage of daily increases in Column 4 would have been larger as length represents one dimension only. Nevertheless it is sufficiently reliable for use as an indication of mass.

It will be seen that following the rapid growth in Instar I there is a marked falling off in Instar II, followed by a still greater fall in the next instar—indicating that the effects of diapause are appearing at least six weeks before colour changes occur. There is a notable loss in size at this stage with a slower decrease throughout the winter. The slight increase towards the end of March is probably accounted for by the absorption of water but not until feeding is resumed does the figure become significant. If the four entries from 27th March to 23rd April are averaged the percentage increase is 3.6 per day, which is 33% greater than in Instar II at a temperature which is close enough to make little difference to the results.

It is possible that the extended diapause reaching nearly to seven months represents two superimposed conditions. The modern *A. iris* may have evolved from a bivoltine ancestor dating back to one of the warm Pleistocene interstadia when it would have been possible to develop two broods in the year, the second of which would have arisen if sallow were the food-plant as many of the bushes to-day develop new growth late into the autumn. Moving south with the advancing cold

and again north with the retreat of the ice—but into a climate region now more temperate—the adjustment to univoltine forms could occur by the gradual elimination of the brood with no diapause and the development of the present-day phenomena of colour changes. There are several examples of this in British Lepidoptera such as *Polyommatus icarus* Rott., which is univoltine in Northern Scotland and bi- and sometimes trivoltine in the South of England. The *Apaturinae* seem to have originated in warm climates if the present distribution of associated families is any guide. The closely related *Charaxidae* are predominantly tropical so that considerable specialisation in evolution might be expected in *iris* to enable it to exist in a temperate region. It does not seem therefore unreasonable to assume that a later type of diapause more complete in its effects has been implanted by natural selection on a simple type already in existence.

Occasionally a larva is without the genetic formula for diapause, in which case growth continues without interruption into the fourth and final instars, or even to pupation. But outdoors increasing cold and lack of food-plant prevent any perpetuation. I know of only one instance where a female butterfly emerged indoors in late autumn. These exceptional cases could be regarded as surviving traces of a bivoltine condition in the species. The same phenomenon is exhibited in varying degrees in other univoltine species such as *Nymphalis io*, *Limenitis camilla*, *Argynnis paphia* and *A. euphrosyne*.

The possibility of obtaining palaeontological records of Lepidoptera is so remote that any theory of origins can only be based on the circumstantial evidence of present structure and behaviour. It might be said that one theory is as good as another—and none is correct anyhow.

Be that as it may, when more life histories have been studied in detail some of the pieces of the jig-saw will fit together.

The Occurrence of *Eurois occulta* L. in Westmorland and Penrith

By Dr. NEVILLE L. BIRKETT.

Until this year specimens of the Great Brocade taken in this district have been both few and far between and the occurrences have been of single specimens only. In view of events detailed below it was felt an opportune moment to review the past records and place before readers an account of this year's remarkable invasion of this district by *Eurois occulta*. Records of past years are taken from the Record Books made by the now-defunct Kendal Entomological Society. The past records are as follows:—

Kendal: 2 specimens taken in 1904 by Mr. T. Smith.

Crossthwaite (5 miles from Kendal): 1 spec., again in 1904 (T. Smith).

Grange-over-Sands: 1 spec. taken by the late G. Podmore (no date); 1 spec. taken by the late Dr. R. C. Lowther on 21st July 1946.

Witherslack: 1 spec. by G. A. Booth. No date. 1 spec. by Mr. A. Richardson on 10th August 1939 (*Entom.*, 1940, p. 90).

Gilsland, near Penrith: 1 spec. by Canon Hervey "about ten years ago".

All these records are, of course, in the pre-mercury vapour era. This year what appears to have been a widespread invasion of the north-west has occurred. The records given below have been collected from Mr. John Thorpe (Kendal), Mr. W. F. Davidson (Penrith), the Rev. J. Vine Hall (Hutton Roof) and myself. The first intimation of anything untoward came to me from John Thorpe who told me that he had captured a specimen of *occulta* on the 22nd August. The same day I heard on the telephone from Mr. Davidson that he had taken six specimens at Penrith in his m.v. moth-trap. The following table gives a summary of all the records of this year's captures:—

OCCURRENCE OF *E. OCCULTA*, 1954.

Locality Date	Penrith Davidson	Hutton Roof		Kendal	
		Vine Hall	Thorpe	Birkett	
22.viii	6	—	1	—	
23.viii	1	—	2	0	
24.viii	5	2	5	3	
25.viii	2	0	0	3	
26.viii	3	—	2	0	
27.viii	1	2	1	0	
28.viii	1				
to 2.ix incl.	each night	0	0	0	
Totals	24	4	11	6	

Grand total of 45 specimens.

0 indicates trap operated but no *occulta* taken.

— indicates trap not operated.

It is to be noted that these dates of occurrence are much later than those previously recorded for the area. In the Highlands the insect is a July or early August species and that tallies with our previous records.

The question of origin of this sudden abundance of *occulta* arises. There are two possibilities, of course. On the one hand they may have bred locally and propitious conditions for the species resulted in a very large number reaching the imaginal stage. On the other hand it would seem more likely that they have followed the advice said to have been given by Dr. Johnson and migrated south from Scotland. Commander G. Harper of Newtonmore informs me that this year *occulta* has been extremely plentiful in the Highlands and also that the emergence has been much later than usual. These observations would certainly support the migration hypothesis for the occurrence of such numbers in this district.

Grateful thanks are due to the gentlemen whose names have been mentioned and who agreed that a communal recording of records was preferable to a number of individual notes.

A Rare Aberration of *Aphantopus hyperantus* Linn.

By NORMAN C. PILLEAU.

I was unable to visit my favourite haunts in Kent this year so had to confine my attentions to some places round about this district. In such dreadful weather I could not expect much; but as I took 3 *Aphantopus hyperantus* L. ab. *arete* Müll. in the first 19 specimens examined I naturally had visions! I count how many specimens I examine each time I go out, and as the total had reached over 1,200 before I saw another *arete* you can guess how bad things were.

Then my luck returned to me. I went to another part of the wood and found *hyperantus* most abundant, rising from the long grass as I walked along. I took four or five various aberrations, elongated ocelli and so on, and was netting them at random when I caught a rather large female. On looking into the net I found I had taken a fresh and perfect female without any trace of a spot or ring on its underside.

I wrote at once to my friend Mr. J. Shepherd, and in congratulating me he said: "it should be exhibited as an extreme rarity and to settle an argument for all time".

The argument to which Mr. Shepherd refers concerns of course the name of this aberration. In his book *British Butterflies*, 1945, at page 222, E. B. Ford writes: "Specimens possessing the reduced rings are often referred to as var. *arete* Müll., and those with the dots only as var. *caeca* Fuchs. However, this does not appear to be the correct use of these names, a view endorsed by Seitz (1906-10), who holds that *arete* applies to the specimens in which the ring is lost, and that var. *caeca* must be reserved for those instances in which both rings and dots have vanished, the insect being immaculate. Such a form has been illustrated in drawings (see Newman, 1869), and it may even exist. Yet I have never seen it, although I have had an unusually large experience of the varieties of this butterfly, extending over many years, for I must have caught and examined (but not necessarily killed!) over a thousand of them . . . Mr. J. Shepherd, whose knowledge of this species is very extensive, tells me that his experience coincides with my own."

My specimen is not unique: both South and Tutt refer to it in their books, the latter naming it *obsoleta*. It was represented in Mr. Castle Russell's splendid collection, now at Tring; but it does bring to the fore the question whether certain specimens catalogued as *caeca* Fuchs are actually referable to that aberration or are in fact old or worn specimens of *arete* Müller and whether *obsoleta* Tutt is a synonym of *caeca* Fuchs. In another letter to me Mr. Shepherd writes: "'Immaculate' must be entirely without spots. My opinion is that those with white dots, even with only one small one, come under *caeca*. I remember there was, some years ago, an article on this subject in the *Entomologist* and the writer expressed his opinion that immaculate forms only occurred in very old collections and worn specimens. As far as I can remember it was never disputed and it may well have been that those offered . . . at 10s. each were not in bred condition."

This article in the *Entomologist* to which Mr. Shepherd referred was in the form of a note contributed by the Rev. H. D. Ford of Thursby

Vicarage, Carlisle, and was printed in the issue for December 1927 (Vol. 60, p. 278). It was as follows:—

APHANTOPUS HYPERANTHUS VAR. OBSOLETA.—I shall be grateful to any observer who can give me information about this variety of *A. hyperanthus*, which I have never yet encountered in a living specimen. I have had the opportunity of examining a good many examples of var. *caeca*, in a number of which the presence of the ocelli is only indicated by three minute white points on the lower wing, but I have not yet seen a true specimen of var. *obsoleta* in which the ocelli are entirely absent; in all the extreme forms of var. *caeca* which I have examined the white points may be extremely small, but are always to be found. On the other hand, among our variations of *A. hyperanthus* my son and I have three or four specimens of var. *caeca* in which the white points, although very minute, were quite visible when the insect was freshly caught, but which now, after the lapse of some years, have completely faded away. I am almost beginning to wonder if var. *obsoleta* is not a 'cabinet specimen' in the most literal sense of the words, and I should be glad to hear of instances of freshly or recently caught examples which are completely obsolete.'

Since this Note appeared, in 1927, I have not seen any record, in the entomological magazines, of the capture of a fresh immaculate specimen of *A. hyperanthus*, though of course it is possible that I have overlooked such an entry. I have specialised in *hyperanthus* since 1944 and have examined over 17,000 specimens since then, and the specimen I have just taken is the first truly immaculate one that I have ever seen. As I doubt very much whether there are half a dozen specimens of it in the country it seems worthy of record.

Notes on the Season in Cambridgeshire

By B. O. C. GARDINER and C. F. RIVERS.

While many people seem to be taking a gloomy view of this year we have found that while few butterflies have been about many of the moths have been very common. In particular we have found, both in Cambridgeshire and Huntingdonshire, that there is a distinct tendency towards melanism this year and it would seem possible that this can be put down to the wet season. In addition, certain rare Cambridgeshire lepidoptera have been turned up. The season started early and some species were out before their normal time. Some of these then continued to be taken, quite fresh, for a longer period than normal. The following short list records some of the more interesting species.

Mimas tiliae L. Much commoner than usual.

Laothoe populi L. Taken in May, June and July. About as common as usual. A successful pairing of *populi* ♀ × *ocellatus* ♂ was obtained and a number of hybrids have now emerged during August.

Sphinx ligustri L. About as common as usual. Taken from May to August.

Macroglossum stellatarum L. One seen on 27th August.

Harpyia hermelina Göze (*bifida* Hüb). Several taken. One very early specimen on 10th May. One late specimen was taken at Dover, Kent, on 28th July. Not previously encountered.

Cerura vinula L. The first specimen was taken early, 28th April.

Drymonia dodonaea Schf. (*trimacula* Esp.). Fairly common within the City boundary. Previous records all prior to 1878. First taken 28th April.

Tethea ocularis L. (*octogesima* Hüb.). Much commoner than usual.

Polyploca ridens Fab. One taken late, on 10th May. Does not appear to have been recorded in Cambridgeshire since 1878. (We understand that another specimen has also been taken.)

Euproctis chrysorrhoea L. One taken in August. This is a rare species in Cambridge and has not been recorded recently.

Lymantria monacha L. One taken 28th August. This confirms the present existence of the species in Cambridgeshire, corroborating the record of a specimen taken in 1953. The only previous records for the county are prior to 1878.

Philudoria potatoria L. Usually very common, only two have been seen this year.

Drepana lacertinaria L. One taken within the City. Previous records are from Chippenham Fen only.

Spilosoma lubricipeda L. (*menthastri* Schf.). Not as common as usual. One nice variety with black rays taken.

Spilosoma lutea Hufn. (*lubricipeda* L.). Not so common as usual.

Mamestra brassicae L. Usually very common, this species has been rather scarce this year.

Melanchra persicariae L. Exceedingly abundant. Not usually so.

Sterrhia emarginata L. This we found commonly in Huntingdonshire (not Cambridgeshire) and a very nice black-banded ♀ was taken *in cop.* from which eggs have been obtained.

Thera obeliscata Hüb. One melanic specimen was taken.

Xanthorhoe fluctuata L. A specimen of this species tending to approach *ab. costovata* was taken.

Hemerophila abruptaria Thun. One melanic specimen was taken.

It might also be of interest to record that amongst the Hymenoptera beekeepers have had a very bad season but that wasps have never been commoner.

Some Cardiganshire Lepidoptera Records 1954

By Dr. NEVILLE L. BIRKETT.

In 1951, after a fortnight's holiday at Tenby, I was able to give a list of some 130 species of macrolepidoptera collected or observed in that favoured West Wales area. My annual holiday this year took me to another part of the same general area when I stayed for a fortnight in a hamlet just south of New Quay, Cardiganshire. I was joined by Dr. D. M. Jeffreys of Bedford and the records here published must be considered as our combined effort for the period.

The coastal region here consists of moderately high cliffs but there are many openings where steep-sided deep valleys run down to the sea. The sides of these valleys are frequently well-covered by mixed woodland with nicely varied undergrowth. The house at which we stayed was situated in the depths of a small valley quite close to its seaward extremity and it was here that most of our night collecting was done.

A pleasant feature of the nearby coast was the presence of good numbers of Grey Seals which seemed to take as much interest in their human observers as the latter did in them! We paid a single night visit to Towyn Warren near Cardigan itself. This area consists of ecologically advanced sand-dunes infested with a myxomatous population of rabbits. Given good weather conditions this area should prove very good collecting ground. The night of our visit though cool resulted in some 54 species coming to the m.v. lamp.

The weather for our stay in the area—from 24th July to 7th August—was rather typical of this unfortunate summer. We had much cloudy weather, moderate rain and generally low temperatures. One or two nights did turn out ideal for light work and on the night of 4th-5th August we noted some 85 species and there must have been thousands of individual moths.

It should be pointed out that night collecting centred round the operation of a 125-watt m.v. lamp—(how else could one log 85 species in a night?). Day collecting was not much practised on account of (a) poor weather and (b) family commitments.

We were able to add no less than 23 species to S. Gordon Smith's List of Cardiganshire Lepidoptera (*Proc. Chester Soc. Nat. Sci., Lit. & Art.*, 1950). Some of these species have been recorded (*op. cit.*) for the neighbouring counties, but not apparently for Cardiganshire. The nomenclature and order are those of P. B. M. Allan's *Larval Food-plants* (1949). For reasons similar to those given in my Tenby list (*Ent. Rec.*, 63: 242) I refrain from committing myself regarding the status of species. Many of them are obviously common and widely distributed, but there are some scarce ones also. These 23 species 'new' to Cardiganshire are as follows:—

<i>Pheosia tremula</i> Cl.	<i>Apatele megacephala</i> Schf.
<i>Notodonta dromedarius</i> L.	<i>Apatele psi</i> L.
<i>Orgyia antiqua</i> L. (one larva found).	<i>Petilampa minima</i> Haw.
<i>Arctia caja</i> L.	<i>Caradrina morpheus</i> Hufn.
<i>Agrotis clavis</i> Hufn.	<i>Pseudoips prasinana</i> L.
<i>Triphaena interjecta</i> Hb.	<i>Plusia chryson</i> Esp.
<i>Lampra fimbriata</i> Schreb.	<i>Plusia bractea</i> Schf.
<i>Hadena serena</i> Schf.	<i>Plusia iota</i> L.
<i>Leucania pallens</i> L.	<i>Abrostola triplasia</i> L.
<i>Cucullia asteris</i> Schf.	<i>Ecliptopera silaceata</i> Schf.
<i>Apatele leporina</i> L.	<i>Chloroclystis coronata</i> Hb.
	<i>Biston betularia</i> L.

A Week in East Kent

By F. M. B. CARR.

My attempts at collecting during 1954 have been very restricted. Up to the time of these notes the weather has either been wet or cold or windy. Very rarely have we been reminded that summer is here, and when a warm day has come along it has taken me by surprise and I have been unable to take advantage of it. However, Mr. Symes and I, having made arrangements to spend the last week in May at Ham Street, set out in some trepidation on 25th May for our destination.

After driving all day Mr. Symes wisely refrained from rushing into the fray that evening, so alone I braved the woods and sugared. I might have spared myself and the treacle, for the evening was chilly. The moths turned up their palpi superciliously and would have none of it. Attempting a short cut homewards in the dark I landed in a dyke and had much ado to reach the further shore, and that was that.

The next day was fine and warm, just the day, we thought, for Dungeness, so to Dungeness we went, as both of us wanted to extend our series of the local form of *Lasiocampa trifolii* Schf. Thanks to Mr. Cue of Ashford, who joined us in the afternoon, we found the larvae in good numbers, also a single larva of *Dasychira fascelina* L. In the evening Mr. Cue fixed up his m.v. light on the shingle, but again the weather turned chilly, and except for *Hadena lepida* Esp., which was moderately common, very few moths appeared—three *Agrotis cinerea* Hub., two *Hadena conspersa* Esp. and one *Cucullia umbratica* L. On a more favourable evening later in the week Mr. Reid of Sheffield secured *A. cinerea* commonly. I obtained several more *H. conspersa* from the Dungeness posts during the week, but *H. albimacula* Bork. was only just beginning to appear.

In the woods *Euphyia luctuata* Schf. was flying not uncommonly locally and Mr. Reid, Mr. Symes and I each secured a few of this pretty and interesting species which, though smaller, looks rather like *Eulype hastata* L., which was also about, on the wing. *Hemaris fuciformis* L. and *H. tityus* L. (two only) were also netted.

Larva beating, not very seriously undertaken, produced a few *Poecilocampa populi* L. and *Pseudoips bicolorana* Fuess.

Mr. Reid and Mr. E. J. Hare very kindly invited us to collect in the woods at their m.v. lights, and sugar proving unattractive we should have had a very lean time in the evenings but for this. By far the best night was 27th May, when 90 species were recorded. The evening was cloudy and, for once in a way, quite warm. After a busy time round Mr. Reid's lamp we started for home in the early hours of the morning, but soon halted to visit Mr. Hare, who was still at work, his clothing gaily decorated with moths, but none so bold as *Eilema sorocula* Hufn., which was resting unmolested on the side of his nose. Comparison of notes and additions to the bag ensued before we three bade Mr. Hare goodnight and returned to the village.

One of the features of the week at light was the large number of 'prominents'. The species noted were *Cerura hermelina* Goze (several), *C. vinula* L., *Stauropus fagi* L. (one), *Drymonia trimacula* Esp. (common), *D. ruficornis* Hufn. (still a few), *Pheosia tremula* Clerck (several), *P. gnoma* Fab. (several), *Notodonta ziczac* L. (several), *N. dromedarius* L. (several), *N. anceps* Goze (in large numbers), *Lophopteryx capucina* L., *Pterostoma palpina* L. (several), *Clostera curtula* L. (fairly common) and *Phalera bucephala* L. *Tethea* or Fab. was not uncommon, *Drepana binaria* Hufn. was particularly common, but *D. cultraria* Fab. scarce. Amongst other species were *Celama confusalis* H.S., *Arctia villica* L., and *Eilema sorocula* Hufn., the two latter being fairly frequent.

Noctuae were not very plentiful but included *Colocasia coryli* L., *Apatele leporina* L., *Cucullia gnaphalii* Hub. (one at Mr. Reid's light and one at Mr. Hare's), *Minucia lunaris* Schf. (a few), whilst Mr. Reid also took a couple of *Colobochoyla salicalis* Schf.

Geometers on the other hand were in good numbers, the following being taken amongst others:—*Cosymbia porata* Fab. (fairly common and in beautiful condition), *Acasis viretata* Hub., *Lobophora halterata* Hufn. (though nearly over), *Ecliptopera silaceata* Fab., *Euphyia luctuata* Schf., *Semiothisa notata* L., *Anagoga pulveraria* L., *Selenia lunaria* Schf. (a few), *Boarmia punctinalis* Scop. (common) and *Ectropis exter-saria* Hub. (a few).

Our last day (31st May) was devoted to a quest for larvae of *Ptilophora plumigera* Esp. In this Mr. Hare joined us. We were sorry to find that most of the best maples of a few years ago had been cut down. A few larvae were found, but they were extremely small. And so ended an enjoyable week with (*mirabile dictu!*) only one wet day.

An Entomologist in Argentina

IX. Collecting in the Forests of North-Western Misiones

By KENNETH J. HAYWARD, D.Sc. (Hon.), F.R.E.S.

Before I commence an account of our actual collecting, it will perhaps be useful to give some idea of the organisation that governs our lives during these extended collecting trips when every moment is of value.

The length of our working day is dictated only by the requirements of collecting. We have to spend two or three hours and even longer when there are many lepidoptera to deal with, in sorting and conditioning our catch. Our hour of rising depends on the success or otherwise of the previous evening's collecting; if many insects were taken we have to be up with the first streak of dawn, if the bag has been poor we can lie longer abed. Work finishes for the day when it is evident that further effort will be unproductive or we may continue for the greater part of the night. Our only let-up is on Sunday afternoons when everybody does what he likes till we meet in the evening to pack for transport the week's accumulation of material. In consequence we sometimes become very tired and it is then that I think of those friends who, hearing that we were off for another trip, expressed their envy at our luck in having another state-paid "holiday" and wonder whether they would still be of the same opinion after a few weeks of our routine.

What takes up much time is the examination, first by eye and afterwards under a low power reading lens, of the great amount of 'trash' that results from sweeping, a thankless but very profitable task, revealing as it does large numbers of minute insects that would otherwise escape notice. When it is humanly impossible to deal with all the trash on hand this is dried and put aside for sorting at some later date or when we return to Tucumán.

On wet days we do what we can, collect small zoological specimens, write up our diaries or deal with correspondence, repair our gear and mend our clothes; above all we make the most of a little rest. If there is lake or river nearby I try my hand at fishing, not for the pot but for our collections, and no method that will get a fish out of the water is too unorthodox to be employed. On such occasions I am no dry-fly purist!

All our packing equipment is standardised. The storage boxes and

the "*camas*" (literally 'beds'), by which name we designate the sheets of cotton wool enclosed in paper envelopes on which we lay out what may be termed the 'hard' insects, beetles, hemiptera and such like, are uniform in size, and it is amazing what a great amount of time this saves and how it simplifies our work. Whilst it is obviously not possible to sort our catch in the field, we do at least keep the orders and major groups apart, packing them on separate *camas* or in separate containers, thus greatly assisting the work of final sorting. Normally we sort and condition our material three times a day, during the early hours before we leave for our morning collecting, again at midday, and after we return in the afternoon. When for any reason this routine cannot be maintained we have to make up for lost time as best we can, but this is never done at the expense of hours that can be more usefully employed collecting. Accumulation of material has the highest priority: insects that have not been collected cannot be studied when we return to Tucumán and it is no good regretting later on that we did not make the most of our opportunities but lost collecting hours by doing jobs that might have been postponed.

For the first few days after our arrival in Puerto Bemberg we explored the immediate neighbourhood of the village, but without much success when judged by the standards of Misiones. I was able to appreciate how intensively deforestation had proceeded since my first visit and to realise that we would have to go much further afield than had then been necessary. We were collecting only about three hundred insects a day between us. Later on we were to come to look with certain disdain on any daily individual catch that did not reach five hundred and our peak was reached one day in the forest behind Puerto Aguirre (I shall retain the older name to avoid confusion) when we totalled over four thousand, but at the time I recalled rather regretfully a rash boast I had made to our Director before we left that we would take back a hundred thousand specimens.

It was during one of our earlier outings that I was stung by a *Dinoponera* ant (*australis* Emery). I had been amusing myself picking up these ants with a pair of tweezers and dropping them into what must have been a rather weak cyanide jar as one apparently escaped when I removed the cork to drop another in, and stung me on the hand. The pain was intense and in a few minutes my arm was numbed to the elbow and I felt the effects for more than a day. I dread to think what the result of many stings would be. I am practically immune to insect stings, even those of the big yellow-jackets, which was not the case with my two companions, one of whom was ultra-sensitive, and the fact that I had at last been made to take notice seemed to cause unseemly mirth. Since then I have treated these ants with more respect.

Seeing that collecting close to the village was not getting us very far, we decided to avail ourselves of the transport offered by the lorry that took the workers out to the spot where the water intake I have already mentioned was being constructed; we could either go right through to the virgin forest bordering the stream or get off at any intermediate spot. The lorry left the village at five thirty (sun time) every morning, returning at eleven to start out again at one thirty and coming back when work ceased for the day, a timetable that allowed us rather more than eight hours for collecting. Even though it was the

height of summer the long ride at dawn in the back of the open lorry often left us chilled and we were glad when it was over, though any small discomforts we suffered were more than repaid by the glory of early morning in the forest where the fragrance of the night still lingered on and the air was clamorous with the song of birds.

Half past six may seem early to be out after butterflies but even at that hour the skippers were a-wing, and when I could find a stand of the white flowered *Gomphrena martiana* (*Amarantaceae*) I was always sure of taking many of the small black species whose superficial similarity and individual variation makes it necessary to catch every one as they can only be classified by examination of the genitalia, and experience has shown me that even in well collected areas there are still new species to be found. Soon after eight these skippers disappear; where they spend the rest of the day I cannot say but they are not seen any more; other commoner species take their place.

Our first task on arrival was to visit a series of trees on which we had been led to expect the presence of insects, sap feeders that having imbibed too well had not yet sought their daylight hide-outs. Amongst such trees the *guatambú*, already mentioned in another account, held special attraction for all manner of small creatures as the sap was sweet and exuded freely through cracks in the bark. Once when collecting in an area of recently burnt forest I found a *guatambú* where the heat had caused the bark to swell so that a small space was left between it and the trunk, and after more than an hour of hard work gradually stripping off the bark till I could reach no higher, I found I had collected more than four hundred insects, chiefly small beetles, that had entered through the cracks and were enjoying the sticky liquid with which the inner trunk was covered.

Searching under bark was one of our most successful methods of obtaining insects, and the discovery of a dead tree was always an event. How thoroughly we employed this method may be gathered from the fact that when an entomologist from another Institution happened to arrive at Puerto Aguirre during our stay there, he left for other parts by the next steamer, complaining that it was a waste of time to collect over ground where we had worked as we had left no bark on any suitable tree within a radius of several miles. I have by this method taken more than a hundred and thirty brentid beetles from a single tree trunk including several different species.

Most of the older forest trees were veritable aerial gardens, their branches covered with ferns and *Bromeliaceae*, with orchids, lichens, mosses and tree cacti, and as I was interested in obtaining certain of these plants for our greenhouses and small botanical garden, a fallen tree gave me the opportunity to pick and choose with no further trouble than that of making my way to the trunk through the tangled undergrowth. Many dead trees remained standing simply because their branches were so entwined with those of their neighbours that they could not fall. I received a nasty shock one afternoon when hearing a tree crash I went to investigate, to find it was one from which only the previous day I had been stripping the bark. Many of these fallen trees proved a rich hunting ground for cerambycid beetles and we made a point of turning aside to visit them whenever we were in their neighbourhood.

At the place where the intake was being constructed on the Uruguayí the river was about eighty yards wide, flowing tranquilly between gradually rising banks of dense virgin forest whilst a little further downstream there was a very beautiful fall. Owing to the water shortage it was not possible to obtain a bath in the visitor's house so Dr. Willink and I bathed every afternoon, meeting by common assent at the same hour at a point where a narrow ledge of rock gave us a clear space to undress. This short relaxation from our daily toil is one of my happiest recollections of the trip. Mosquitoes and other biting insects caused us to hurry over our ablutions, but once in the water we swam far upstream, gazed at by wondering cormorants and herons and then allowing the current to drift us slowly downwards we lay watching the birds amongst the branches of the overhanging forest, resplendent kingfishers intent on fishing, bright plumage tanagers and noisy parrots. It is in the higher reaches of this river that the saw-billed duck *Mergus octosetaceus*, until recently considered a great rarity, is to be found.

Whenever transport was available, we took the opportunity of visiting other parts of the Bemberg estate. One Sunday afternoon we were taken down-stream to a tiny Paraguayan island known as Paranambó. It was a picnic and we went unprepared for collecting which was a mistake, as although the island was only two or three acres in extent it contained many interesting plants and insects. However by collecting matchboxes and other small containers from amongst the guests we managed to take back about three hundred insects; the plants of course were no problem.

On January 29th we left Bemberg and proceeded upstream to Puerto Aguirre and this was the first occasion since our arrival in Misiones that I had to put on a jacket. The Iguazú district is now a National Park and we were accommodated in the fine *Intendencia* that had been erected half way up the high bank where the steep footpath that had formerly been the only means of access to the river was now replaced by a good motor road. From the balcony of the *Intendencia* we looked down on to the Iguazú which here separates Argentina and Brazil and which a few hundred yards further downstream unites with the Paraná across which lies Paraguay. As there was electric light on the balcony we used it for our night collecting, but in spite of the extensive area it commanded, the results were very poor. Further back in the village was another new building which housed the local detachment of the National *Gendarmería* from whom we received many courtesies and who even went so far as to send their launch to find a doctor when I went down with a bad attack of malaria. These, however, were the only changes I noticed since my first visit; but the shadow of things to come could be seen to the east where lanes had been cleared in the forest for future streets. Puerto Aguirre (which in the interim has suffered yet another change of name to that of Puerto Eva Perón) is now cleared for a considerable distance back from the river, and the village has grown to several times its original size.

As no food was available at the *Intendencia* I made arrangements to feed at a small store a little way back in the forest about half a mile from the river. As we had to pass close by every time we went out to collect this presented no problem as far as breakfast and lunch were

concerned, which we took on our way out and home, but the extra walk was rather a trial after a hard day or when it was dark and raining and we had to turn out for supper.

In Aguirre we could count on no transport except occasionally a lift in a car which took the mail to a plane that landed once a week near the falls on its way to and from Asunción and Buenos Aires, but as the forest commenced in those days at the edge of the village and was comparatively open and well supplied with small tracks, this did not cause us much inconvenience and we were able to vary our walks beyond any question of monotony. We usually collected together, one of us confining himself to searching for insects under bark, stones, rotting stumps and in such-like places and occasionally sweeping, the other two, whilst not neglecting these methods, concerning themselves more with flying insects and those to be found at flowers or on the foliage. By this method we covered the ground very thoroughly.

When the Iguazú began to rise owing to heavy rains higher up in Brazil we reaped a rich harvest by searching along the edge of the rising water. Here small insects that would normally be scattered over a large area were to be found concentrated just above the waterline as they slowly retreated before the advancing flood.

We occasionally tried baiting, but the only real success we had was with the rind of some water melons we obtained that attracted a good number of beetles every night, which we collected the first thing in the morning. Unless of extremely penetrating odour, I think success in the use of baits resides in their continual use in the same spot and I have often seen butterflies continue to visit a place where baits have been used for several days after these had disappeared. The theory that the butterflies one sees assembled in patches on damp ground are attracted only to those places that have been soiled by beast or man received some support from two observations I was able to make. Surrounding the spot where work was being carried out on the intake on the river Uruguayí at Bemberg, a mud bank had been erected to keep the water back and this was continually being trodden by barefooted workmen. Here in the afternoons literally tens of thousands of butterflies assembled, chiefly Swallowtails and Brimstones, till the bank was covered with a solid carpet of colour the like of which I never hope to see again. The insects were so thick that it was easy if one approached them quietly to net thirty or forty at a time when they rose. What is significant is that although there were other suitable mud-banks along the river, I never saw butterflies using them. The second case is similar. Where the steamers tied up alongside at Aguirre there was a large bare patch of mud which was always well sprinkled with drinking butterflies though very few were to be found above or below this spot which was, of course, continually being trodden by men and was also soiled by spilt merchandise, such as flour, which soon fermented.

On one or two occasions we collected round the Iguazú falls and when a small botanical expedition came up to collect there from the Lillo Institute I accompanied them for a few days and reaped a rich harvest at the electric lights of the hotel which stood overlooking the cataracts in a large clearing. On two wet afternoons I got in some interesting and productive fishing at the foot of the falls.

Towards the middle of March we returned once more to Puerto

Bemberg, a fierce storm that suddenly broke over the river nearly driving us ashore. During our stay at Aguirre the long drought had broken, but although the water situation had improved, Dr. Willink and I continued to bathe whenever we visited the Uruguayí, which we did as often as possible. The change in the insect population was very marked and many species not present in January were now common. Especially striking was the number of caterpillars I found every day, and I regretted that I had no time to breed them nor facilities for this work nor artist to draw and paint them. One morning when passing a large planting of mandioca I heard a curious rustling noise coming from some way back and on investigating found that it was caused by the munching of a great horde of larvae of the small sphingid *Erinnis ello* which were advancing in line and leaving behind them nothing but a field of barren stalks.

Our time in Misiones was now drawing to a close and none too soon. The excitement and glamour of the early days had long since worn off and we were becoming stale and weary. On March 30th we embarked on the river steamer *Ciudad de Concepción* which was replacing the *Guayra*, which had a few weeks previously struck a hidden rock and foundered, and began our long journey back to Tucumán. Our efforts had not been in vain. We had added 118,000 insects to our collections, apart from which we had collected more than twelve hundred other invertebrates, two-thirds of which were spiders, many of which were obtained from the mud nests of wasps. We were taking back three hundred and sixty fish and many reptiles, and more than five hundred plants had been sent by post. As a contrast to my first collecting trip to Misiones when 33% of the insects collected were butterflies and moths, only just over 7% were now of this order whilst 48% of our total were beetles.

(To be continued)

Notes on Microlepidoptera

By H. C. HUGGINS, F.R.E.S.

When Dr. Cockayne asked me to undertake this series I did so with pleasure, as I should have done any reasonable task he suggested, but I did not think it would be read. I thought it would occupy much the same position in the magazine as the late Professor Cockerell's descriptions of foreign bees did in the *Entomologist* and I have been agreeably surprised by the number of letters I have had on the subject of micros from new correspondents.

In addition to Mr. Newton's *Eucosma subsequana* Haworth (see *Ent. Rec.*, 66: 199) I had two lots of *pygmaeana* Hub. sent me for checking. Mr. Newton points out that his *subsequana* were on spruce, not silver fir. As I stated in my note (*Ent. Rec.*, 66: 116), I have never seen *subsequana* alive, and whilst Barrett gives both spruce and silver fir as food-plants the late W. G. Sheldon informed me it was confined to silver fir, and as when I investigated several spruce groves in Kent at Sharsted, Stockbury, etc., I always found *pygmaeana* and never *subsequana*, I concluded he was correct.

The m.v. lamp is revealing a good deal about the movements of micros previously unsuspected by most of us. In June I took a black

insect in the garden which I suspected to be an early *Phycita betulae* Göze, as there are a few birches in neighbouring gardens. However, in the morning I found it to be *Diorcytria fusca* Haw. There is no heather within two miles of here; moreover in twenty years I have never seen *fusca* even on this distant patch, and it is a lively insect not likely to be overlooked; so unless it is colonising some heath in a garden, which does not seem likely as I think I know all the gardens round, this moth must have been a wanderer. *Acentropus niveus* Olivier is a not infrequent arrival. I can now say definitely there are no lily ponds in gardens within a quarter of a mile, and the brook two hundred yards off is fully concreted for miles, so that it is either a torrent or dry. I think *niveus* must come from the marshes several miles away, ascending and then dropping to a suitable light.

Notes and Observations

PYRAUSTA NUBILALIS HÜB. IN LONDON.—Referring to Mr. Britten's note in the June issue of the 'Record' (*Ent. Rec.*, 66: 173) it may be of some interest to hear that I took six examples of this species in the year 1952 and two more in the present year within the Metropolitan area, all in the month of August. This migrant appears to come freely to light even in built-up districts like the London boroughs of Lambeth and Camberwell.—Canon T. G. EDWARDS, 93 Alleyn Park, Dulwich, S.E.21. 16.viii.54.

STERRHA RUSTICATA SCHF. IN THE LONDON DISTRICT.—In an interesting note relating to this retiring little moth in the August issue of the 'Record' (*Ent. Rec.*, 66: 201) Mr Huggins mentions its occurrence at Plumstead prior to 1910. It is well known that Stainton over a hundred years ago recorded it at Lewisham. But I have not heard of more recent records within the Metropolitan area of greater London. But to my surprise I took it at light myself in this garden at Dulwich (one specimen) on 4th August of this year, when I was using a mercury vapour lamp.—Canon T. G. EDWARDS, 93 Alleyn Park, Dulwich, S.E.21. 16.viii.54.

HIBERNATION OF SCOLIOPTERYX LIBATRIX L.—Referring to Mrs. Muspratt's observations on the above (*Ent. Rec.*, 66: 203) I would like to mention that on the 29th October 1943 I had been collecting moths which were feeding on the sugary excreta of a scale insect on cultivated yew hedges in the grounds of Leigh Manor, Ansty, Sussex, when my fellow collector suggested that I accompanied him to the cellar of the Manor House, where he had something of interest to show me.

As he switched on the electric light I was amazed to see some 30-40 *libatrix* resting in hibernation on the ceiling and oak joists. There were also several Small Tortoiseshell and Peacock butterflies and odd moths at rest, but contrary to the cold draughty passage of the Chateau at Quintin, which Mrs. Muspratt visited in 1939, this cellar was very warm owing to the hot water pipes therein. I have, however, found odd *libatrix* in cold and draughty A.R.P. shelters during the late war.—L. E. SAVAGE, 65 Cranmer Avenue, Hove, Sussex. 12.viii.54.

A GYNANDROUS ANTHOCHARIS CARDAMINES L.—It may be of interest to record that I was fortunate enough to take a gynandrous female Orange-tip with several orange streaks on each of the fore wings at Worplesdon near Guildford on 26th May last.—E. E. JOHNSON, 34 Portsmouth Road, Guildford. 14.viii.54.

SMALL RACE OF PLUSIA GAMMA L.—With reference to Dr. Cockayne's paper, "A Subspecies of *Plusia gamma* Linnaeus" in *Ent. Rec.*, 65, 194-5, it may be of interest to record that this week two very small specimens of this moth, a little more than half the usual size, have been taken in the m.v. lamp trap. So far as I can see, there is no real difference in the markings, only in the scale. Both specimens appeared to be in very fair condition. I had never noticed this variation before.—C. S. COLMAN, 42 Hadham Road, Bishop's Stortford. 8.ix.54.

HYPPA RECTILINEA ESP. AT 1,900 FEET.—On 14th June 1954 I took a separated pair of *H. rectilinea* at just over 1,900 feet on the top of Meall Dubh above the Loch Rannoch Hotel. The trees had stopped some 600 feet lower down. They were on a rock which formed part of a big outcrop. Bilberry, crowberry and bearberry were all to be found at the foot of the rock, so presumably one of these had supported the larvae. The larvae from the female are feeding contentedly on every kind of sallow.—RODERICK LOVELL, 27 Athenaeum Road, Whetstone, N.20. 8.ix.54.

LAMPROPTERYX SUFFUMATA SCHF. AT 3,000 FEET.—As 'South' gives "weedy lanes" as the haunt of this insect, it is perhaps unusual to have taken a specimen (of the form ab. *piceata* Stephens) on 14th June 1954 at over 3,000 feet on the mountain Schiehallion. This was, in fact, the greatest altitude at which any insect was taken during a three-week visit to Rannoch. This altitude is at least 1,000 feet above the heather, and the main vegetation is crowberry, as thick on the ground as the heather is lower down, interspersed with sparsely-growing bilberry.—RODERICK LOVELL, 27 Athenaeum Road, Whetstone, N.20. 8.ix.54.

CHLO⁻OCLYSTA MIATA L. IN JUNE AND JULY.—I took a not very fresh example of this moth at Rannoch on 10th June 1954 and a further one hatched on 30th July from a larva taken at Rannoch during June. It is difficult to decide whether they are very early or very late. The first example is of the form shown in Culot, Plate 23, fig. 470 and described by him as *alpinata*, a new species.—RODERICK LOVELL, 27 Athenaeum Road, Whetstone, N.20. 8.ix.54.

CONTINUOUS EMERGENCE OF AGROTIS EXCLAMATIONIS L.—So far, this year has been, entomologically, almost a tragic failure in these parts, and at light the only consistent and reliable attendant has been *A. exclamatoris*, which has been in even greater evidence than usual and has formed the largest proportion of every population sample taken since the middle of March. Even now ragged examples of this moth continue to come to hand, and they lead me to speculate as to whether in certain seasons there is a partial second brood? If not, then surely this species breaks the record for a staggered single emergence!—V. W. PHILPOTT, Watergate Lane, Broadmayne, Dorset. 13.viii.54.

LITHOMOIA SOLIDAGINIS HÜB. AT FOLKESTONE.—A day or two ago Mr. R. W. Fawthrop, who is working a m.v. trap on the opposite side of Radnor Park to my house, brought round some of his recent captures. Among them was a specimen of the Golden-rod Brindle, a species of which the occurrence in Folkestone is as unexpected as in some other places where it has been taken this year.—A. M. MORLEY, 9 Radnor Park West, Folkestone. 12.ix.54.

LITHOMOIA SOLIDAGINIS HÜB. IN SURREY.—I have been given to understand that this species has been recorded from several places in the south-east of England recently, due apparently to an immigration from the Continent. It was a great surprise to me to take a fine specimen of this moth at my m.v. lamp at Byfleet (Shearwater), Surrey, on the 27th August. Although there are records of it having been taken in Hampshire I can find no record for Surrey. In any case, it seems very unusual for this species to occur as a migrant—particularly in such a season as the present one when the usual migrants have been so scarce.—S. WAKELY, 26 Finsen Road, Ruskin Park, S.E.5.

LITHOMOIA SOLIDAGINIS HÜB. IN SOUTH-EAST ESSEX.—On 26th August 1954 I went to look at the m.v. trap set in the garden about 10 p.m. G.m.t. As there was a heavy dew the trap was placed on the edge of the grass about ten feet from the house wall, which is painted cream, and a number of moths were sitting on the wall. I ran my eye over these and saw one tucked away on the frame of the French windows whose attitude was not familiar. When I brought it into the house I was amazed to see it was a specimen of *L. solidaginis*. The moth is a male and had evidently been on the wing for a little while, as the cilia are slightly worn. It is much the darkest I have ever seen, the whole of the fore wings being deeply suffused with leaden grey. It will be interesting to see later if it agrees with any well-known Continental form. I am not aware that this moth has been taken south of Shropshire, Stafford or Derbyshire, from the first and last of which counties I possess specimens. The Westcliff insect agrees with none of these nor with a couple from Aberdeen. I shall be very pleased to hear of other southern records.—H. C. HUGGINS, 65 Eastwood Boulevard, Westcliff-on-Sea. 27.viii.54.

A NOTE FROM DERBYSHIRE.—On 24th July I visited Beeley Moors. There was a very strong westerly wind blowing, with occasional showers, so lepidoptera were scarce. I looked for sheltered places, such as old quarries, and there I was pestered by flies and some species of gnat whose bites caused painful swellings. This is the first time I have been troubled by flies and gnats on these moors. The only butterfly seen was *Coenonympha pamphilus* L., usually at rest. Walking through the heather I disturbed large numbers of *Scopula ternata* Schr. (*fumata* Steph.), a few *Epirrhoe tristata* L., *Aleis repandata* L., and *Ematurga atomaria* L. Several *Lycophotia varia* Vill. and *Anarta myrtilli* L. were seen in flight, but they were all badly worn. The walls were carefully searched but only one *Epirrhoe galiata* Schf. was found. The markings on it were deep black as in the form mentioned by South as referable to *unilobata* Haw.

Close search of the pine trunks in Slagmill Plantation revealed a few *Semiothisa liturata* Cl., *Alcis repandata* L., and *Lygris populata* L., all in good condition. A few worn *Xanthorhoe montanata* Schf. and *Electrophaes corylata* Thun. still lingered among the birch shrubs, which were much infested by aphids, some so badly that all their leaves had turned brown.

Most of the bilberry bushes growing among the trees had been defoliated by some species unknown and perhaps it was on this account that I was able to find, to my great pleasure, a nest of *Vespa norvegicus* Fab. It was the first time I had seen it in England and it was fastened to a twig in the midst of a leafless bilberry bush, about eighteen inches above the ground. About a score of the small dark wasps were moving uneasily over the surface of the nest, which was no bigger than a tennis ball. The last nest of this species which I had seen was hanging from a twig of a stunted birch bush in Norway somewhere between Harstad and Narvik in June 1940. This was 200 miles inside the Arctic Circle, but if my memory serves me right the temperature was higher than it was on Beeley Moors in July 1954. On the same day I had found several nests of the fieldfare, *Turdus pilaris* L., in birch bushes near the village of Solia.

Apart from a good *Acherontia atropos* L., found by a boy on a pleasure boat at Skegness on 6th July, I have nothing else to report.—J. H. JOHNSON, 1 Berry Street, Hephthorne Lane, Chesterfield. 28.vii.54

DORSAL SPINES ON NOCTUID PUPAE.—The spines referred to by Mr. Hedges in his paper in the May issue of this Journal are to be found on the pupae of various species of the subfamilies Hadeninae and Amphipyriinae, more frequently the former, and I have one record of a Sarrothripinid with such spines. All my notes on the first two families, however, refer to the spines being on the 4th to 7th abdominal somites, whilst the Sarrothripinid had them on the 7th abdominal somite only.

I have records of the following species bearing such spines:—

Hadeninae: *Sideridis yu* Guen.; *Sideridis venalba* Moore; *Leucania irregularis* Wlk.

Amphipyriinae: *Magusa versicolora* Saalm.; *Ethiopica (Proxenus) micra* Hamps.

Sarrothripinae: *Risoba basalis* Moore.

R. basalis and *E. micra* spin cocoons, the former between leaves and the latter amongst litter, but all the other species are perfectly normal, pupating in a slight earth-covered cocoon below the ground.

Strangely enough *Cirphis atricimacula* Hamps. and *Sideridis insularis* Btlr., both pupating in the same manner as the three Wainscots mentioned above, have unspined pupae.

Amongst the Amphipyriinae, the following all have unspined, subterranean pupae:—*Spodoptera mauritia* Bsd.; *S. cilium* Guen.; *S. pecten* Guen.; *Prodenia litura* F.; *Laphygma exempta* Wlk.; *Eriopus maillardi* Guen.; *E. repleta* Wlk.; *Perigea capensis* Guen.; *P. pallidipennis* Warr.; *Calogramma festiva* Don.

As also have the Hadeninae:—*Brithys crini* F.; *B. pancratii* Cyr.; *Polytela gloriosae* F.; *Diaphone eumela* Stoll.—D. G. SEVASTOPULO, Kampala, Uganda. 22.vi.54.

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THE ENTOMOLOGIST'S RECORD
AND JOURNAL OF VARIATION

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TO OUR CONTRIBUTORS

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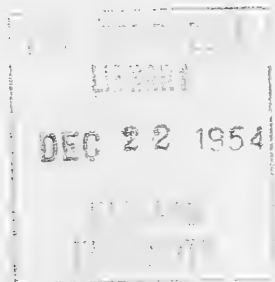
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EDITED BY
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The Effect of Winter Floods on Certain Species of Lepidoptera

By H. N. MICHAELIS.

I have attempted to observe the effect of winter flood lasting for a period of three weeks on low-lying uncultivated meadow land at Didsbury, Manchester. On 15.i.1954 a large area was covered to a depth of 3-4 feet by an overflow of the river Mersey. By 21st January the water level had fallen to 18 ins., when a thin coating of ice formed. The ice on 24th January was sufficiently thick to permit skating, which continued to be possible until 31st January, when a slow thaw commenced. The level of the ice and water gradually fell and, except in a few depressions, the ground was free from water by 7th February.

To observe the effect of the flood, four species, all known to be common on the ground, were chosen. These were: *Crambus culmellus* Linn. and *Crambus pratellus* Linn., both species common to grassland; *Cnephasia incertana* Treits., whose larvae are found on *Ranunculus* and *Elachista cerusella* Hubn., which feeds in the leaves of *Phalaris*, *Alopecurus pratensis* and, to a lesser degree, *Dactylis glomerata*. The *Crambus* and the *Elachista* pass the winter as larvae and the *Cnephasia* would exist as either eggs or larvae, the early stage being imperfectly known (Ford No. 319).

Careful observation during the spring and summer showed all four species were present and the possible effects were as follows:

Crambus culmellus L. Observed from 23rd July to 20th September, the moth reached its peak in numbers in mid-August and was found to be as plentiful as in previous years.

Crambus pratellus L. Observed from 1st-30th June, it reached the maximum flight in mid-June. The numbers were found to be much reduced, possibly halved, as compared with previous years.

Cnephasia incertana Treits. Larvae were plentiful in spun leaves of *Ranunculus repens* and *R. acris* in early May. The moth, mainly a black form, was as common from mid-June to mid-July as in other years.

Elachista cerusella Hubn. Larvae were more plentiful in May than in previous years. From a total of twenty larvae only 10% were parasitised. The usual rate of parasitisation on this ground is 25-35%. The moth was plentiful in both broods.

The area of ground under observation was roughly two acres and was last flooded in 1948. While the immersion for three weeks in 1954 had, apart from a slight increase in the *Elachista*, no effect on the normal numbers of three of the selected species, it is certain that the numbers of *C. pratellus* had fallen considerably. On a similar field, half a mile away, which was not flooded, this moth was seen in its usual numbers.

10 Didsbury Park, Manchester 20.

Sound Production and Reception in the Orthoptera

By D. K. McE. KEVAN.

From the 5th to the 8th of April last a very successful if highly specialised symposium was held at Jouy-en-Josas, near Versailles, under

the auspices of the Institut National de la Recherche Agronomique. This symposium on Orthopteran Acoustics was competently organized by Dr. R. G. Busnel, ably assisted by Mme. Busnel and many others. It was the present writer's privilege to attend this international gathering of scientists, many of whom are distinguished also in other fields. An account of the symposium has already been given by Prof. R. J. Pumphrey (who was himself a contributor) in *Nature* (**173**: 1219), but readers may be interested to have a brief report in these pages also.

The members of the gathering, who came from France, Germany and Great Britain, were welcomed by the Director of the Institute on behalf of the French Government and were later entertained in Paris by the municipal authorities. It was much regretted that those representatives from Italy and the more easterly parts of Europe who had been invited were unable to attend. One American observer was also present but he did not contribute a paper, the only transatlantic contribution being a useful mimeographed bibliography of the literature on insect acoustics circulated by Miss Mable Frings (Pennsylvania) *in absentia*. It was especially unfortunate that the great pioneer in the field of Orthopteran ethology, Dr. A. Faber of Tübingen, found himself unable to attend.

All the papers presented, together with the discussions which followed them, will be published presently in French (in *Ann. Epiphyt.*, 1954, Suppl.) although originally submitted also in English or German. Chairmen of the various sessions from among those who attended but who did not read papers (although they made valuable contributions to the discussions) included Prof. J. B. S. Haldane, Prof. P. P. Grassé and Dr. B. P. Uvarov. At the end of this present report is appended an alphabetical list of contributors with abbreviated English titles of the papers they gave. It will be seen that even in the specialized field of Orthopteran acoustics a great range of interests was covered, including physiology, ecology, ethology, systematics, morphology and pure physics (various branches), since all of these meet on common ground in the study of insect sound.

In order to allow as much time as possible for discussions the papers to be read were circulated in two languages prior to the symposium to those who had expressed their intention to be present. This allowed the speakers' remarks to be reduced to the presentation of new information and of visual and auditory illustrations. At first the whole of the proceedings were translated twice over into the other appropriate official languages (the fourth official language, Russian, was not used in the absence of Soviet participation); but the German members later courteously suggested that their language could be dispensed with in the interests of brevity. A British representative then suggested that English was superfluous and the French, as hosts, felt that they could not insist upon their own language being used; so that for a short time it seemed that the "language" of the Orthoptera was to be the only one permissible and that stridulation should be the means of communication between members! This admirable suggestion was not practicable, however, and the proceedings were latterly conducted in French and English.

In a short space it is not possible to do justice to any aspect of the symposium and, since an opportunity for those interested to read the

original texts will soon occur, only a few comments of a general nature are called for here.

The majority of the physiological papers concerned the techniques of recording, reproducing and analysing the sounds produced as well as of interpreting the function of the sounds; much of the information gained in these fields will prove of inestimable value to those working on sound production and reception in other groups of insects such as the Homoptera and Heteroptera (in which stridulation is becoming increasingly widely known). The invention of the ionophone (an aperiodic loud-speaker with a large undistorted power output from, to all intents and purposes, a "point" source) was one of the major advances in technique demonstrated, and was the only means so far known of getting any response to artificial sounds by the tree-cricket *Oecanthus pellucens* (Scop.). By complete contrast, it was also demonstrated how male *Chorthippus brunneus* (Thunb.) can often be induced to stridulate, or females to orientate themselves in response to very "poor" imitations of the "ordinary" song made by the mouth of the experimenter. There is obviously a great deal to be discovered about what exactly are the stimuli producing reactions in different species; these may be quite different from those of which we ourselves are naturally aware.

Different aspects of the complex subject of behaviour in response to auditory stimuli were discussed at length by several able speakers, while more than one paper dealt with the size of the field covered by the sounds made by various species. These last contributions, no less than the others, were both helpful and stimulating, indicating, as they did, the possible effects of vegetation and other topographical irregularities on the carrying power of Orthopteran song.

In the morphological field, attention was drawn to the very numerous independently evolved devices utilized by the Orthoptera in the production of sounds, and it was pointed out that the stridulatory mechanisms so familiar to European workers are by no means so universal (so far as Acrididae in particular are concerned) as is generally supposed. On a world basis, the majority of the Acrididae are, so far as the human ear can appreciate, mute, even although most of them possess tympanal organs ("ears") at the base of the abdomen. On the other hand, attention was drawn to an apterous Mexican species which possesses a sound-producing mechanism of considerable size, but, like many (but by no means all) other wingless Acrididae, no tympanum! Some Acrididae can apparently "hear" without tympana, while others which are apparently mute possess these organs; the function of the tympanum in relation to flight would bear investigation. Other methods of vibration reception than by means of tympana are, of course, known.

In conclusion, it might be appropriate to note the foresight of the French Ministry of Agriculture in sponsoring research, let alone a symposium, on problems such as these (which have no very obvious connections with agriculture). The fact of the matter is, however, that the problems associated with Orthopteran acoustics have a much wider significance than is at first apparent and their study may lead to considerable advances in the field of sonics and ultrasonics generally and in the practical applications to which such advances may be put.

The thanks of all those who attended the symposium are due, not only to Dr. and Mme. Busnel as instigators and organizers of this most profitable "get-together", but also to the Institute who were our hosts

and to the various members of the secretarial staff, the translators, the interpreters and others who contributed to the success of the enterprise.

CONTRIBUTORS AND TITLES.

- H. Autrum: Physiological analysis of sound-reception in Orthoptera.
 W. B. Broughton: Some song characters of *Platypleis affinis* Fieber.
 E. S. Brown (*in absentia*): Behaviour mechanisms of sound-production in Orthoptera.
 Mme. M. C. Busnel: Acoustic behaviour of *Oecanthus pellucens* (Scop.) ♂.
 — and R. G. Busnel: The same, ♀.
 R. G. Busnel: Certain relationships between means of acoustic communication and the acoustic behaviour of Orthoptera.
 — and W. Loher: Reactions to artificial acoustic stimuli in male Acrididae.
 P. Chavasse, R. G. Busnel, F. Pasquinely and W. B. Broughton: Definitions concerned with the acoustics of Orthoptera.
 P. T. Haskell: Sound intensity of stridulation in some British Orthoptera.
 W. Jacobs: Problems in behaviour research in the Orthoptera.
 D. K. McE. Kevan: "Unorthodox" methods of sound-production in Orthoptera.
 M. S. Klein: "The Ionophone".
 W. Loher and W. B. Broughton: Stridulation in some *Chorthippus* and allied species.
 G. Obolensky: Statistical study of number of teeth on the rasp of *Locusta migratoria gallica* Rém.
 F. Pasquinely: Objective sound recording and its application to animal acoustics.
 — and W. B. Broughton: Electro-acoustic chains and techniques of recording.
 — and Mme. M. C. Busnel: Preliminary studies of the mechanism of sound-production in Orthoptera.
 L. Pimonow: "The Frequency Analisator".
 R. J. Pumphrey: The relation of sound-reception to behaviour.
 D. R. Ragge (*in absentia*): The problem of female stridulation in the Acridinae.
 R. Roerich and Mlle. G. Moutous: Comparison of the *pars stridens* of the wings of *Locusta migratoria gallica* Rém. and *L. m. migratoria* L. (Gascogne and Herault).

Leioptilus carphodactylus Hübn. and *Platyptilia isodactyla* Zell. in Gloucestershire (v.c. 33)

By ARTHUR F. PEACEY, F.R.E.S.

On 5.viii.49 I was very surprised to find amongst my captures at light in the Stroud district a specimen of *Leioptilus carphodactylus* Hübn. I was not only surprised to get this species so far from its known localities, given by Beirne, 1952, as the Isle of Wight, Kent

and the Winchester district, but also because of the complete lack of its food-plant, *Inula conyza*, in the immediate vicinity. Careful search of *Inula* in the surrounding district failed to produce any more specimens, and as no more appeared at light I reluctantly decided that the specimen I had taken was an isolated wanderer.

So the matter rested until 12.vii.54, when I took nine specimens on a rough hillside above the village of Chalford. All the specimens were found late in the evening, at rest on *Inula conyza*. All were boxed from the plants, none making any effort to fly.

I revisited the locality on the 18th of September and examined a few flower-heads. Larvae of varying sizes were found. From a bunch of the heads taken home and placed in a roomy cage, the first moth appeared two days later. The presence of larvae in varying stages of growth and adults at the same time may be due to a delayed emergence of the previous brood caused by adverse weather conditions, or it may be that the life cycle of this species is normally irregular, as is well known to be the case with *Alucita spilodactyla* Curtis.

All the previously known localities for *L. carphodactylus* are in chalk districts; the Gloucestershire specimens, however, were taken on limestone and I think it probable that diligent search in both chalk and limestone districts would reveal the presence of this insect in many hitherto unsuspected localities.

During early September, 1954, I succeeded in taking a short series of the very local moth *Platyptilia isodactyla* Zell. at Elmore. With the exception of one specimen taken at a mercury vapour lamp, they were found resting on the stems of *Senecio aquaticus*, a few inches above the surface of the water with which the meadows were flooded.

Beirne, 1952, does not include Gloucestershire in the distribution of this species. He refers to the "Micro-lepidoptera of Gloucestershire" as one of the county lists studied, but appears to have overlooked a number of records which appear in a list of Additions and Corrections at the end of that work.

Platyptilia isodactyla Zell. was first taken in Gloucestershire at Elmore, 18.vi.41 (Richardson). In 1942 Bainbrigge Fletcher found a larva, also at Elmore, but was unable to rear it.

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- Beirne, B. P., 1952: *British Pyralid & Plume Moths*, 33, 171, 183.
 Fletcher, T. B. and Clutterbuck, C. G., 1943: *Microlepidoptera of Gloucestershire*, Part VII, Proc. Cotts. Nat. Fld. Club, 28: 64-66.

Field Notes from Salisbury, 1954

By C. M. R. PITMAN.

A nice batch of eggs laid by *Euphydryas aurinia* Rott. on potted-up scabious on 10th June had all hatched by 18th July, 1953. The small larvae fed very leisurely for a week or two during which time the foodplant had become covered with webs, and by the beginning of September the hibernaculum, complete with ventilators or escape tunnels, had been constructed, and the larvae settled down into winter diapause.

The New Year of 1954 was marked by a very severe spell of arctic weather and for a few days during early February it was noticed that the young larvae were almost frozen into a block of solid ice (see *Ent. Rec.* 66: 119). However, they survived and came out very actively when the sun shone in mid-February and started feeding voraciously on shoots of honeysuckle and were often to be seen feeding at night.

The majority of the larvae attained their final instar by intermittent stages. Some had started to pupate during early May, the first on 5th May; others continued to pupate throughout May and June. Some of the larvae, however, were only casually nibbling at food in a very desultory manner and very spasmodically, which is not surprising in view of the extremely bad spell of weather we were then experiencing, consisting of cold rain on most days and little or no sunshine, conditions which the more forward larvae had been fortunate enough to escape.

From these pupae the first imago, a small male, emerged at the end of May. Others followed, sunshine permitting, throughout June and July, emergences usually taking place in the evenings about 6 p.m. if there was a gleam of sunshine.

All this time the backward larvae, no doubt disgusted with the prevailing weather conditions, and rightly so, had almost become dormant, so that there were larvae, pupae and imagines in the cage together for over a month. Eventually, over a staggered period, the butterflies emerged, the last emergence taking place on 10th July; but still the diffident larvae lingered about the foodplant in the same instar they had been in when they came out of the winter diapause, refusing to eat anything.

As many pairings had taken place within the cages, the imagines were supplied with honey-water sprinkled over the food-plant, which they sipped readily, and numerous batches of eggs were obtained; so that at this time all four stages of the insect were to be seen. It was also noticed that a particular male paired twice, with different females, there being an interval of a week between the pairings.

Towards the end of July the reluctant larvae had clustered together at the top of the cage on the perforated zinc and were spinning the characteristic web preparatory to entering into the winter diapause for the second year, a procedure I have not heard of before. At the beginning of August they were completely ensconced within the hibernaculum, which was not so thickly woven as the nest of 1953. At the time of writing it appears as though one or two of these wintering larvae have shrivelled within the web.

A fresh female *Herse convolvuli* L. was taken at rest in Salisbury on 7th September. She was kept in captivity in a roomy and well-ventilated cage in the hopes of obtaining some eggs. Owing to the pristine condition of the insect it was very much feared that she might have been bred locally and that therefore there was little chance of her having already paired at the time of capture. This conjecture seemed to be justified when, after being in captivity for about two weeks, no sign of an egg was to be seen anywhere in the cage nor on the convolvulus with which she had been provided. At times during her confinement she was fed with honey and sugar-water, a difficult procedure but effected by unfurling her long proboscis with the aid of a

needle while the insect was balanced on a perch. If she was hungry she would move the tip of the proboscis about in a manner similar to the movement of antennae as if scenting the sweets and would then dip the tip into the liquid offered, repeating the process several times. From a side view one could see the juices being imbibed through the long tongue, the wings being a-quiver the whole time she was feeding. If she was not hungry she refused to feed even if the tongue was dipped into the fluid.

On 19th September nineteen eggs were found dotted about the cage and a few on the convolvulus leaves, and the insect, now in a ragged condition, had died. She was absolutely full of eggs, which showed up green through her abdomen. Her reluctance to lay after feeding, and dying so full of eggs, was another factor which suggested to me that she may not have been fertilized.

The eggs laid were remarkably smaller than those of *Sphinx ligustri* L., a darker green and much more transparent. After twelve days. infertility was further suggested when it was noticed that most of the eggs had become deflated. But a day or two later four began to turn to a yellowish green and on 4th October a young larva hatched and another the next day. On the evening of the 4th, with the aid of a lens, I was able to observe a baby larva eating the eggshell from within the egg; however, it had not hatched the following day although movement was still visible. The next day it had died in the shell and another was also found to be dead within an egg. The rest of the eggs proved to be infertile, so that only four were fertile out of nineteen—a poor state of affairs indeed and to my mind very strange. In view of these observations I find myself wondering if it was possible that the insect was parthenogenetic, or is such a condition out of the question?

The two surviving larvae are quite happy at the time of writing and feeding well on convolvulus; but can any reader suggest how I could maintain a supply of the food-plant long enough to last the needs of these larvae, as the convolvulus here is already showing signs of finishing and dying off in the hedgerows. Is there any alternative food-plant?

A larva of *Hyloicus pinastri* L. was found in its second instar feeding on cedar in Salisbury on 12th September. One was also found on the same food-plant in Salisbury during September 1948. Incidentally the first authentic capture of *pinastri* in Wiltshire was a female and was taken sitting on a cedar trunk in Salisbury on 27th June 1944. She was seen sitting on the tree at 6 p.m. and was still there when taken at 2 a.m. next morning.

A male *Erannis defoliaria* Cl. emerged in my breeding-cage, which is kept out of doors, on 28th September and another one on the 29th. Barrett (*Lep. Br. Is.* 7: 233) says that this moth is on the wing "occasionally as early as October"; but September emergences seem to be few and far between.

In spite of continuous searching this summer I failed to find any broods of *Vanessa io* L., which is all the more remarkable in view of the fact that thousands of imagines were reared and released in this district last summer.

After enduring one of the worst seasons for butterflies that one ever remembers, compensations came my way with the arrival of *Lysandra*

coridon Poda although at times while collecting these I was wrapped up in a coat and scarf. The first emergence was noted on 21st July and the last seen was on 3rd October. During the period a concentrated effort with this species was rewarded and some very fine varieties and forms were obtained including some male and female *fowleri*, three female *alba*, one male *alba*, a very striking series of male upper-sides, very dark *marginata* and *metallica* forms, some very curious *transformis*, a series of very nice male *albocrenata* with white discals, two *syngrapha* one of which was *inframarginata*, a good selection of male and female *caeca* and obsolete forms, female *roystonensis*, many interesting male colour forms on the upper-sides, some females with white streaks on the forewing, a few nice *inequalis* and some interesting "dribbles". On the whole one of the best seasons I remember for *L. coridon*.

Lepidoptera in North-East Derbyshire, 1953

By J. H. JOHNSON.

(Continued from page 222)

DUSKING AND SUGAR IN HARDWICK WOOD.

Hardwick Wood, situated a few miles south of Chesterfield on the edge of a coalfield, is in no way connected with the well-known Hardwick Hall which belongs to the Duke of Devonshire. It is a considerable stretch of uncultivated land in which still linger, in secluded corners, monumental oaks, immemorial elms, venerable yews and a few gloomy groves of flourishing green bay bushes, remnants of a rapidly disappearing past. The greater part of the trees were felled in 1917, and larches were planted in scattered rectangular plots. In between these birch and oak saplings struggle with bracken and fire, while in boggy places growths of alder, willow, sycamore, hazel and aspen are holding their own. Altogether a pleasant prospect for the naturalist.

During 1953 I paid several visits to one portion of this wood where brambles and rose bushes made it suitable for 'dusking' and well spaced large tree trunks were just right for sugaring. I was able to take several species which I never find in the industrial wasteland.

I made the first nocturnal trip on 8th April (*Ent. Rec.*, 65: 179), taking a short series of *Ectropis bistortata* Göze, *Calostigia multistrigaria* Haw., and *Erannis progemmaria* Hb.

On 16th May I searched tree trunks and found *Bapta temerata* Schf. (*punctata* Hb.) and one *E. bistortata*. On this date bluebells, dog violets, archangel, crosswort and wood sorrell were in full flower. By 4th June the weather had improved a little, although still rather cool. Sitting on the herbage on the edge of the wood were large numbers of *Xanthorhoe montanata* Schf., *X. spadicearia* Schf. (*ferrugata* Stgr.), *Epirrhoe alternata* Müll. (*sociata* Bork., *subtristata* Haw.) and *Cabera pusaria* L. Under the elms a few *Abraxas sylvata* Scop. (*ulmata* Fab.) were seen. On hazel leaves were several *B. temerata*. One crippled ♂ *Bupalus piniaria* L. was found near a larch plantation. Guelder rose, red campion and herb robert were in full flower.

The 7th June promised to be a cold dewy night but I visited the woods at 9.30 p.m. All round the wood *Opisthograptis luteolata* L.

(*crataegata* L.) and *Lithina chlorosata* Scop. were a nuisance, but I was able to net 2 *Lomaspilis marginata* L., 3 *Jodis lactearia* L., 2 *Electrophaes corylata* Thun.; *C. pusaria* and *X montanata* were still common. I made a stroke at a large moth hovering above a bramble growing in a ditch and was surprised to find I had captured a ♂ *Hepialus fusconebulosa* Deg. I sugared a dozen trees but failed to attract any moths at all. When I left the woods at 11.30 p.m. all the vegetation was dripping with dew.

On 13th June I applied the sugaring mixture at 9.30 p.m. Dozens of *J. lactearia*, *X montanata*, *A. sylvata* and *C. pusaria* were in flight, but I took nothing exciting by dusking. The visitors to the sugar were far more interesting, if not numerous. Here is a list of my captures, those not recorded by me hitherto being marked with an asterisk:—*Agrotis exclamationis* L., 1; *Diarsia festiva* Schf., 1; *D. rubi* View., 1; *Hadena thalassina* Hufn., 4; *Leucania comma* L., 2; *Eumichtis adusta* Esp., 3; **Rusina umbratica* Göze (*tenebrosa* Hb.), 2; *Apamea crenata* Hufn. (*rurea* Fab.), 6; *A. sordens* Hufn. (*basilinea* Schf.), 1; *Procus strigilis* Cl., 2; *P. fasciuncula* Haw., 3; *Caradrina morpheus* Hufn., 2; *C. clavipalpis* Scop. (*cubicularis* Schf.), 1; *Scoliopteryx libatrix* L., 1; **Thyatira batis* L., 1; **Tethea ocularis* L. (*octogesima* Hb.), 1. Although I took only 34 moths I was quite satisfied. The rose bushes were covered with bloom and it was good to be out.

On 17th June I visited the woods in daylight and was surprised at the number of *A. sylvata*, which I found in dozens everywhere. Equally numerous were *X. montanata* and *B. piniaria*. There were many *L. marginata* and *J. lactearia* still, but *L. chlorosata* was completely absent. I found another *E. bistortata* and, for the first time in this wood, *Epirrhoe tristata* L., though it is common on Beeley Moors. At 7.30 p.m. I noticed a number of *Hepialus hecta* L. flying over the grass near the larch plantation; many settled on the ground and were easily boxed. At 8.0 p.m. a heavy shower persuaded me to go home. Bistort and bedstraw were in full bloom.

On 20th June I sugared at 9.30 p.m. The first visitor was *P. strigilis*, at 10.10 p.m. After that I was kept busy until 11.45. There was a moon behind the clouds which were so light that a torch was unnecessary except in the dark corners. I took 72 moths altogether, of which three were new to me. In addition to the species listed above my captures were:—*Agrotis segetum* L., 1; *Graphiphora augur* Fab., 1; *Ochropleura plecta* L., 1; **Polia nebulosa* Hufn., 1; **Apatele leporina* L., 1; **Apamea unanimitis* Hb., 1; *Euplexia lucipara* L., 8; *Meristis trigrammica* Hufn., 1. This was quite a satisfactory night's work and I expected to find that the mercury vapour lamp would yield a good harvest too. I was wrong. When I left the shelter of the trees I found that a strong south-west wind was blowing and all that the trap had captured was a single *A. exclamationis*!

The 10th July was a dull calm day and I applied the sugar at 9.30 p.m. It was still light enough to see moths in flight. In a few minutes I had taken *Cidaria fulvata* Forst., *Sterrrha aversata* L. and *Alcis rhomboidaria* Schf. *Campaea margaritata* L. and *Hydriomena furcata* Thun. were extremely abundant, but I took only one *Ourapteryx sambucaria* L. I was surprised to net two *P. nebulosa* dashing over brambles before it was dark. I noticed that the sky was clearing and

that gnats and midges were gathering in sheltered spots and so I was not surprised that I did not have an exciting time at the sugar patches. The newcomers were as follows:—*Triphaena pronuba* L., 12; *Diataraxia oleracea* L., 1; *Leucania lithargyria* Esp., 3; *Apatele psi* L., 1; *Apamea monoglypha* Hufn., 12; *A. secalis* L., 1; *A. lithoxylea* Schf., 3. I noticed more at sugar, but the moths were easily disturbed and many escaped. The m.v. light trap made a poor catch too.

I was unable to visit the woods again until 3rd August when I found that my sugar had completely lost its charm. Not one moth visited any of my patches. I searched the flowers in the ditches, but there was not a single moth at either campion or meadow-sweet. In the shelter of a hedge I netted several *Euphyia bilineata* L., *Ortholitha chenopodiata* L. (*limitata*, *mensuraria*), *Calostygia didymata* L., *Hypena proboscidalis* L., *Zanclognatha tarsipennalis* Tr., *Crocallis elinguaris* L. and one ♀ *Selenia bilunaria* Esp. (*illunaria* Hb.) which laid a few eggs. When I returned home I was surprised to see scores of moths circling the m.v. light trap.

On 10th August I found that sugar was useless, and so it was again on 27th August. I tried several mixtures or concoctions of beer and treacle, rum and treacle, amyl acetate and black treacle, but I caught no more moths with any kind of bait until 3rd October, when I succeeded in attracting two *Agrochola circellaris* Hufn. (*ferruginea* Esp.). Even then, I found a fine *S. libatrix* feasting on an over-ripe blackberry not ten yards away from my sugar patch.

On 14th November I searched hedges, bushes and tree-trunks after dark and found large numbers of *Erannis defoliaria* Cl., *E. aurantiaria* Hb. and *Operophtera fagata* Scharf. (*boreata* Hb.), a few *Colotois pennaria* L. and one *A. circellaris* on a rotten branch among dozens of woodlice. I have no idea what was attracting either the moth or the isopods. Then I began looking for rotten rose-hips and I was able to find far more *Eupsilia transversa* Hufn. (*satellitica* L.) than I needed. I noticed that as many had yellow reniform stigmata as had white ones.

On 27th November I was still able to find three *E. defoliaria* resting on hazel bushes together with several *O. fagata*, *O. brumata*, *E. transversa*, and one *Poecilocampa populi* L. flew to the hand torch I was carrying. As I searched birch bushes on 19th December I came across a lively ♀ *E. defoliaria*. I boxed her but failed to obtain any eggs.

The most remarkable point in 1953 was the sudden decline in the attractive power of the entomologist's sugar. I have read about it several times, but this is the first time I have experienced it. I could hardly believe my own eyes. Fortunately it did not occur until I had taken a good series of *T. batis*, which brightened up the whole of 1953 for me.

(Concluded.)

An Entomologist in Argentina

X. The Chaco Santafecino revisited

By KENNETH J. HAYWARD, D.Sc. (Hon.), F.R.E.S.

The summer following our trip to Misiones I spent two months with Dr. Willink collecting for the Miguel Lillo Institute in the north of the province of Santa Fé over ground that was already familiar and which I have described before.

We left Tucumán on 27th January for the city of Santa Fé, in which town we had to spend two days waiting for a combination to the north. The journey across the xerophilous scrub and cactus covered plains of Santiago del Estero was uneventful and it was not till the following morning when nearing our destination that we began to pass through cultivated land. Here for a short distance the line was flanked by low swampy fields and for a few minutes I had the pleasure of seeing the numerous species of aquatic and water-loving birds that were feeding there. During our short stay in Santa Fé we had to fend for ourselves as the hotel waiters and other servants were on strike though the manager and his office staff did what they could for us. There was also a strike at the city's power and light plant which was being run by a scratch crew and in consequence all non-essential illumination had been suppressed, so we were disappointed in our hopes of collecting at the waterfront lights that border the Setabul lagoon and from which we had expected to reap a rich harvest.

Our train for the Chaco Santafecino left soon after dawn and when towards the end of the day we changed to the local at Intiyaco I was surprised on entering the small restaurant car to find myself immediately recognised by the attendant although he had not seen me for eighteen years. After rather more than twelve hours' travelling we reached Villa Ana which was to be our headquarters for a few weeks and I was more than a little taken aback to find a large reception committee awaiting our arrival. As soon as we had checked our luggage we were rushed off to the village in cars, an innovation since my days when no road existed and this short journey had to be made in the Company's train. In spite of my protests that all we needed was the use of a room in the bachelors' quarters, we were installed in the sumptuous guest house and throughout our stay in this area we were treated as the guests of the Forestal Company. In fact we sometimes found the hospitality we received a little embarrassing when we felt we should be spending more time at our job.

Villa Ana had been my home from late in 1923 till the end of 1928 and I had paid it a short visit on my way through to Misiones during the spring of 1933. Changes are to be expected when one revisits old haunts after an absence of many years but those I noticed were confined to the village and its people and to a few new roads. The surrounding countryside had not altered in any way but the passage of time was brought home to me when I saw my old house almost hidden behind the branches of a large jacaranda tree that I had planted as a seedling and which was only a small bush when I left the district.

We remained three weeks in this locality which was suffering as in the case of Misiones the previous year from the aftermath of a severe drought. Insects were scarce, how scarce will perhaps be realised when I add that our total catch for the two months we remained in the Chaco Santafecino only just reached forty-two thousand of which 63% were beetles, mostly obtained by sweeping, and *only four hundred were lepidoptera*. I think I can safely say that we spent most of our collecting hours with sweeping nets.

Our standby at Villa Ana was the rough ground that lay between the village and the forest to the east where weeds and grasses flourished unchecked and where there were many flowers. Here as during the

remainder of our trip we found collecting in the woodland itself a sheer waste of time though as always I found it hard to resist the temptation of giving it another try. One day for example after having gone early in the morning to a point a couple of miles outside the village we collected homewards through the forest, but our total bag amounted to only about a hundred insects, mostly flies and Hymenoptera and we saw only five butterflies in all. There was, however, never any lack of mosquitoes. They rose in grey clouds wherever stagnant rainwater lay in any hollow.

Our original plan had included a week under canvas near the Pindó about half-way between Villa Ana and the river Paraná and where I had camped once before. The idea was to work the country between this stream and the Paraná to the east, virgin territory for a naturalist, a sawgrass plain some twenty miles wide with many small lakes and ponds and scattered patches of forest. Apart from insects, which would not vary greatly from those to be found near the village, I had hoped to collect plants for our herbarium and to observe and photograph the wild life round the pools, which were hardly ever visited by man. When, however, on our first afternoon we were taken down to Puerto Ocampo on the Paraná we found that this river was in flood and had overflowed its banks and that the ground we had hoped to explore was now one vast expanse of water from which here and there clumps of trees showed their heads above the flood like small islands. The port itself, where most of the storage barns and houses are built on short piles, resembled a swamp village and our walking was confined to the railway embankment which alone remained dry. Floating everywhere and adhering to any bush or branch that stood above water were balls of ants of many species and in places the embankment was a crawling mass of *Atta*. Nor were these the only creatures that had perforce sought safety here, but all along the line tinamous, scared by the noise of our passing, took to wing or hoping to pass un-noticed, crouched flattened against the ground, and often hares would race before the railcar. Alongside the track in the bushes and tall weeds not yet submerged lizards and small mammals had taken refuge, clinging precariously to slim perches from which they would presently fall to drown or perhaps, starving, survive till the waters again receded. In the branches of a *Prosopis* we counted seventeen snakes.

From Villa Ana we passed on to Villa Guillermina, another factory further to the north where we were again, as we continued to be throughout our journey, accommodated in the visitors' house. Whilst in no way belittling the other advantages and creature comforts this hospitality provided, I think what we most appreciated was being able to have a bath whenever we wished. Only those who have had to pass long periods without this luxury, tramping day after day in the sweltering heat of the forest or over open shadeless country, one's clothes sticky with sweat, can understand what this meant to us.

In Villa Guillermina we collected chiefly over a large piece of cleared ground behind the village, park-like in aspect and where there were extensive areas of the pink flowering *Veronica chamaedrys* which I had never before seen in such profusion; but we found few insects and what there were varied but little from those we had been taking round Villa Ana. The only time we left the immediate vicinity of the town was

one afternoon when we were taken as far as the floods permitted along the line to Puerto Piracuacito. We collected no insects to speak of but as we returned at twilight the tall *Copernicia* palms that dotted the landscape seen against the reddening western sky reminded me of evenings spent along the Nile, whilst overhead long skeins of black ibis winged their way to their feeding grounds and the pools alongside the track glistening like black mirrors in the fading light revealed the presence of duck and tall waders.

One afternoon when rain threatened we decided not to go out and instead collected the contents of the globes of all the verandah and garden lights. Naturally most of the small insects trapped in these had long since been reduced to fragments, but a couple of hours' hard work sorting out this mass of refuse produced rather more than a thousand small beetles in good condition and perhaps a hundred cubic centimetres of jassids which we did not attempt to count. This was the only big haul we made except for a lucky hour on our last morning when I discovered a patch of some composite with creamy-white flowers from which we air-swept about four hundred small bees and wasps and flies and a few beetles. By air-sweeping I refer to the method we use of passing a light net rapidly to and fro just *above* the vegetation and flowers, after which the purse of the net can be slipped into a large killing-bottle and the cork pressed on for a minute or so till the insects are stupified when they can be sorted out or the whole catch emptied without loss or trouble into a killing-jar. The rapid movement of the net causes the insects to rise and so be trapped, and enormous numbers of small species are often to be taken by this means.

After eight days at Guillermina we turned south to Tartagal where for some years the tannin factory had been closed. Here perhaps more than anywhere else we noted the effects of the drought and so bad were conditions in general from a collector's point of view that after our first sally we nearly decided to refrain from unpacking and take the next train on to La Gallareta. In the end we resolved to have another try next day and the following morning paid a fresh visit to some of the more promising or shall I say less hopeless terrain. This time we had better luck and managed to find a few insects, especially in a large field of short coarse grass where scattered mesquite bushes gave shade to a number of mules and horses. These animals took a more than ordinary interest in the proceedings and insisted on following me closely in a troupe whilst I was sweeping and when I sat down to examine the result would form a circle round me, giving vent to their opinions from time to time in equine or mulish snorts.

Alongside the village was a large sheet of water, stained red with tannin, over which the railway was carried on a low embankment. Crossing this in order to get within photographing distance of a flock of about a hundred of that prehistoric looking bird the *chaja* (*Chauna torquata*) which lived on the far side of the lagoon, I found that its banks were covered with a creeper on which were numbers of several species of red and black cassid beetles and of these we were able to collect long series. This embankment, together with another stretch of railway that ran out into the forest and along the sides of which masses of golden-rod were just coming into flower, proved to be our salvation and but for the insects that were caught here we should have fared

badly. The forest round Tartagal had either been more completely cleared or perhaps the soil was less productive than elsewhere, for in many places there was no undergrowth whatever. In one part the trees were heavily laden with *Tillandsia* air-plants of which I collected a number for our gardens.

From Tartagal we proceeded to La Gallareta, yet another Forestal town and the most southern of the group. When I lived in the Chaco it was the cinderella of our factories, but circumstances connected with the supply of quebracho had led to its being increased in size from time to time and it was now producing far more tannin than Guillermina which had previously been the largest tannin factory in the world.

I had never collected seriously at La Gallareta and did not know its surroundings at all well except in the neighbourhood of a large *estero* where I had occasionally gone to shoot duck. We therefore wasted a certain amount of time in exploring, but as we were returning direct from here to Tucumán a few days more or less did not matter. We found an extensive field on the outskirts of the town enclosed on two sides by forest and destined I believe for a future air-strip. This field was deep in flowering weeds and grasses and whenever we went there we were assured of a large and varied assortment of insects, and one day Dr. Willink even netted a *quirquincho* or small armadillo (*Chaetopractus villosus*). As this field lay only about ten minutes' walk from our residence it was very convenient. To the north was an expanse of open country where the grass was turf-like and covered with scattered mesquite and mimosa bushes and there were a number of small shallow pools, probably the result of the removal of soil for making adobe bricks. There were few weeds here except round the pools which were the haunt of great numbers of frogs and toads and in consequence, except for *Odonata*, very few insects. However, for some reason this place always held a great attraction for me and I spent far more time visiting it than was warranted by the results, though I did collect some eight or ten interesting scale insects previously unknown to me from the *Prosopis*. Undoubtedly the best collecting ground apart from the field already mentioned was a wide belt of clearing that carried the Company's railway to the main line and it was here that we obtained many of our most interesting insects. As on the rough ground near Villa Ana, specimens of the Chrysomelid genera *Griburius* and *Metallactus* (*Cryptocephalinae*) were abundant here and perhaps the most outstanding result of our trip was the collection of these beetles, more than twenty species in all, that we obtained. When we were collecting along this strip of clearing we had to contend with quantities of burrs and other barbed seeds which if one did not keep a sharp look out clogged our nets till they could no longer be used and covered our clothes like a well supplied pin-cushion and then we would have to take time off and remove them one by one. In fact these seeds were so bad that there was one stretch of about four hundred yards where we simply could not sweep and nowhere else in this country have they given me so much trouble as they did in Gallareta. As elsewhere, the forest produced little more than a superabundance of mosquitoes though we did on one occasion find a number of a large Curculionid beetle we saw nowhere else and one morning after about a couple of hours searching I managed to net seven or eight specimens of a large Buprestid from *Prosopis*.

On 18th March we left for Tucumán, which was reached during the early afternoon of the third day. Our stay in Santa Fé was marred by torrential rain so we were again unable to do any collecting, but as rain had been general over the north of the country we had a dustless journey across the plains.

In spite of the fact that the results of our trip were nothing out of the ordinary, the insects we had obtained served to fill a gap in our collections as this was the first material received from this part of the country. No doubt we also brought back many species which I had collected and sent back to the British Museum during my years of residence in the Chaco but which still remained unrepresented in Argentine museums. I had expected better things from night collecting but the only two occasions when insects came to light in their thousands we were socially engaged and not in a position to take advantage of this windfall. It was undoubtedly the most comfortable trip we have ever made but we lived too soft and probably our work suffered in consequence, but I personally had the pleasure of renewing many old acquaintances and of seeing again a corner of the country I have always loved and which offers such a rich field for the naturalist and above all for the lover of birds.

(To be continued.)

Notes on Microlepidoptera

By H. C. HUGGINS, F.R.E.S.

Platyptilia ochrodactyla Hubn. and *P. pallidactyla* Haw.—Mr. H. N. Michaelis recently wrote to me about these two moths and after my reply asked me if I would publish it in this column, as several of his friends would be interested in the answer.

His query was that having bred *ochrodactyla* from a pale green larva feeding in the stems of tansy and *pallidactyla* from a smoky-brown larva on *Achillea* he noticed that Beirne (*Brit. Pyralid and Plume Moths*, pp. 171-3) gave the larvae respectively as brown and green and wondered if he had reversed them, especially as Meyrick gives *ochrodactyla* as green and *pallidactyla* as brown.

The answer is that both are right and both are wrong. The larva of each species varies from pale apple-green to darker green with brownish dorsal clouds and finally to almost uniform brown. I have bred a good number of each and the larvae of both have varied exceedingly, and I have never been able to find any distinction between them that I could put on paper and do not think I could tell them apart.

The difference in the larval stage is in the food-plant and method of feeding. *P. ochrodactyla* feeds on tansy and is an internal feeder, disappearing entirely in the stem from which it extrudes quantities of frass. I have never bred it from any plant but tansy nor found it feeding externally. *P. pallidactyla* feeds on *Achillea*, both yarrow and sneezewort; some books give tansy also, but I have never found it on this plant and am satisfied in my own mind that these records were errors for *ochrodactyla*. Its method of feeding is quite different; it feeds externally on the top of a shoot until about half the body is buried in it, thus stunting or killing the inflorescence, and then moves on. I have noticed that it is more prone to bury itself in sneezewort than

yarrow, probably from the greater succulence of the stem, but even on this plant a good portion of the body is left exposed.

The moths seem to me to differ somewhat in disposition. Both are easily disturbed at dusk and may be seen sitting on the food-plants at night; but whereas I have had little difficulty in disturbing *pallidactyla* in the daytime I have never roused *ochrodactyla* then without the aid of a bee-smoker. I believe *ochrodactyla* is found in most places where tansy grows naturally but is usually overlooked as collectors think it is as lively as its near relation. To give a case in point, there were (and probably are) great clumps of tansy on the Ludham road near Horning Ferry. I several times tried to find *ochrodactyla* in these without success, but one night in July 1924 when I had been collecting elsewhere I took a walk along the road with a hand-lamp and found it in numbers, the females sitting on the tops of the flowers with their abdomens thrust deep into the florets and the males sitting about in various places. The next day I tried disturbing the plants with a stick out of curiosity and found none.

Apart from the difference in the tibia, there is, when long series of each are compared, a difference in the facies of *ochrodactyla* compared with *pallidactyla*. The forewings of the former appear more falcate than those of the latter; roughly the difference in shape is the same as that of *punctidactyla* compared with *acanthodactyla*. This difference can only be perceived in long series, however. Selected specimens of either species can be found in which the shape is practically identical and the tibia appears to be the only safe guide.

Notes and Observations

OCURRENCE OF *COLEOPHORA CLYPEIFERELLA* HOFMANN IN ENGLAND.—In the March number of the *Record* I recorded a number of moths taken at light at Camberwell, South London, during August 1953. At the same time I took several species which I was unable to identify and which were later sent to the British Museum. Among these was a specimen of *Coleophora clypeiferella*—a species not previously recorded for Britain. The specimen, in fair condition, is pale grey in colour with a slight ochreous tinge and well dusted with darker scales. A rather indistinct dark central spot is visible at $\frac{3}{4}$. There are also some raised ridges on the thorax visible under the microscope. These ridges, seven or eight in number, are across the width of the thorax, reminding one of the milled edge of a coin, and are a peculiarity of this species. Wing expanse is about 14 mm. Date of capture: 11th August 1953. The larva is stated by the Continental authors to feed on the seeds of *Chenopodium*, and it seems likely that this species will be found to be established in the vicinity of Camberwell, although I have not come across any further specimens this year. My thanks are due to Mr. J. D. Bradley for identifying this interesting addition to the British List.—S. WAKELY, 26 Finsen Road, Ruskin Park, London, S.E.5. 24.ix.54.

PLUSIA CONFUSA STEPH., APAMEA OPHIOGRAMMA ESP. AND CIRRHIA GILVAGO SCHIFF. IN CUMBERLAND.—On 31st August 1954 a slightly worn and very curious *Plusia* turned up at my m.v. trap here in Penrith, Cumberland. Mr. Tams kindly identified it for me as *Plusia confusa*

Steph., a Continental species. Another species taken this summer at the trap is *Apamea ophiogramma* Esp., which is, I think, only the third to be taken in Cumberland. *Cirrhia gilvago* Schf. is not listed in the records for this county, yet it appears to be not uncommon, three specimens having been taken at Gilsland (and not recorded), while I have taken six at Penrith this year.—W. F. DAVIDSON, 9 Castlegate, Penrith. 4.x.54.

AUTUMN EMERGENCE OF *EPIONE APICIARIA* SCHIFF.—It may be of interest to record a wild autumn emergence of the Bordered Beauty, *Epione apiciaria* Schf. (*repandaria* Hufn.). On 11th October, in bright sunshine, I came upon a specimen in newly emerged condition fluttering on a bramble bush at Worplesdon, near Guildford.—E. E. JOHNSON, Highfield House, Guildford, Surrey. 12.x.54.

COLIAS CROCEUS FOURC. IN 1954.—In spite of weather so unfavourable to visitors from the South, *C. croceus* certainly managed to breed in Wiltshire this summer. On 22nd August two males were encountered and one which was captured proved to be perfectly fresh and was evidently newly emerged; this opinion was supported by Mr. C. M. R. Pitman, in whose presence the capture was made. Further observations were as follows:—27th August, five; 4th September, about twelve, and 19th September, one. One specimen captured on 4th September was a female of fresh appearance which subsequently laid about two hundred fertile eggs.—D. A. L. DAVIES, 5 St. Francis Crescent, Salisbury. 30.ix.54.

LITHOMOIA SOLIDAGINIS HÜB. IN KENT.—It may be of interest to record the capture of a specimen of *Lithomoia solidaginis* Hüb. at the m.v. trap in my garden in Abbey Wood, on the London border, on 28th August 1954. The moth was taken at rest on the garage door nearby and was in good condition. The evening was also notable for the first appearance of the second broods of *Cilix glaucata* Scop., *Ochropleura plecta* L., *Scopula marginepunctata* Göze and *Chloroclystis coronata* Hüb.—A. J. SHOWLER, 19 Harvel Crescent, London, S.E.2. 24.ix.54.

STERRHA RUSTICATA SCHIFF. IN 1954.—Following my notes (*Ent. Rec.*, 66: 164) and those of Mr. Huggins (*ibid.*, 66: 201) a few more comments may be of interest. Although the season has been late throughout, due to bad weather, *S. rusticata* turned up well on time, first being noted on 4th July 1954 in Bexleyheath, though the last specimen seen was fairly late on 24th August at Abbey Wood. On 22nd July I found one *rusticata* in Welling, the first time I have seen it there.

One female taken on 14th July had by 20th July laid about 40 pink coloured eggs, comparatively large in size and unattached to the box in which she was contained. These commenced to hatch on 1st August, and the young larvae were fed on dandelion and plantain. At first fresh leaves were given, but as the larvae appeared to do just as well on the dead leaves, these were then left in the muslin-topped jar in which the larvae were being reared. Later, elm leaves were added, and some of the dead leaves of English elm (*Ulmus procera* Salisb.) have now been eaten, but wych elm (*U. glabra* Huds.) has not been touched, and neither has ivy. It seems that the larvae much prefer dead dandelion, though

as Mr. Huggins notes, elm seems to have an attraction for the moth. This was exemplified this year by five specimens seen on about twelve yards of fencing sheltered by English elm near Dartford on 5th August. In such situations ivy is often found in association with elm, and this elm-ivy-fence (or bank) type of habitat seems the most favoured, as Mr. Huggins has said, in North Kent. It seems probable that the larva feeds on a variety of dead vegetation. *S. rusticata* larvae rest in a characteristic pose, with the fore-parts raised and curled in the form of a tightly closed question-mark. They feed at night.—A. J. SHOWLER, 19 Harvel Crescent, Abbey Wood, London, S.E.2. 24.ix.54.

EUPLAGIA QUADRIPUNCTARIA PODA AT DAWLISH—A FURTHER NOTE.—It may be of interest to record with reference to my previous note on the abundance of the 'Jersey Tiger' at Dawlish in 1953 (*Ent. Rec.*, 66: 119) that I again visited the town for the corresponding two weeks of this year (14th-28th of August). In sharp contrast to the large number observed in 1953, not one specimen was seen during the whole fortnight. My colleague Mr. P. J. Osborne who toured South Devon and Cornwall by motor-cycle about the same time, informs me that he saw a single example at Torcross on 25th August.—ERNEST TAYLOR, Department of Entomology, University Museum, Oxford. 20.ix.54.

EPICNAPTERA ILICIFOLIA L. AT CANNOCK CHASE.—I was most interested to read Mr. Sperring's note in the August issue of the 'Record' that there was a recent report of *ilicifolia* in the Cannock area of South Staffordshire. I am well acquainted with this district, and between the years 1929 and 1933 I did a great deal of collecting there, particularly during the months of May and June, using a powerful light until 2.30 a.m. In this particular part of the Chase, Dr. Frere, a general practitioner at Rugeley, took the moth regularly every year until the first world war. I believe most of the reputed British specimens in our cabinets to-day come from this source.

I saw no signs of *ilicifolia* whatsoever, though I took many other good insects, including *Orthosia advena* Schf. (*Monima opima* Hub.) and *Hadena bombycina* Hufn. (*Melanchra glauca* Hub.), and I concluded that the Army occupation during the first world war had destroyed its breeding grounds. However, the Chase is one of the few remaining stretches of wild moorland which has remained for the most part uncultivated since the last ice age, and I have no doubt that it contains much that would yet reward the diligent field worker. From the geologist's point of view Cannock Chase is an area of great interest; it is believed to mark the limit of the terminal moraine of the ice cap before it began to recede. This may account for the peculiar flora and fauna which has so many affinities with those of the higher peaks in Scotland.—Canon T. G. EDWARDS, 93 Alleyn Park, Dulwich, S.E.21. 16.viii.54.

DASYCHIRA FASCELINA L. IN SURREY.—On 24th July last I found a specimen, in perfect condition, of the Dark Tussock at rest on a twig of heather at Worplesdon, near Guildford.—E. E. JOHNSON, 34 Portsmouth Road, Guildford. 12.viii.54.

COLIAS CROCEUS FOURC. IN DORSET.—On 14th August, from a vantage point above the mile-long Coombe Valley that links Culliford Tree and Preston, near Weymouth, I could see at least ten *C. croceus* on the

Sheep's-bit, Dwarf Thistle and other chalkhill flowers. The movements of these *croceus* were quite random; they seemed to remain within the confines and the shelter of the valley, and there was no apparent general movement of these imagines in any one direction. If, in fact, they are the result of a very recent immigration, a fair proportion, at least, must have halted its progress soon after crossing the coast-line. If, on the other hand, they are the progeny of earlier immigrants, it is truly remarkable that they survived the rigours of such a cold, damp, and sunless early summer; for is it not the general belief that it is the intense humidity rather than the cold of our climate that prevents *C. croceus* becoming a native species?—V. W. PHILPOTT, Watergate Lane, Broadmayne, Dorset. 13.viii.54.

HETEROGRAPHIS OBLITELLA ZELL. IN SUFFOLK.—There is a most interesting account of this rare species in the *Record* for January this year by Mr. H. C. Huggins and I should like to add another specimen to the Records. This specimen was taken at a m.v. light by Mr. F. Rumsey at Freethorpe, Suffolk, on the 15th of September 1953. On being shown the specimen I thought at first it was a *Scoparia*, but a comparison with specimens of that genus showed me I was wrong. It was then that I remembered the article by Mr. Huggins, and on reading Meyrick's description of *H. oblitella* I felt sure it must be that insect. This was afterwards verified at the British Museum. Mr. Rumsey's specimen was a male and very light in colour—not at all like the dark one described by Mr. Huggins.—S. WAKELY, 26 Finsen Road, London, S.E.5.

A NOTE FROM HUNTINGDONSHIRE.—We have found the season anything but a gloomy one. Admitted, butterflies seemed non-existent; but the moths! and the larvae! Beating for larvae in late May one light tap would bring down 40-50. You will be pleased to hear that on Wood Walton Fen the Large Copper larvae have never been more numerous; almost every dock leaf had its quota of 3-4. This is the first time we have seen them. Incidentally *C. palaemon* was very common there too this year.

Night work for moths turned up *H. palustris*, which one of us (B.O.C.G.) has been trying for since 1948. Later we are going after the larvae. The interesting thing about this species is that we took it in a previously unknown locality, Holme Fen, where its known (or, should we say, usual?) foodplant, meadowsweet, is very rare. We also caught specimens on the same dates as its previously recorded first and last appearances. Two were taken in the pouring rain (three miles away severe flooding occurred). We admit that these were taken with a m.v. lamp; but we think that field work still enters into this method of catching moths. Three specimens were found underneath the sheet and not in the trap. Hours, too, were spent looking for the elusive females with torches. We also turned up *Arenostola fluxa (helmanni)* and *Cybosia mesomella*, which is given by the books as formerly occurring at Yaxley, near Holme, and various other good things, which included a very fine variety of *D. falcataria* and a specimen of *L. hirtaria* closely approaching the Scottish form of this insect.

Two other things have been noticed about this season: (1) the extremely long emergence period of various species; for instance, we

have been taking *Pheosia tremula* ever since 28th April. The two broods have run into each other and it is still very common. *Biston betularia* and *Lycia hirtaria*, too, we have taken from March to July. (2) The large number of dark and melanic forms there are about.—B. O. C. GARDINER, 43 Woodlark Road, Cambridge; C. F. RIVERS, Plant Virus Research Unit, Downing Street, Cambridge. 12.viii.54.

SOME NEW CAMBRIDGESHIRE LEPIDOPTERA.—While compiling a Note on the 1954 season in Cambridgeshire it was discovered that some other species, taken in previous years, are new to the county list, and I feel that these are worth putting on record. The species listed below are not included in the Victoria County History of Cambridgeshire and the Isle of Ely (1938) nor in the records of the Cambridge Natural History Society.

Drymonia ruficornis Hufn. (*chaonia* Hüb.). One specimen taken in May 1950.

Sarrothripa revayana Scop. Larvae were beaten from oak in July 1953 and again in 1954.

Pyrausta nubilalis Hüb. One specimen taken 26th June 1952. The specimens are in my collection and cards are being inserted in the records kept by the Cambridge Natural History Society.—B. O. C. GARDINER, 43 Woodlark Road, Cambridge. 30.viii.54.

EGG-LAYING OF BUTTERFLIES IN CLOSE CONFINEMENT.—It is known that a few—a very few—butterflies will lay eggs in the confined space of a glass-topped pillbox but, with one notable exception, *Erebia aethiops* Esp., which will lay in an air-tight box with all light excluded, some light seems to be necessary as a stimulus to the laying of eggs.

I remember some years ago subjecting a female *Carterocephalus palaemon* Pall. to the light from a 60-watt electric bulb at six inches in a net-covered 3-inch diameter box and watching her lay nearly 50 eggs. I have also known *Pararge aegeria* L. lay a small number of eggs in similar conditions.

I think the following account of the laying of eggs on an enclosed leaf by two Pierids in closed boxes of very small dimensions, and in complete darkness, during 24 hours of postal transit, will be of sufficient interest to report in some detail.

On the afternoon of 21st July 1954 I received by post from Mr. S. R. Bowden of Letchworth two live females of a hybrid derived from a *Pieris adalwinda* ♀ from Kiruna stock and a British ♂ *Pieris napi* f. *sulphurea*. On unpacking the females I noticed that there were 34 eggs on the small leaf enclosed with one female and 37 on the other. I acknowledged receipt of the females and eggs which I thought had been laid before despatch and enclosed within each box for the sake of convenience by Mr. Bowden.

His surprise on receiving my letter can well be imagined and he wrote back to say that the leaves, one to each little box, had been enclosed in order to maintain some degree of humidity so as to make the travelling conditions more comfortable for the inmates and that, when despatched, they were quite free from eggs. Furthermore he reported that no artificial food had been given to the butterflies at any time. They had, he stated, emerged on 11th and 13th July respectively and had laid well after pairing in a cage at Letchworth, in which he had

placed some flowers on which they had fed. They were packed up on the afternoon of 20th July, just 24 hours before I opened the package, having spent 5 days in their cage at Letchworth. The foodplant inserted into the pillboxes consisted of a single small leaf of *Alliaria petiolata* and the diameter of the boxes was 2 inches. The depth was $1\frac{1}{4}$ in., giving a cubic volume of just under 4 cu. ins. They had no glass panel and completely excluded both light and air.

All the eggs in due course produced healthy larvae, and mortality was nil. It would appear, therefore, that neither light nor a current of air is really necessary to a female of this species when she is determined to go about her business of propagation. Indeed the output of each of the females, per 24-hour period, would compare most favourably with that which would obtain if they were enclosed for egg-laying in a large and airy cage and under optimum conditions of light and heat.

No longer, it would thus appear, need entomologists despair of raising a brood of *P. napi* in an unfavourable summer such as we have experienced this year, once they have paired their females. Cages normally used for egg-laying could be utilised entirely for pairing and more broods could be reared with a given number of cages available.

I remember that the late Hugh Main once told me that some of his most successful broods of *napi* × *bryoniae* hybrids were reared with females laying in 2-lb. jam jars, a statement which I found difficult to swallow at the time but which I can now quite easily believe.

Further experiments on these lines will be carried out in order to ascertain whether pure *P. napi* will also lay in the dark under similar conditions.—N. T. EASTON, 92 Connaught Road, Reading. 18.viii.54.

Current Literature

FORESTRY COMMISSION: LEAFLET No. 32. Price 9d. Pine Looper Moth, *Bupalus piniarius*.

The leaflet is well written and the illustrations, some coloured, are excellent. The contents, however, are very disturbing. The species has been common on *Pinus sylvestris* and to a small extent on other species all over England and Scotland for many years, but has never been a serious pest until 1953 when over 100 acres were defoliated on Cannock Chase, and there was a similar infestation at Culbin and Roseisle, Moray. In the latter area the small indigenous subspecies with a white male and a dull brown female is found, but at Cannock there is a larger mixed race where the native Scottish and the larger Continental subspecies have met and interbred. Here most of the males are white but the females vary very much, fulvous and dark brown forms being commonest. The recent outbreak resembling the infestations which are so destructive on the Continent must be due to the policy of the Forestry Commission. They are planting too large acreages of the same age with the trees rather close together instead of breaking the forests up into small areas of different age and fewer to the acre. Since we must suffer the planting of spruces these or larch might be planted in strips to break up the stands of pine. Trees are not attacked seriously until they have reached the pole stage and then they are defoliated. The needles are eaten almost to the brown base or gnawed so severely

that they turn brown and wither. The trees at this stage have a brown appearance, which is pinkish in certain lights. Trees can stand defoliation for one year, but seldom for more and infestations usually last for three or four years before they die out naturally.

In Continental countries insecticides are used to control the pest and the Commission proposes to use insecticides sprayed by aeroplane or by mechanical dusting machines on the ground. It is to be hoped this can be avoided here, because all insect life is destroyed and the beneficial insects suffer with the rest. The ultimate effect cannot be foretold. Reading the leaflet one fears it is already too late, but this position need not have arisen if the Commission had studied conditions abroad and paid heed to the warning. All this trouble and expense could have been avoided if it had continued to plant pines in the manner customary here. The Commission is to be congratulated on its leaflet. It is a pity its policy falls so far short of the same high standard.

E. A. C.

THE NATURALIST, July-Sept., 1954, contains, at pp. 87-92, an interesting paper by Frank Hewson on "The Enemies of Lepidoptera". The way of the lepidopteron, like that of the transgressor, is hard; in fact it is astonishing how many classes of animals compete with the collector and there are few of the larger animals which will not, now and then, make a meal of larva, pupa or imago. Cats, dogs and monkeys will all on occasion eat butterflies, and many a graminivorous larva must find its way into the stomach of a ruminant. The Roman epicures were said to delight in the larva of *Cossus cossus* and Mr. Hewson tells us of a Frenchman who munched caterpillars and spiders "when in season". There is even the story of a small boy who, told to rid some cabbages of the larvae of *P. brassicae* and asked later why the tin with which he had been supplied was empty, replied "Oh, I eats 'em". Mr. Hewson has covered the ground well and his paper is full of interest for the biologist.

The Chester Society of Natural Science, etc., has just issued the fifth volume of its valuable "Cheshire, North and Mid-Wales Natural History". This volume, which is mainly a catalogue of the Lepidoptera of the county of Radnor, also contains additional records of Lepidoptera for the counties of Chester, Flint, Denbigh, Caernarvon, Anglesey, Merioneth, Montgomery and Cardigan, with a list of corrigenda for the previous three volumes. Like its predecessors it is well produced and has descriptions, with a plate, of eight new aberrations (named) of *Selenia bilunaria* Esp. bred by S. Gordon Smith and J. D. C. Boyes.

On page 34 (No. 301) R. E. Vaughan Roberts records *Luperina nickerlii* ssp. *gueneei* Doubleday near Prestatyn, Flintshire, in 1929, but does not say how many were taken.

Pl. 2, fig 1, *Gonodontis bidentata* Clerck, Chester, bred by J. Povey. The left fore wing is largely ab. *nigra* Prout, but a streak of normal colour runs through the middle of the wing; the other three wings, the antennae, and abdomen are female and of normal coloration. At first I thought it was a somatic mosaic, but on closer examination the difference in the shape and number of dentations has led me to believe that it is a gynandromorph with the black parts male. No description of the under side is given and no account of the parents or the number and appearance of the rest of the brood.

E. A. C.

The Proceedings of the Chester Society of Natural Science, Literature and Art are not accessible to most Continental workers and in the volume published 31st May 1954 there are descriptions of several new aberrations of *Selenia bilunaria* Esp., illustrated by very beautiful black and white plates. I give descriptions of these below. Abs. *chalcescens*, *glaucescens*, *chionochlora*, *dolichobalia*, and *rubropustulata* are named by S. Gordon Smith, *postmediojuncta*, *infravenosa*, and *albicosta* by J. D. C. Boyes. Ab. *chalcescens* (p. 91), Pl. 5, fig. 1. Head, thorax, and abdomen pinkish buff mixed with fuscous; palpi warm buff, frons with some whitish hair-scales; abdominal segments clearly edged with pinkish buff. Wings pinkish buff strongly suffused with warm buff over the cell, the inner margin and distal third of the wing; oval patch at base of the fore wing, costa, and lunar apical patch orange brown; antemedial and postmedial fasciae fuscous black, sparse fuscous black irroration over all. Underside of fore wing pinkish buff heavily shaded with two long diverging wedges of fuscous from base towards termen, distal third suffused with orange brown, hind wing with distal half with orange brown. Sparse fuscous black irroration over all. The only traces of whitish are the above-mentioned hair-scales on the frons, and a trace on the underside of the fore wing costa. F3 gen. from a pairing of ab. *nigrata* from Lincolnshire with an ab. *eblanaria* Baynes of Dublin and Surrey origin.

Ab. *glaucescens* (p. 91), Pl. 5, fig. 2.

The general colouration of this variation is a fairly uniform greenish to bluish grey (glaucous) with the antemedial and post-medial fasciae fuscous black, the oval patch at base of costa, the medial shade and the lunar apical patch olive brown. Underside similar but with the forewings dark olive green over the distal third, the hindwings dark olive green with a narrow almost broken medial glaucous band. The specimen, a female, together with several others of a similar character were bred in the F2 generation from a pairing of an ab. *nigrata* from Lincolnshire with an ab. *eblanaria* Baynes of Dublin and Surrey origin.

E. A. C.

PROTOCOLLIPHORA IN BIRDS' NESTS. *British Birds*, XLVII: 236-243, 1954.—Under this title Mr. D. F. Owen has given a brief account of his observations on *P. azurea* (Fln.) (Dipt., Calliphoridae), whose larvae are parasitic on birds and are even recorded as causing the death of nestlings. He continues with a summary of the other European records and of studies made on the related American genus *Apulina* and the Australian *Passeromyia*. Details of the few Chalcid parasites of the flies are mentioned and there is an interesting discussion on *Protocalliphora* and its host relationship with birds. Twenty-two species of British birds are listed in the appendix as being attacked by *P. azurea*.

This is a model paper, placed suitably in our leading monthly ornithological journal, to interest bird-ringers, who should be able to secure further data. The 47 items of references indicate the research the author has undertaken and the world-wide interest of his subject, see also *Ent. Rec.*, 65: 31-2 and 267.

L. PARMENTER.

HANDBOOKS FOR THE IDENTIFICATION OF BRITISH INSECTS. Published by the Royal Entomological Society of London, 41 Queen's Gate, S.W.7. 1954.

Vol. X, Part 4 (a). Diptera Cyclorrhapha, Calyptrata (1), Section

(a). Tachinidae and Calliphoridae. By F. I. van Emden. 133 pp., 42 figs., 1 map. Price £1.

The Tachinidae have attracted the attention of every breeder of Lepidoptera; some taking the trouble to try and obtain information as to the name and habits of the parasite bred. Until C. J. Wainwright's paper in 1928 appeared in the Trans. [Royal] Ent. Soc., with its keys to the family, there had been little advance in this country in the study of the family then receiving considerable attention from continental workers. These 1928 keys were not easy to use and lacking illustrations and adequate descriptions, there was always doubt of certainty of identification unless comparison could be made with authentically named specimens. W. Lundbeck's *Diptera Danica* volume on the Tachinidae covered a number of species found in this country, with full descriptions and 106 figures, had appeared the year before and being in English, supplemented Wainwright. In 1946, there began to appear the parts of C. D. Day's work on the British Tachinidae—artificial keys, with abbreviated descriptions, 221 figures and an excellent section on definitions. This still remains a valuable work for beginners on the family.

The present volume is one of the best of this excellent series of Handbooks of which some 16 parts have now been published. It takes the study of the family a great step forward. Although primarily composed of keys to the subfamilies, tribes, genera and species of the families of Calliphoridae and Tachinidae, these are sufficiently expanded and illustrated with 816 drawings in the 42 figures that every species can be identified provided one can pass the initial stage of assigning the specimen to the correct subfamily and tribe. The species appear to be grouped more naturally than before but the addition of some artificial keys would have helped workers as every specimen cannot be examined, without mutilation, as to the presence or not of hairs at the side of the prosternum, etc. The author has a greater command of English entomological terms than his readers and one would have liked further definition of many terms and larger explanatory introductory diagrams so that the reader could be certain he fully understood the author's meaning.

There is an amazing wealth of detail included, of great value to biologists, ecologists and field naturalists. The full host and life group lists, detailed also against each species keyed, are excellent. Great trouble has been taken over the recording of distribution, with flight times shown with the months divided into three parts, so that fuller details are given than in any other part of this Series. Although subgenera are not used, these are indicated in most cases and several helpful synonyms are given. There is, however, a considerable difference to the list of the Tachinidae and Calliphoridae as listed in Kloet and Hincks' *Check List*, and as in previous parts of the Diptera section of this Series, unlike the other Orders, no brackets appear where necessary, around authors' names. It is a pity that editorial policy has not devoted a few pages to a Check List in each part, a useful tool for so many workers as well as "mere collectors".

The few misprints are trivial and are not misleading, *e.g.* p. 31 under Macquartiinae, the first couplet should be 1 (16), and serve only to emphasize the excellence of the production of this well edited Series.

L. PARMENTER.

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Offers invited for Entomologist's Record, Vol. 60, 1948, to Vol. 65, 1953, in Parts as issued. Write *Dr. H. M. Vickers, 6 The Acre Close, Boundary Road, Worthing, Sussex.*

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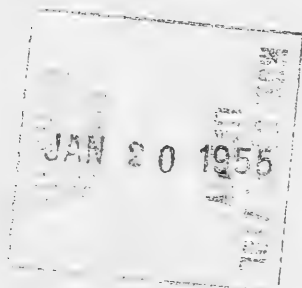
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A new species of *Trotteria* Kieffer (Cecidomyiidae)
reared from unopened flower-buds of Privet
(*Ligustrum vulgare* L.)

By H. F. BARNES.

Owing to the kindness of Mr. S. A. Manning, who by sending me in August 1952 some unopened flower-buds of Privet from Norfolk provided the material from which I reared the *Trotteria* species to be described below, I am now able to clear up a problem that for some years has puzzled collectors of such galls.

Many years ago Bagnall & Harrison (1917) recorded that one of them (R.S.B.) had found at Warkworth, Northumberland, the flowers of Privet remaining closed, leathery, and each containing a solitary, rather large, 'orange-yellow' larva. They stated that this was not *Placochela* (*Schizomyia*) *ligustri* (Rübsaamen). The larvae of this latter species also live in slightly swollen and unopened flower-buds of Privet but they are stated, for example by Houard, to be gregarious and very bright ('clair') yellow in colour. Bagnall & Harrison (1918) later reported finding this latter species at Hemlington and Hesleden Dene in Durham and also at Bath.

A few years later Dallman (1925) found solitary 'apricot-coloured' larvae in swollen flower-buds of indigenous Privet near Abergele and at Llanddulas in Denbighshire and on cultivated Privet near Storeton in Cheshire. Owing to the fact that he always found solitary larvae in the galls and because of their colour, Dallman was uncertain whether they were *P. (S.) ligustri* or not. But he reared three females in May 1925 and submitted them to me for my opinion. They (Cecid. 122-4) were in fact *P. (S.) ligustri* (Rübsaamen).

In July the same year I found 'orange' solitary larvae in closed Privet flowers at Nenzig, Austria, and at Mühlehorn, Switzerland. In August I collected similar galls at Olantigh, near Wye, Kent. Some of the flower-buds contained several larvae, others contained only one larva. The gregarious ones were mostly 'orange' and bore on the anal segment two up-turned hooks typical of *Schizomyia* larvae. But among the 'orange' larvae there were also what I termed 'pink' ones that bore no anal hooks. The breast-bone or sternal spatula on both were bidentate. The solitary larvae were either 'orange' or 'pink'. The following year (1926) I collected more galls and larvae at Crundale, near Wye, but once again was not successful in rearing any midges.

When I wrote (1949) that I had come to the conclusion that the 'orange' solitary larvae were those of an undescribed species of the genus *Trotteria* which lives as an inquiline in the galls of *P. ligustri*, I had overlooked my old notes in which I had remarked upon the 'pink' larvae without anal hooks and foolishly not realised that the number of larvae found in a single flower-bud might depend to some extent on whether or not they had started to descend to the soil for the winter. I should have written that the 'pink' larvae probably were an undescribed *Trotteria* species, pointing out that the presence or absence of anal hooks was of much more use in diagnosis than either such colour descriptions as 'apricot-coloured', 'orange', 'very bright yellow' and 'pink' or whether the larvae were solitary or gregarious.

Having reared the *Trotteria* species, it can now be definitely stated that the larvae with anal hooks (Cecid. 997-8) are those of *Placochela* (*Schizomyia*) *ligustri* (Rübsaamen), while those without the anal hooks (Cecid. 999 and 9813) are those of *Trotteria ligustri* sp. n. that is described below. As to colour, those of *P. ligustri* may be described as bright yellow-orange and those of *T. ligustri* as orange-pink; but colour terms being notoriously unsatisfactory they should only be used as rough indications. There is the possibility of an *Asphondylia* species, yet to be discovered, causing unopened flower-buds of Privet. The larva of such an *Asphondylia* would be yellow-orange in colour and would have a quadridentate breast-bone but no anal hooks. It would probably be solitary.

Trotteria ligustri sp. n.

Male.—Length 2 mm. Antennae: 2+13+big (=2+15), 2+14+big (=2+16), 2+17; the scape segment elongated, about three times as long as broad; flagellar segments as in *Lasioptera*, sessile, lozenge-shaped, terminal segment incompletely separated in Cecid. 8744 and 8746. Eyes confined to lower half of head, widely separated dorsally but connected by a band of pigment, dorsal half of head with broad scales and hairs. Palpi: four segments, proximal quadrate; second slightly swollen about twice as long as broad; third slightly narrower about the same length; fourth and terminal segment narrower and about twice as long; all with setae and scales. Thorax and abdomen dark brown, dorsal parts covered with scales and hairs, scales on distal abdominal segment long and projecting over genitalia. Wings: surface thickly clothed with short hairs; costa, subcosta and 3rd vein thickly covered with scales; 3rd vein clearly separated from subcosta, curved, reaching margin at about two-thirds length of wing; 5th and 6th veins free. Legs: thickly clothed with hairs and scales, posterior femora swollen, long hairs at distal extremity of tibiae, and to a less extent the metatarsal and tarsal segments, giving a slight impression of spurs; claws bifid, moderately curved, slightly longer than empodium. Genitalia: basal clasp segment long, narrow, with long setae; distal clasp segment slightly swollen basally, ending in a narrow beak-like point, heavily chitinised dorsally, with a few short setae ventrally; upper lamella deeply bilobed, each lobe broad, slightly constricted distally; lower lamella about as long, only slightly emarginate; harpes well developed, about one-third again as long as lamellae and reaching to distal end of basal clasp segment; style as long as harpes.

Type: Cecid. 8746.

Paratypes: Cecid. 8744 and 8745.

Habitat.—Larvae in unopened flower-buds of Privet (*Ligustrum vulgare* L.), sometimes in company with larvae of *Placochela ligustri* (Rübsaamen). The galls were collected on 12th August 1952 and the three males emerged on 16th June, 19th June and 18th July 1953.

Type Locality.—Drayton, E. Norfolk.

When alive *T. ligustri*, as is the case with other species of this genus, is peculiar in appearance since its wings, instead of being folded flat, are heavily creased over the abdomen and so appear very narrow. Fur-

thermore its hind legs are held up in the air with the tarsal segments curved upwards.

No larvae were extracted from the galls from which the above three males were reared, but the following is an abbreviated description of one of the 'pink' larvae (Cecid. 999) found in 1925 at Olantigh, near Wye, Kent, and of a 'pale orange' solitary larva (Cecid. 9813) found in Bluebell Road, Norwich, by Mr. S. A. Manning, 9.9.54.

Larva.—Surface covered with scales. Well-developed bilobed breast-bone, pointed lobes widely separated. Anal segment with four long setae. Head-capsule rather heavily chitinised for a normal phytophagous larva, reminiscent of *Mycodiplosis*, and antennae similarly rather pointed.

Cecid. 999 and 9813.

It has not yet been possible to ascertain exactly how the larvae of *Trotteria* species maintain themselves. They could be predators or inquilines, either obligatory or occasional, or even gall-formers. This last alternative is considered unlikely. The fact remains however that practically all the species of this Lasiopterine genus that have been reared have either been definitely associated with various species of four very closely allied genera of gall midges, viz. *Asphondylia*, *Schizomyia*, *Kiefferia* and *Placochela*, or have been reared from a gall very similar to, if not identical with, one made by one of these species. Thus the type of the genus, *T. sarothamni* (Kieffer), occurs in the swollen pods of *Cytisus scoparius* (Common Broom), so does *Asphondylia mayeri* Liebel. *T. galii* Rübsaamen is found in swollen blossom buds of various *Galium* (Bedstraw) species, so is *Schizomyia galiorum* Kieffer. *T. umbelliferarum* Kieffer and *T. inquilina* Rübsaamen have been definitely associated with *Kiefferia pimpinellae* (F. Loew) in the swollen fruits of several Umbellifers. *T. sarothamni*, *T. galii* and *T. umbelliferarum* have been recorded from England. Other European species, in addition to the above, are *T. lathyri* Rübsaamen that was found in swollen pods of *Lathyrus pratensis* (Meadow Vetchling) just as was *Asphondylia lathyri* Rübsaamen; and *T. dalmatica* Rübsaamen (= ? *T. coronillae* Kieffer), both of which were reported from axillary galls very similar to those of *Asphondylia coronillae* (Vallot) on *Coronilla* species. The only African species of *Trotteria* known, *T. sesami* Barnes, was reared from proliferated blossom and capsules of *Sesamum angustifolium* in company with *Schizomyia sesami* Barnes in Tanganyika Territory. The only bred American species of *Trotteria*, *T. solidaginis* Felt, was reared in association with *Asphondylia thalictri* Felt and, according to Felt, is probably zoophagous. Rübsaamen also suggested that the larvae of *Trotteria* species were predaceous. This possible mode of feeding is supported by the somewhat predatory type of larval head-capsule.

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Some Berwickshire Lepidoptera Records, 1952-54

By A. G. LONG, M.Sc.

I came to Scotland from North Staffordshire in 1945 but it was not until early 1952 that I resumed systematic moth collecting. As a boy I collected in and about my home town of Todmorden on the border of Lancashire and Yorkshire, my favourite locality being Hardcastle Crags near Hebden Bridge. My headmaster at the Todmorden Grammar School, Mr. A. Radway Allen, M.A., B.Sc., gave me much encouragement and identified my specimens. Boys make good collectors and I remember the thrill of making captures which were new to my mentor.

Here in Berwickshire I discovered that I was virtually a lone hand, most of the collecting having been done by a few keen collectors last century, notably Simpson Buglass of Ayton, Wm. Shaw of Eyemouth, Andrew Kelly of Lauder, Robert Renton of Fans near Earlston, John and Adam Anderson of Preston near Duns, and George Bolam of Berwick-upon-Tweed. Bolam compiled a list of the Lepidoptera of the eastern Borders and published it in the Berwickshire Naturalists' Club *Transactions* for 1925-1927, Vols. XXV-XXVI. This list has proved most valuable for comparison and for assessing the status of my own captures. Of course there are many species listed by Bolam which so far I have never seen. On the other hand there are some which are new or have changed their status. For example, when Bolam compiled his list he had only five records of *Deilephila elpenor* L. over a period of nearly a century, the first record being that of P. J. Selby at Twizell (Northumberland) in 1837. Now, this moth turns up each year and I have records from all over the county.

It is my suspicion that parts of Berwickshire, notably the glens, have never been worked thoroughly, probably due to difficulties of transport in the old days. Thus Bolam had no Berwickshire record of *Drepana lacertinaria* L. though he knew it to be widely distributed in Northumberland. From my own collecting I can say that it is also widely distributed in Berwickshire. I have collected larvae readily by beating birches at several localities.

Bolam mentions that *Pheosia gnoma* Fab. is scarcer than *P. tremula* Cl., but I have found that in the glens and valleys south of the Lamermuir where birch is more common than poplar and aspen *gnoma* is easier to obtain than *tremula*. Thus when working a Tilly paraffin lamp this season (1.viii.54) at Kyles Hill near Greenlaw Moor I took eleven specimens of *gnoma*. Nevertheless *tremula* is widely distributed and I have found its larvae several times in different localities.

In the village of Gavinton where I live there are twelve mercury vapour street lamps which were erected in the autumn of 1951. With the aid of a net on a nine-foot cane I have taken many interesting species at these lamps. One of these is *Drymonia ruficornis* Hufn. for which Bolam had no Berwickshire records. In 1952 I took five in the first week of May. In 1953 I had nine, also in the first week of May, and this year I took seven from May 12th to 29th. Usually they alight on the wooden lamp standards and sit quite still about a foot below the light.

Pterostoma palpina Cl. I have found as larvae on willows and pop-

lars in four localities, the best place being Duns Castle woods in late July. I have found the larvae easy to rear in air-tight honey jars.

Bolam had only one record of *Apatele leporina* L. in Berwickshire. It was taken on Duns Law in 1873 by a Duns cobbler who collected moths. In 1953 I found two larvae at Gordon Moss, two at Kyles Hill and one at Lees Cleugh, all by beating birch. Unfortunately three died when full grown, from some unknown cause. This year I found twelve larvae at Gordon Moss and all have pupated successfully.

Amathes castanea Esp. is a species which Bolam records as not common. I found larvae in 1952 and again this year by searching heather in the evenings in May, and successfully reared the moth. A better method of obtaining it, however, is to walk among heather at night with a Tilly lamp when the moths are readily attracted or seen at rest on the heather. In this way I took six specimens on 26th August 1954, including a pair *in cop*.

One of the 'new' Berwickshire species which has come to the village lamps is *Axylia putris* L. though it was known to occur in Northumberland and East Lothian. I took six in 1952 and three in 1953. *Tholera popularis* Fab. has also come to light, three in 1952, three again in 1953, and one to my Tilly lamp this year. It was taken by Buglass at Ayton Castle in 1876.

Another good record from the village lamps was *Aporophyla lutulenta* Schf. on 5th September 1953 (not new). Three specimens of *A. nigra* Haw. also came to these lights in the autumn of 1953 and this year I have taken two more.

In the early hours of 27th August 1954 I was walking along the edge of Greenlaw Moor at Kyles Hill. At the time a rough west wind was blowing, but I was in the lee of the hill. I had my Tilly storm lantern lit and suddenly a moth dropped into the heather where it sat quivering its wings about two yards in front of me. I boxed it and discovered it was *Lithomoia solidaginis* Hb. In early September I took two more by sugaring fencing stabs at the edge of the same moor. So far I can find no records of this species for the eastern Borders. Its occurrence in Berwickshire is probably due to indigenous breeding but in the light of recent records in S.E. England the possibility of migration cannot be ruled out.

Another similar record is that of *Eurois occulta* L. On the night of 24th August 1954 I placed an electric lamp and white cloth on the village green when a rough easterly wind was blowing. To my surprise I found a good specimen of *occulta* sitting quietly on the cloth. The following night I sugared telegraph poles near the village and took another. Bolam says it has been "taken over a wide area at long intervals and singly". These records support the suggestion put forward by Dr. Birkett that *occulta* has migrated southwards this season (*Ent. Rec.*, 66, p. 240).

In July of this year (1954) a friend sent me some larvae of *Hydraecia petasitis* Dbld. from Yorkshire. Since the butterbur plant grows abundantly by the Langton Burn only a few hundred yards from my home I forthwith took a garden fork and botanical vasculum and proceeded to the nearest likely spot to search for the larvae. The first plant which I dug was obviously healthy and contained no grub, so I cast my eyes around and spotted a plant with a mottled yellowish leaf. On digging

I found my first Butterbur larva—another new record. Altogether I collected about two dozen from which I reared a good series of moths.

In August this year I went in search of pupae of *Nonagria typhae* Thun. Wearing Wellington boots I waded into the margin of Duns Castle lake and soon found reed mace plants which had been tunnelled. These were most readily found by their failure to produce a healthy spike of flowers. Altogether I collected a dozen pupae. Last year (1953) I took a male of this species at a Gavinton lamp about two miles from Duns Castle where the nearest known *Typha* grows. Another related species, *Rhizedra lutosa* Hb., also came to street lamps in 1953, one in Duns and two in Gavinton.

On 13th August 1952 I took a moth sitting on a beech tree trunk at Kyles Hill which I thought at the time was a variety of *Apamea secalis* L. Fortunately I kept it, for on later examination it proved to be *Parastichtis suspecta* Hb. This year I took three more by sugaring near the same locality in August.

On a wet and windy night, 15th September 1952, I sugared telegraph poles between Gavinton and Duns. The last but one patch was opposite a lime tree and on it I took a single specimen of *Tiliacea cit-rago* L.; another new record. This year, again at mid-September, I took three more at Nesbit, near Duns.

Perhaps the most interesting moth taken this autumn is *Cirrhia gilvago* Schf. Bolam did not include this in his list though it has been taken once in recent years at Edrom (by Lieut.-Col. W. M. Logan-Home). I have taken eight at sugar and three at light. All were in the vicinity of this village except for one at Kyles Hill. It is not surprising that this species should occur in Berwickshire as there are many elms and this year there was a great crop of fruits due to good pollination weather in early spring.

Another interesting capture at our village lamps was *Pyrrhia umbra* Hufn. on 28th May 1953. This is a coastal species as the foodplant, rest harrow, grows mostly near the sea in this part of the world. *Zanclognatha tarsipennalis* Tr. and *Z. grisealis* Schf. are both new records taken more than once.

This year, whilst beating birches in a wood called 'The Bell' between Cranshaws village and the 'Hungry Snout' in the Lammermuirs I disturbed a moth which I netted and discovered it to be *Colostygia olivata* Schf. Although well distributed in Northumberland, Bolam had no records for Berwickshire. Its foodplant, Lady's Bedstraw, grows commonly about Cranshaws. I find, however, that the place of capture is about fifty yards within the East Lothian boundary.

Venusia cambrica Curt. I have found to be fairly common at Lees Cleugh and Kyles Hill. I have found it by day on tree trunks in the vicinity of rowans and at night it has come to light along with *Lyncometra ocellata* L. Four specimens of *Dyscia fagaria* Thun. were taken this season. Two females were caught flying over heather by day and two males came to my Tilly lamp at night. I also reared a moth from a larva taken on heather in May near the big Dirrington.

Bolam records *Deuteronomos alniaria* L. as rare, but each year some have come to the village lamps. *Selenia lunaria* Schf. also came well to light in 1952 (six specimens) and *Colotois pennaria* L. has also occurred frequently.

A strange omission from Bolam's list for these Scottish Border counties in the east is *Lithina chlorosata* Scop. I have found it to be fairly common locally.

On 17th April 1954 I was surprised to find a specimen of *Ectropis bistortata* Göze in one of my breeding-cages. Unfortunately I never kept a record of the locality in Berwickshire from which the larva came. Bolam had no Scottish record for the eastern Borders.

One 'new' species which puzzles me is *Aleis jubata* Thun. I have taken this moth from several well-separated localities (Gordon Moss, Lees Cleugh, Whitadder near Cockburn Law, and others). I cannot understand how it was missed by the old collectors. This year I reared a series from larvae found in June among lichens on tree trunks and branches. The moth seems more common than *Cleorodes lichenaria* Hufn., which Bolam described as "not uncommon in many places especially north of the Border".

Lastly I must mention *Diarsia florida* Schmidt. I have three specimens which I think belong to this species though their identification requires confirmation. They were all taken at light.

In conclusion I may add that Berwickshire has proved a very interesting county in which to collect. It has a good variety of habitats, moors, heaths, glens, mosses, a rocky coastline, and the well wooded plain of the Merse. One can therefore expect a good representation of our northern Lepidoptera.

Larva Hunting in 1954

By H. SYMES.

Larva hunting is a branch of Entomology that has always made a special appeal to me, and I can look back on many profitable days spent in patient searching or strenuous beating. As time passes by I find myself increasingly inclined to rely on the former method.

The season in Bournemouth began for me as usual with a search for larvae of *Arctia villica* L. These were less numerous than in the past two or three years, and about half of the 22 larvae found during March proved to have been 'stung' by Tachinid flies.

An expedition to Hod Hill with Mr. P. Cue of Ashford on 23rd April to look for larvae of *Euphydryas aurinia* Rott. was very successful. We took 45 larvae without much trouble, but here again the parasites had been at work and about 50% of the larvae produced a cluster of ichneumon pupae. We made two visits to Ringwood, on 30th April and 6th May, and found a few full-grown larvae of *Panaxia dominula* L. feeding on comfrey. I kept a dozen of these, and when only three moths had emerged and it was too late to expect any more, I opened the remaining pupae and found five of them full of repulsive-looking grubs. This is an experience I have never had before in rearing larvae of *P. dominula*.

A morning's beating at Badbury Rings on 4th May was very disappointing. Mr. Cue obtained two small larvae of *Trichiura crataegi* L., but the only other larvae in evidence were *Episema caeruleocephala* L. and *Allophytes oxyacanthae* L. A strong wind and intermittent drizzle made beating an unpleasant job.

On 12th May, rather an earlier date than usual, the Rev. F. M. B. Carr, Dr. H. King and I paid our annual visit to South Wilts in quest of *Apatura iris* L. larvae. Only one was found, and I was the lucky man. It was on a 'family tree' and about eight feet from the ground: most of the lower branches had died, apparently not an unusual occurrence with old sallow bushes. We went on to beat the oak trees, with singular lack of success: not a larva of any interest fell into our trays.

At the end of May I paid a visit to East Kent with the Rev. F. M. B. Carr. Here we were taken by Mr. Cue to a wonderful locality for the larvae of *Lasiocampa trifolii* Schiff. Between us we collected about 60 in an hour. They were lying about on the shingle in the early afternoon, many of them at some distance from broom (*Cytisus scoparius*) which is the usual foodplant at Dungeness. I saw one larva busily devouring an almost invisible plant of *Lotus corniculatus*. We were told by a local bird-watcher that these large hairy caterpillars are picked up by wheatears and given as food to their young, so the cuckoo is not the only bird that finds them appetizing.

A visit to the Downs near Ashford to beat for larvae of *Ptilophora plumigera* Schiff. was only moderately successful. I obtained nine, and Mr. E. J. Hare, who had joined us for the occasion, got six. When I last visited the locality, in 1949, larvae were more plentiful, but since then nearly all the best maple trees have been cut down.

On 9th June the Rev. F. M. B. Carr came with me to search for larvae of *Nola albula* Schiff. in their restricted habitat. It was fine when we started, but a strong wind brought up showers of rain soon after we had started work, and the long grass became very wet. Larvae were harder to find than last year. Searching under very unpleasant conditions I found six, of which three were very small, and Mr. Carr found one. Once more the parasites had been at work: of my three small larvae, one changed its skin very soon and died without feeding again, and two fed up slowly until they reached their last instar, and then remained fasting and motionless: eventually one ichneumon fly emerged from each. Mr. Carr's larva also had been 'stung'. Of the large larvae, one formed a cocoon in the normal way and a moth duly emerged, but the other two pupated without forming a cocoon, and from one of these pupae a moth emerged. After leaving the *albula* ground we searched aspen for larvae of *Brephos notha* L., but without success. Then just as we were leaving the wood the rain really began to come down in torrents.

On 16th June Dr. King took me to a locality where he had taken a number of *Lithophane semibrunnea* Haw. and *L. socia* Hufn. at sugar last autumn. There were some fine beatable trees, but no larvae fell into our trays.

On 4th August Dr. King and I visited the locality for *Apatura iris* in South Wilts and searched the 'family tree' and a good many other sallows for eggs or possibly very young larvae of this species. We drew a complete blank.

My next larva hunt was on 14th August when Mr. A. C. R. Redgrave came with me to Portland in quest of the larvae of *Pyrrhia umbra* Hufn. We searched rest harrow (*Ononis arvensis*) diligently for more than three hours, and each found three: four of the larvae were of the green form and two of the brown. Two of mine were nearly full-fed

and went down before my supply of *Ononis* withered: when this happened my small larva took readily to the flowers of knotgrass (*Polygonum aviculare*) and enjoyed them so much that a few days later, when I offered it a supply of fresh *Ononis* it would not look at it and stuck to the *Polygonum*. It was full-fed on 1st September.

While searching for *umbra* larvae I found a mass of yellow eggs on the woolly underside of a leaf of coltsfoot (*Tussilago farfara*). This seemed a most improbable food-plant, and when the eggs hatched in the course of about a fortnight I was at a loss what to give the larvae—rather fat, off-white little beasts, with black heads. They ate their egg-shells, and this seemed to keep them going for two or three days. After offering them a variety of popular pabula I hit upon the right one, bird's-foot trefoil (*Lotus corniculatus*). When the larvae had changed into their second skin it became clear that they were one of the Burnets (*Zygaenidae*).

On 17th August I paid a hasty visit, curtailed by the inevitable rain, to a Dorset locality for *Cucullia lychnitis* Ramb., and found four small larvae. At this time of the year the larvae are generally nearly full grown, with one or two small ones among them, and the latter invariably die: presumably they are the 'nestletripes' or weaklings of a brood. This year all the larvae must have been backward, for they fed up rapidly and had completed their growth by 4th September.

On 8th September I visited Badbury Rings, where in 1951 the Rev. F. M. B. Carr and I each obtained fifteen larvae of *Apatele tridens* Schiff. in two mornings' beating, and other larvae, such as *A. psi*, *Lophopteryx capucina* L. and *Cilix glaucata* Scop. had been almost embarrassingly plentiful. But what a change there was this year! Apart from one or two common Geometrid larvae all I saw was 2 *A. psi*, 1 *G. quercifolia*, 4 *E. similis*, 3 *L. capucina*, 2 *C. glaucata* and 2 *N. cucullatella*.

While gathering blackberries on some waste ground near Wimborne, Dorset, on 17th September I chanced upon a larva of *Calocalpe undulata* L. After that, I paid more attention to the sallows than the brambles, but did not find another.

Mr. Redgrave and I paid a second visit to Portland on 25th September and found larvae of *Cucullia absinthii* L. locally very plentiful. After a slow start we collected forty-two in little over an hour. We were cheered for a while by the strains of "Music while you search", but this was really intended for the benefit of spectators at a neighbouring football match. About two-thirds of the larvae were in their last instar, and three or four went down next day. We released more than a dozen of the smaller ones as wormwood (*Artemisia absinthium* L.) cannot be obtained near Bournemouth, and although it is said that the larvae will eat mugwort (*A. vulgaris* L.), I found, when rearing a number of them two or three years ago, that they continued to eat stale wormwood when offered fresh mugwort.

My last expedition was on 1st October to Cranborne Chase, where larvae had been so plentiful three years ago. Mr. Redgrave came with me, and our main objective was larvae of *Craniophora ligustri* Schiff. Larvae of all species were very scarce. We beat two full-grown *C. ligustri*, one from ash and the other from privet. Hawthorn yielded three or four *Lophopteryx capucina* L., but no *Apatele tridens* Schiff.

or even *A. psi* L. One *Bena fagana* Fab., one *Lasiocampa quercus* L. and one *Euplexia lucipara* L. were beaten from birch, and a few Geometrid larvae, including one *Cleora lichenaria* Hufn., were seen in the trays, but, as had been the case at Badbury Rings on 8th September, even these were much scarcer than usual. Two large larvae of *Macrothylacia rubi* L. were seen. The return journey was made by way of Hod Hill. Here we beat, from privet, seven more larvae of *C. ligustri*, one of which had not yet changed into its last skin. We saw nearly two dozen larvae of *M. rubi*, trying to sun themselves in sheltered hollows, but the sun was not at all co-operative, though the day was warm. A fine specimen of the Great Green Grasshopper (*Tettigonia viridissima*) was seen among the leaves of a small privet bush, where it was most inconspicuous, and two specimens of this insect in its nymphal stage were seen on the same bush.

Looking back over the season I can only regard it as a poor one for larvae, and in the case of four species, *M. aurinia*, *A. villica*, *P. dominula* and *N. albula*, an unusually large proportion were 'stung'. Almost my only success was with *L. trifolii*, and as I have often heard that these larvae are difficult to rear in confinement, and South says that bred females are apt to be deformed, some details of the results obtained may be of interest.

Starting with thirty-four larvae, one of which was accidentally killed, I bred twenty-six moths, twelve males and fourteen females, of which one male and three females were deformed. The main item of their diet was broom, on which most of them had been found, but they appreciated a little variety, such as laburnum (convenient for town-dwellers), bird's-foot trefoil, purple clover and, most of all, lucerne. They were not interested in sallow or grass. It is essential to give these larvae plenty of room, especially when in their last instar. I kept mine in four good-sized cages, but even so a few of the larvae were disturbed by others when starting to form their cocoon, a job over which some of them took an inordinately long time. Five of the disturbed larvae failed to form a cocoon and pupated in the open, and to my surprise two of these pupae produced moths, albeit not perfect specimens. The moths emerged over a long period, the first appearing on 9th August and the last on 7th September. No fewer than six emerged during a prolonged thunderstorm on the afternoon of 22nd August. Three of the pupae from which moths did not emerge were found, when removed from their cocoons on 2nd October, to contain a densely-packed mass of parasitic grubs, a disgusting sight.

An Entomologist in Argentina

XI. Bahia Blanca and the Río Negro Valley

By KENNETH J. HAYWARD, D.Sc. (Hon.), F.R.E.S.

As there was still money available for travelling, I was able to take out a second collecting expedition towards the end of 1946, being again accompanied by Dr. Willink. This gave me at last the opportunity of doing what I had long wished, paying a visit to that part of Argentina that lies south of the thirty-fifth parallel. Although I knew most of the country north of this line, it had never been my lot to have

travelled anywhere below it, a trip that had been planned for me for the spring and summer of 1931-32 having fallen through. On this occasion I was to have followed the railway south and across the country to Zapala and then continued on to Tierra del Fuego as best I could, keeping near the eastern slopes of the Andes.

After some days spent in Buenos Aires we left early on the morning of November 8th for Bahia Blanca. Until near the journey's end the land on either side of the line as far as one can see is level plain and not a tree grows anywhere that has not been planted by man, in fact we were not to see any autochthonous trees till we reached San Martín de los Andes towards the end of our trip nearly a month later. The only relief from this dreary expanse of flatness came during the early afternoon when for a time we ran through a long stretch of semi-inundated fields abounding in all kinds of birds. In these marshes were duck and teal and innumerable black coots with their fluffy families, heron and large bands of the *chajá* or crested screamer and flocks of seagulls that had come inland to feed and occasionally a flamingo, stork or upland goose. It was not only a welcome break in the monotony of the journey but brought back memories of many happy hours spent shooting in like places in other parts of the country. Only on approaching Sierra de la Ventana at sunset did the aspect change. Now we entered a wide shallow valley planted everywhere with still green corn amongst which outcrops of grey rock and patches of brown grasses growing on shallow soil made a patchwork of colour.

At Bahia Blanca we found that the railway had mislaid our luggage which was eventually located at Cipoletti, a long way ahead. This was a trick they played on us again when we detrained at Fuerte General Roca on a later date but on this second occasion we recovered the lost baggage early the following morning. Here in Bahia Blanca we had to wait two days before we could begin to work in earnest as all our collecting gear was amongst the cases that had gone astray.

Bahia Blanca is a fine modern city but its surroundings do not lend themselves to collecting. It seemed that every yard of fertile soil had been planted with corn amongst which grew yellow mustard, and this apart from some thistles growing in odd corners seemed about the only flower in bloom. Our collecting was confined almost entirely to the roadsides and was unproductive. There was generally a strong wind blowing if not a gale, but annoying as we found it we were to experience much worse as we moved westwards across the country.

At that time Bahia Blanca was suffering from a plague of flies. I have experienced these pests in native markets and villages along the Nile but never have I seen anything to compare with what we had to put up with during our short stay. When we passed the refuse dumps that lay a mile or so beyond the city limits the air was filled with a constant drone that I took at first to be the noise of distant planes flying over the naval base whilst in nearby fields of corn every ear was black with a clinging mass of flies so that from a short distance it seemed that the wheat was suffering from a severe attack of smutty fungus.

One morning we took the train to Médanos, about an hour's journey to the west and where in our original itinerary (based on a study of the map) we had planned to spend a few days. Ten minutes after

our arrival a severe thunderstorm broke and the heavens opened and although the storm was short all chance of collecting seemed to have been washed out. As there was no return train till the evening we decided to kill time by walking back to one of the intermediate stations, but a gale that followed the rain soon dried the vegetation and before we had reached the sand dunes that give the place its name, we were able to begin work. This was our first experience of the fierce winds we were so often to encounter and we found collecting difficult, nor did we ever get accustomed to working under such conditions. Amongst the coarse dune grasses there were numbers of scarabaeid and tenebrionid beetles and these with other insects we found amongst the road and laneside vegetation enabled us to make a fairly reasonable showing before we reached Mascota and took the train. It was in fact the only occasion on which we found much of interest during our stay in Bahia Blanca. Four days proved sufficient to convince us that we were wasting our time in this locality. Not only were insects scarce but the season was late, nor did we ever come across any really satisfactory place for collecting. In consequence we moved on to Río Colorado, a small country town just over the border into the national territory of Río Negro, a hundred and twenty miles west.

Río Colorado which seemed to have no specific function apart from being on the main road to Buenos Aires, and before the bridge was built over the Colorado (which did not belittle its name), the site of the ferry, was completely surrounded by sandy desert densely covered with low vegetation, chiefly *Chenopodiaceae*, with scattered areas of *jarilla* (a *Larrea*) and here and there mesquite and other xerophilous trees and bushes. Flowers were plentiful, chiefly yellow daisies of which there were several species and we were lucky in that our arrival coincided with the flowering of one of the *Prosopis* whose blossoms were attracting great quantities of flies and small hymenoptera. In fact about half the eight to nine thousand insects we took here were hymenoptera. These were easy to catch on the *Prosopis* and it was only necessary to slip a wide-mouthed killing jar under the flower and tap the twig to capture often eight or ten specimens at a time. At least eight of the bees we collected in this area were new to science and I think ours was the first big collection made in the locality which is still too far east to contain many species of the much better known Chilean fauna.

We spent the first morning on some rough ground to the south of the village but there were few insects apart from numbers of the satyrid *Cosmosatyrus chiliensis* (that ranges from Tierra del Fuego northwards as far as Bolivia) which were just emerging and although they were difficult to catch amongst the thorny undergrowth, I managed by concentrating on them to obtain a good series which has recently come in very useful in my study of the satyrid fauna of Argentina. I did not however ever see any of the silver satyrid (*Argyrophorus argenteus*), one of the wonders of the butterfly world, although I have heard that it flies in the locality. Perhaps we were too early as I saw it on the wing in the mountains behind Mendoza some two months later.

We had more luck when we went out after lunch as we quickly stumbled on what was undoubtedly the best collecting ground in the neighbourhood. It was a little to the east of the town and about ten minutes' walk from it and here the *Prosopis* was in flower and there

were large patches of yellow daisies on which we found two or three species of bright coloured buprestid beetles, in fact we continued to find them on these flowers till we reached Zapala at the extreme western limit of our exploration. In the matter of flowers we were perhaps fortunate as when we passed through this locality on our return trip towards the end of December everything was dried up and brown.

As we turned homewards towards dusk that first afternoon we were surprised to see a hare coming along the road towards us, one of the imported European species and not the local Patagonian hare, *Dolichotis australis*. I thought that it had not seen us and would on becoming aware of our presence be off like a shot. This was not the case however and when but a little distance separated us it stopped and sat up in the middle of the road and watched us till we were quite close before turning tail to scamper down the road for about a hundred yards. Here it again turned to face us, occasionally advancing a few yards in our direction. This manoeuvre was repeated several times till we reached the outskirts of the town when the hare disappeared into the scrub. I should perhaps have forgotten the incident had the same thing not happened on two or three subsequent occasions when sunset found us homeward bound along this road.

(To be continued)

Notes on Microlepidoptera

By H. C. HUGGINS, F.R.E.S.

Margaronia unionalis Hübn. I have more than once written on this insect in this column, particularly on its increasingly frequent occurrence in England. It has always been one of my favourite insects, a preference I acquired from B. A. Bower who taught me micros. Bower had a fine female *unionalis* he took, as far as I can remember, in Gracechurch Street, London. He always looked at this with mingled pride and misgiving, pride that he had taken it himself and misgiving that it might have been imported. However, he pointed out that its food-plant did not make it a likely subject for importation and that if it flew over it might as well have come down in London as anywhere else.

This year there appears to have been a number of *unionalis* about in south-east Essex. The only previous record I have is the one taken in his bathroom at Leigh-on-Sea by Mr. Dennis Smith on 29th August 1947. At the beginning of September this year, however, Mr. D. More of Hockley found two *unionalis* sitting on the outside of his m.v. trap in the early morning. Unfortunately he did not recognize them so only kept one, which I saw on the boards, a good male. On 8th October, a warm night with a fine drizzle falling, I saw a *unionalis* sitting on the transparent plastic inside my lamp here (65 Eastwood Boulevard, West-cliff-on-Sea). I promptly cut off the light and brought the trap in and boxed the moth, a female in perfect condition. On 20th October at 6.30 p.m. my wife called me out to look at a *nupta* and other insects flying round the lamp and I saw another female *unionalis* sitting on a flowerpot about a yard from the light, which I promptly boxed. It was in perfect condition but its wings were not of quite such a dazzling

white as the first and I think it probable it came in the same flight. It seems, from being one of our greatest rarities, *unionalis* is now becoming quite frequent, like *obstipata*.

Beirne's *British Pyralid and Plume Moths*. I have now received a copy of Mr. S. N. A. Jacobs's new coloured illustrations to this book. They are extraordinarily good and are the best I have ever seen of this group, not even excluding the hand-coloured ones in 'Leech'. These were exceedingly good, but suffered from the usual disadvantage of hand-coloured figures, of having been coloured by some tame artist who did not know much about the insects. In my copy *cirrigerella* is barred like *sinuella* and *sticticalis* chocolate coloured.

With these illustrations Mr. Jacobs has definitely placed himself in the succession of entomological artists whose names will be mentioned in all future reviews of the subject. They are no better than those he has furnished to various papers in the 'South London' *Proceedings*, but with them he is stepping before the general public. Fine though they are, however, no mechanical process can do perfect service to Mr Jacobs's originals, as anyone who has had the pleasure of seeing him at work can testify.

There are two small points to which attention should be drawn. On Plate 15 the names of figures 11 and 12 are reversed: 11 is *baliodactyla* and 12 is *tridactyla*. Possibly some system of numbering has caused this as a similar error occurs in the 'South London' *Proceedings*, 1952-53, Plate VIII, where figure 6 is *Simaethis fabriciana* L. and figure 25 *S. pariana* Clerck; these names are reversed in the key on the opposite page. Figure 3, Plate 15, appears to have been drawn from a faded specimen: I have bred a large number of *ochrodactyla* and have never seen a fresh one of this colour, the usual tint being practically the same as that of the following figure of *pallidactyla*.

A noteworthy achievement; let us hope that one day Mr. Jacobs will illustrate a monograph of the Tortrices.

Notes and Observations

HELIOTHIS ARMIGERA (HUEB.) IN HAMPSHIRE.—In this not very notable year for migrants it may be worth recording that a male of this species came to my m.v. trap on 17th October.—P. J. BURTON, Godshill Wood, Fordingbridge, Hants. 6.xi.54.

PALPITA UNIONALIS (HÜBN.) AT WESTON-SUPER-MARE.—In this year in which there seems to have been so little of interest to report I feel I should record the capture of a specimen of *Palpita unionalis* in my moth trap at Weston-super-Mare this morning (19th October).—C. S. H. BLATHWAYT, 27 South Road, Weston-super-Mare, Somerset. 19.x.54.

LITHOMOIA SOLIDAGINIS HÜB. IN HAMPSHIRE.—I see from the October number of the *Record* that several specimens of *Lithomoia solidaginis* Hüb. have been taken in southern England. I found one in my m.v. light trap in my garden here (I am just south of the Berkshire border) on the morning of 28th August 1954.

As I had just returned with my caravan from Inverness-shire, where *L. solidaginis* was just emerging, I came to the conclusion that the specimen in my light trap must be a stowaway that I had inadvertently brought with me. It now appears certain that it was one of the wave of immigrants which apparently arrived in this country in late August. Though it is perhaps slightly darker than my series of Scottish *solidaginis* it does not differ significantly from them.—Air Marshal Sir ROBERT SAUNDBY, Burghclere, Newbury, Berks. 21.x.54.

LEUCANIA UNIPUNCTA HAW. IN DORSET.—On 25th September, among four moths attracted to a m.v. light operated by Mr. A. C. R. Redgrave at Portland, was a *Leucania unipuncta*. The other three were *Eumichtis lichenea* Hb., *Agrotis ypsilon* Rott. and *Amathes xanthographa* Schiff.

An interesting and attractive visitor was a small bird, one of the warblers, that came up over the cliff and settled on the flex beneath the tripod. Here it sat perfectly still and rested for several minutes before flying away inland. There was a strong west wind blowing, but the night was dark and not too cold. The moths (except *A. xanthographa*) arrived between 8.0 and 8.15 p.m. Heavy rain set in about 9 p.m. and curtailed our operations. The paucity of moths was probably due to the imminence of this downpour.—H. SYMES, 52 Lowther Road, Bourne-mouth. 16.x.54.

COLIAS CROCEUS VAR. HELICE AT SWANAGE.—While walking over a field a mile from the town on Wednesday, 6th October, I was surprised to see a specimen of var. *helice* flitting around, and alighting on the flowers of the bristly ox-tongue. The time was noon and the weather fine with a few clouds about. She laid a dozen eggs, spread over four days, but they have failed to hatch. I have been in many parts of the county during the last three months, but have only seen three ♂♂ *C. croceus* in all that time.—LEONARD TATCHELL, Rocklight Cottage, Swanage, Dorset. 12.x.54.

EUROIS OCCULTA L. IN IRELAND.—The occurrence of this species in Westmorland as recorded in the October *Record* reminds me that I took two specimens at Tully, west of Spiddle, Galway, Eire, on 3rd August 1953, which was a damp sultry night. As recorded in O'Donovan's List (1936, p. 53) "Only two Irish specimens taken, both seen by Kane. One at Knockmaree, Sligo (Russ) and the other near Derry (Campbell)".

There were a number of what appeared to be the same species seen at light on the same night but only two were taken, for until I examined them next day I took them to be *X. monoglypha* Hufn.—Rev. D. MURRAY, The Lodge, Stoke Golding, Leics.

LITHOMOIA SOLIDAGINIS HÜB. AN LEICESTERSHIRE.—With reference to the records of *L. solidaginis* in the southern counties (*Ent. Rev.*, 66: 255) it may be of interest to note that I took two specimens of this moth at my m.v. trap in Hinckley on 30th August and 1st September respectively. Needless to say I was surprised to see the species in a lowland industrial area a far cry from the moors, but as I am new to the region I have not made haste to report these captures. The specimens do not differ markedly from those I have taken on the Westmorland moors (where the species was fairly common this summer).—J. E. THORPE, Goulburn House, London Road, Hinckley, Leics. 16.x.54.

UNEXPECTED SPECIES AT LIGHT IN KENDAL, WESTMORLAND, IN AUGUST.—Apart from the strange influx of *E. occulta* in the N.W. this year, I was surprised to find single specimens of *Zenobia subtusa* Schiff., *Enargia paleacea* Esp., *Tiliacea citrugo* L. and *Celaena leucostigma* Hüb. in my light trap during August. The first of these occurs at Leighton Moss, ten miles south of Kendal, where also does the last, but neither species has appeared in the town before. *T. citrugo* occurs near Windermere, but here again the species was unknown in Kendal itself. *E. paleacea* was reported once by Forsythe as having been taken in the larval stage on Meathrop Moss, but this is the first record for the imago in the county.—J. E. THORPE, Goulburn House, London Road, Hinckley, Leics. 16.x.54.

Dr. H. B. D. Kettlewell will not be returning to Africa this year as he expects to be permanently in this country, and his address will be:—Genetics Laboratory, Department of Zoology, Parks Road, Oxford.

Obituary

It is with regret that we learn of the untimely death of Dr. Leslie S. Coleman as a result of a motor accident on his way to the Research Laboratories at Saanichton, British Columbia, on 14th September 1954. Dr. Coleman was one of the pioneers of economic entomology in southern India, particularly in Mysore, for which state he was at one time the Government Entomologist. It was after him that Don Ignacio Bolívar y Urrutia in 1910 named the serious Acridid pest *Colemania sphenarioides*, well known as the Deccan or Jola Grasshopper.

He had retired for many years from the Indian Service but retained a keen interest in entomology on his return to his home in Canada and had for some time conducted researches into the cytology of Orthoptera. His recent visit to India, in which he renewed old acquaintances, has been noticed in the current volume of the *Indian Journal of Entomology*. His passing will doubtless be keenly felt both in Canada and in India.

D. K. McE. K.



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EXCHANGES AND WANTS

Wanted.—Larvae of *Agrotis segetum*, *A. exclamatoris*, *Euxoa nigricans* and *Triphaena pronuba* for experimental work. Please report to *D. K. McE. Kevan*, School of Agriculture, Sutton Bonington, Loughborough, Leics.

Wanted.—20-drawer Lepidoptera cabinet, preferably single tier. Would purchase collectors' duplicate set insects.—*W. F. Davidson*, 9 Castlegate, Penrith, Cumb.

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