Pyrgus accreta Verity A few of the form *centralhispaniae* Verity near Albarracin.
Spialia sao Hbn. (=*sertorius* Hffmsgg.) A few at Riano and Albarracin.
Spialia proto Ochs. Quite common in the Albarracin area.
Adopaea lineola Ochs. Some few round Albarracin.
Adopaea thaumas Hufn. Only near Riano.
Adopaea actaeon Rott. Only taken near Bilbao.
Ochlodes sylvanus Esp. A few observed round Albarracin.

Moths on the whole were few and far between even by day and the only locality that produced even Burnets to any extent was Moscardon where I recorded *Zygaena loti arragonensis* Staudinger, *Zygaena lonicarae intermixta* Verity and *Z. nevadensis* with *Procris geryon* Hbn. *Coscinia striata* L. was also flying by day in that region.

Three Oaks, Woking. 18.x.66.

Notes on the distribution of *Plusia festucae* L. and *P. gracilis* Lempke mainly in North-west England

By Dr. Neville L. Birkett

The publication by Lempke (1966) of his discovery that the species hitherto known as *Plusia festucae* L. in fact consists of two species having distinctive facies and showing marked structural differences has stimulated reappraisal of British specimens labelled previously as '*festucae*'. As Bretherton (1966) points out it is of interest now to know the distribution of true *festucae* as well as the new species—*gracilis*.

The fact than in my small series of '*festucae*' I had also at least one specimen of *Plusia gracilis* Lempke became known when I was showing a photograph of presumed *festucae* in the course of a recent lecture to the South London Entomological Society. With his usual perspicacity the Baron de Worms recognised my slide as being of the new species. Following this lecture I re-examined my ten specimens and obtained a copy of Lempke's paper. It then became abundantly clear that I had both species and that, on making genitalia preparations, the structural differences are well-marked and easily recognised. Having correlated in my mind the differences of structure with the differences of facies I set out to see as many local '*festucae*' as possible. Thanks to the willing co-operation of a number of our local collectors I have now been able to examine nearly 100 specimens and it is the results of this survey that are now presented.

Distribution of *P. festucae* L.

Westmorland:—Kendal in light-trap, 15th July 1951, 10th July 1954, 15th July 1954 (in col. N.L.B.). Hutton Roof nr. Kirby Lonsdale, 30th June 1952, 8th September 1959 (in col. J.V.H.). Ings Marsh nr. Staveley, 12th July 1911, 12th July 1913, 29th July 1913, 8th July 1914 (3 specimens), 9th July 1913 (all taken by Tom Smith and now in col. N.L.B.). Martindale, 23rd July 1955 (col. G.A.K.H.).

Lancashire:—Baycliffe nr. Ulverston, 10th June 1946, 13th June 1960 (in col. J.H.). Leighton Moss nr. Silverdale, 5th July 1959 (2 specimens), 24th July 1960, 23rd September 1964 (in col. C.J.G.). Morecambe, 21st June 1959, 11th August 1959 (2 specimens), 4th June 1960 (2 specimens), 22nd August 1960, 2nd September 1962 (in col. C.J.G.). Penwortham nr.

Preston, 6th August 1947 (in col. J.H.). Bolton, two specimens in col. G. B. Routledge at Tullie House, Carlisle, without data other than locality. Warrington, 1895, J. Collins. No other details (in col. P.M.C.).

Cumberland:—Tarn Lodge nr. Carlisle. Ten specimens in G. B. Routledge collection at Tullie House, dated 21st June 1901. Though there is no indication, from their appearance this could have been a bred series. Penrith, 25th June 1955, 13th July 1955, 25th August 1955 (taken by W. F. Davidson and now in col. P.M.C.). Glencoyne Wood nr. Patterdale, 12th July 1955 (taken by W.F.D. and in col. P.M.C.). Kirkoswald, 9th July 1964 (in col. P.M.C.). Cotehill, bred F.H.D(ay) (in col. P.M.C.). Threlkeld, 17th July 1964 (2 specimens in col. J.V.H.). Buttermere, 27th June 1928 (in col. G.A.K.H.). Great Salkeld, 22nd July 1955 (in col. G.A.K.H.).

Cambridgeshire:—Ely. Four specimens in G. B. Routledge collection at Tullie House without further data.

Kent:—Deal, 25th August 1933 (in col. C.J.G.).

Dorset:—Bryanston, 19th August 1935 (in col. G.A.K.H.).

Caernarvonshire:—Lleyn, 31st August 1952 (in col. N.L.B.).

Inverness-shire:—Kincraig, 23rd June 1959, 4th July 1959 (in col. J.V.H.).

Perthshire:—Rannoch, one specimen in G. B. Routledge collection at Tullie House. No data other than locality.

DISTRIBUTION OF *P. gracilis* LEMPKE.

Westmorland:—Kendal, in light trap, 20th July 1950, 5th, 7th, 15th and 21st July 1952, 18th July 1955 (in col. N.L.B.). Hutton Roof, 2nd July 1952, 2nd July 1953, 26th July 1955 (in col. J.V.H.). Heversham, July 1966. (Two specimens in col. G.R.). Witherslack, 15th July 1955 (6 specimens), 3rd, 6th and 15th July 1957 (in col. J. H.). (Taken also *circa* 11th August 1966 by Baron C. G. M. de Worms.)

Lancashire:—Holker Moss, 19th June 1957 (in col. J.H.). Fell Foot nr. Newby Bridge, 9th July 1955 (in col. J.H.). Roundsea Wood Nature Reserve, 28th June 1959 (in col. C.J.G.).

Cumberland:—Threlkeld, 2nd August 1963, 3rd July 1965 (in col. J.V.H.). Kirkoswald, 27th June 1959, 23rd July 1960 (in col. P.M.C.). Great Salkeld, 8th July 1955, 2nd July 1955 (2 specimens) (in col. G.A.K.H.). Gilsland, 23rd July 1945 (in col. G.A.K.H.).

I have not seen specimens of this species from outside our area in any of the local collections.

On present evidence the two species seem to be truly sympatric. Further work might show, however, that each has its own ecological preferences. Because *P. festucae* has always been considered a reasonably common species it has suffered neglect from collectors once they have got a small series. Now that our eyes have been opened there is scope for considerable work in elucidating the true distribution of the two species. In Holland Lempke notes that both species occur in marshy ground but that *gracilis* is more strongly bound to this biotope. The data here presented shows no definite indication either way on this point.

FLIGHT PERIOD

Lempke notes that both species are bivoltine in Holland. The first brood of *gracilis* is said to be more abundant than the second whereas the reverse is said to hold for *festucae*. The evidence given above does not support these conclusions—for northern England, at any rate. If the composite data for *P. festucae* are graphed they show that the species

may occur from the beginning of June to near the end of September. However the curve so formed is bimodal with a peak of records in the first three weeks of July and a secondary peak in the third and fourth weeks of August. The earliest date for *festucae* is 4th June (1960) and the latest 23rd September (1964).

P. gracilis seems to be essentially a July insect and nearly all the records are in this month. The earliest date being 27th June (1959) and the latest 2nd August (1963)—but I have noted already that the Baron de Worms took specimens at Witherslack on 11th August 1966. Pelham Clinton (1966) gives the dates for six Scottish examples of *gracilis* and these are all for July except one, which is for 1st August.

The status of these two species is a matter of considerable interest. No doubt the coming season will provide opportunity for a considerable expansion of our knowledge of both distribution and ecology. Should any collectors who have visited the Lake District have any records of these species I should be very grateful if they would let me have them for inclusion in the list of lepidoptera occurring in the Lake Counties which is in preparation.

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Kendal Wood, New Hutton, nr. Kendal.

English Entomological Methods in the Seventeenth and Eighteenth Centuries

PART II: WILKES AND DUTFIELD

By RONALD STERNE WILKINSON, F.L.S., F.R.E.S.

We have seen that when Eleazar Albin completed publication of his *Natural History of English Insects* in 1720 many sorts of apparatus and collecting methods had long been used, some being rudimentary forms of those in our present *repertoire*. The early eighteenth-century entomologist was equipped with pill boxes, collecting box of the 'chip' design, beating stick, lantern, pincushion and net of uncertain style; his searching procedure was much like ours, and when located the quarry was despatched by pinching, pinning or sulphur fumes if of a scaly-winged nature, by drowning in spirits if not. Larvae were reared in variously designed breeding boxes. The collection was often mounted on pins and kept in store boxes or cabinets, although other methods were in use.