

Apatura iris.—About the third week of July, my brother brought us a wing (♂) of this species found in his garden, on the lawn, and informed us that he had seen one fly past him. On August 19th, he saw a worn ♀ flying about a willow, also in his garden, which may have been ovipositing. Unfortunately, we shall not be able to search for larvæ there next year, as he is changing his residence.

Dryas paphia.—July 24th-August 9th and August 29th. The ♂s as common and as ragged as usual. A very few ♀s seen.

Epinephele tithonus.—August 6th. Only one ♂ seen, at Llandogo.

Hipparchia semele.—August 8th. As I was passing by a thistle, in a field at Tintern, I noticed one of these butterflies (a ♂) drop, rather than fly down from it, on to a dry patch of cow-dung lying by the side. This is the only one we have seen in the neighbourhood, and are rather surprised at not having met with more, as there are plenty of suitable-looking spots on the hills around where one would expect to find them.

Agriades corydon.—August 11th. One ♂ at Tintern, already noted in the *Ent. Record*, p. 241.

Eugonia polychloros.—August 29th. One was found by my father in the house, fluttering on a window.

My best record for one day was on August 6th, when I noted seventeen species, namely:—*Agriades sylvanus*, *Adopaea flava*, *Rumicia phlaeas*, *Polyommatus icarus*, *Bithys quercus*, *Strymon w-album*, *Pieris brassicae*, *P. rapae*, *P. napi*, *Gonepteryx rhamni*, *Vanessa io*, *Aglais urticae*, *Polygonia c-album*, *Pyrameis cardui*, *Epinephele jurtina*, *E. tithonus*, and *Enodia hyperanthus*.

Some notes on *Camptogramma fluviata* with descriptions of new aberrations.

By Paymaster-in-Chief GERVASE F. MATHEW, R.N., F.E.S.

This species never appears to be abundant anywhere—one never hears of its capture in any numbers—only a stray one now and again turns up in widely separated localities, and at no fixed time of the year. Is it sluggish in its habits? Does it dislike to fly? One would think not, for it has been taken occasionally at light, and the first I ever met with, a male, was disturbed out of a bed of wild peppermint growing in one of the hollows on Braunton Burrows, North Devon, and flew off at a good pace, and I had to run to catch it. This was as long ago as August 25th, 1857, and, on July 23rd, the following year, one of my brothers caught a male at Croyde, a few miles from Braunton, but I have no record as to whether it was taken by day or night, sitting or flying. A good many years elapsed before I met with it again, for it was not until July 24th, 1901, that I took a male, at night, on some reeds, in a reed-bed near Dovercourt; on September 22nd, 1903, I boxed a pair, *in cop.*, about midnight, sitting on a barbed wire fence facing the sea, near Harwich; and, on October 12th, 1904, I took a fine fresh female at rest, by day, on a wall in High Street, Dovercourt, and kept her for eggs, but she died without depositing any, so I fancy she had never paired, as she was in such fine condition when captured.

The female of the pair taken *in cop.* on September 22nd, 1903, was kept for eggs, and confined in a chip-box with some fibres of tow, and fed on syrup placed on a little piece of sponge, and, in the course

of a few days some 60 or 70 eggs were deposited on the tow. The eggs began to hatch on October 2nd, and the young larvæ were placed in a small breeding-cage upon a growing plant of groundsel, upon which they fed up very rapidly, and by the 28th of the month most of them had spun up. The first moth appeared on November 14th, and the last one on November 30th. Fifty-nine moths were bred, and they were very fine examples and nearly twice the size of their parents. Several pairs were confined together in small breeding-cages, and supplied with food on a piece of sponge. Only two pairs were noticed *in cop.*, and, strange to say, both of the females, although kept a long time, died without laying a single egg. The females of two or three other pairs, that I had not seen *in cop.*, deposited three or four hundred eggs upon fibres of tow and pieces of moss. About two-thirds of these proved fertile, and the first larva hatched on December 8th, and, of the remaining eggs that did not hatch, a great many contained fully formed larvæ. On December 21st I counted over 200 larvæ feeding; by January 6th many were nearly fullgrown, and, on the 9th, I noticed many of them spinning up, so they only took about a week longer than the first brood. The first moths, 5 in number, emerged on January 22nd, and the last on February 29th, 102 in all. A few of the larvæ failed to spin up, and a great many pupæ did not produce moths, for only about half were bred. The larvæ and pupæ were kept in a bathroom where the temperature seldom fell below 54° during the night, owing to the hot water cylinder being next door in the drying cupboard, with only a thin wooden partition between, and the breeding-cages were placed on a shelf attached to this partition. Of the 102 moths of this second brood several pairs were kept for eggs, but most of them died without pairing or laying, and the 3 or 4 females that did lay only produced a small number of eggs. These began to hatch on February 11th. The imagines of the second brood were considerably smaller than those of the first brood, being about the same size as their grandparents, and the third brood, which began to appear on April 2nd, were still smaller, and their progeny, who began to emerge on June 10th, were such dwarfs that I did not care to carry on the brood any further.

The larvæ of *C. fluviala* are very sluggish in their habits, feed chiefly at night, and during the day hide away among the lower stems of their food or beneath the leaves.

Among the several hundred moths bred there were sundry examples of two or three distinct and interesting aberrations, which I think are worthy of names and descriptions, so I append them below:—

(1) *C. fluviala* ab. *marginata*, n. ab.—Male, fore- and hindwings typical, but beyond the narrow hindmarginal black line there is a conspicuous pearly-grey fringe. Female, forewings purple-brown; a dusky transverse median band, widest near the costa, crosses the wings obliquely, and encloses the discoidal spot, which is dark and minute, and surrounded by a conspicuous whitish ring; between the median band and base of wings, there are two faint and rather zigzag whitish lines crossing from costa, where they are most distinct, and form a sharp angle to inner margin; about half way between the median band and outer margin, there is a similar angulated wavy line, and beyond it, and quite close to the outer margin, there is another, but fainter, wavy line; at the apex of the wings there is a short oblique dusky patch pointing downwards; the outer margin is inwardly distinctly bordered by a narrow black line, which, in some specimens, viewed through a lens, looks as if it was composed of a series of spots arranged closely together in pairs,

and beyond this is a conspicuous pearly-grey fringe. The hindwings are grey, faintly tinged with rose colour towards the anal angle and inner margin, and with several dark and pale indistinct transverse wavy lines, and with the black hind marginal line and pearly-grey fringe as in the forewings. Of course, the chief character of this aberration is the conspicuous pearly-grey fringe, which is absent in typical examples.

(2) *C. fluviata* ab. *olivacea*, n. ab.—In this aberration, which is rare, and seems to occur only among the females, the purple-brown of the forewings is replaced by olive-brown, but all the other characters are the same as in typical specimens. I have, however, two examples of this aberration which possess the conspicuous pearly-grey fringe characteristic of ab. *marginata*, but do not think it necessary to give them a varietal name.

(3) *C. fluviata* ab. *obsoleta*, n. ab.—In this aberration, which is confined to the males, the dark median band is nearly obsolete, or altogether absent.

With reference to my query at the beginning of this paper, as to the retiring habits of this species, I may mention that, on several occasions when removing bred moths from the breeding-cages, some of them have escaped, but instead of flying towards the window, as most Geometers do, or to the ceiling, they almost always fluttered low and gently downwards, and hid themselves beneath a table or in some dark corner of the room. The one I found in the daytime in High Street, Dovercourt, was sitting on the wall within an inch of the ground.

Contribution to the life-history of *Heliothis peltigera*.

By ALFRED SICH, F.E.S.

On July 13th, 1906, Mr. Eustace R. Bankes took, in the Isle of Purbeck, a ♀ *Heliothis peltigera*, and subsequently obtained ova, one of which, and the larva produced from it, owing to the kindness of Mr. Bankes, form the subject of these notes.

OVUM.—Upright, conoid, bluntly rounded towards the top, with the apex itself containing a depression in its centre, raised above the general surface. Height, 0.52mm. Diameter, at the base, 0.5mm., at the top, 0.23mm. Basal outline not regular. Sculpture: the shell is very finely pitted; there are about 35 primary ribs, which are reduced in number as they approach the micropylar area, where they are but fifteen. These ribs are irregular, rather thick (0.016mm.), somewhat keeled. They decrease by running into each other, or by ceasing more or less abruptly. The interspaces between the ribs are about equal in width to the breadth of the ribs. About twenty weak wrinkles encircle the egg, more defined towards the base and summit. The micropyle lies at the summit, on an elevation, down the upper slopes of which the cells of the neat and conspicuous rosette extend. The apex of this elevation is depressed, and, in the centre of the depression, is a raised point, from which the twelve elongated kite-shape cells of the rosette radiate. These cells vary much in length, the longest being 0.05mm. and the shortest about half that length. [Described, July 18th, 1906, from a single ovum, just before hatching. The black head of the larva and its yellow body were distinctly visible through the thin, almost colourless, eggshell. On hatching, the larva cut a hole in the wall of the egg near the summit, but left the shell otherwise uneaten.]

HABITS OF LARVA.—After hatching, the slender, pale yellow, larva hid itself in the flower-head of *Trifolium repens*, with which it was supplied, boring into the florets. It appeared particularly fond of the anthers. It hatched on July 18th, and, on the morning of the 22nd, it had spun a



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