

## YORKSHIRE EPHEMEROPTERA.

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The brief summary which follows, of the results of our work on the Ephemeroptera during 1931, is intended as a supplement to the investigations previously carried out and reported upon in *The Naturalist* and elsewhere by Messrs. Percival and Whitehead. The present contribution includes three species which are additions to the county list, so that the number of species now recorded for Yorkshire is 29 out of 42 known to occur in Britain.

*Ephemera danica* Müll. Nymphs of this insect occurred at Bramham in February, and in profusion at Meanwood Beck, Leeds, on 11th May. We have seen no adults of this usually common species in the county.

*Ecydonurus insignis* Eaton. This is an addition to the Yorkshire list. One adult male was obtained on August 2nd on the bridge at West Tanfield. The insect was taken from the jaws of a spider which was busily engaged devouring the may-fly. Subimagines were found to be hatching out in large numbers from the River Ure above the bridge, but only a single female was obtained, as a number of swallows were swooping down upon the subimagines as soon as they rose from the water. The swallows must have accounted for immense numbers of this may-fly. Under stones in the river the nymphs were very abundant, and most of them were ready for the final ecdysis. *E. insignis* is evidently a late species, which probably accounts for its previous non-inclusion in the county list.

*Ecydonurus venosus* Fab. A single subimago was taken at Harewood Bridge on 18th May, and small numbers of males were seen 'dancing' over a meadow near Meanwood Beck on 4th June. Nymphs of species of *Ecydonurus* have been found abundantly in running water at almost all of the localities we have visited. Most of the specimens taken probably represent *Ecydonurus venosus*, but other very closely allied species are involved, and present determinations are by no means certain.

*Heptagenia sulphurea* Müll. Very few specimens occurred at Pool on 8th June. It was again taken sparingly at Harewood Bridge on June 22nd.

*Rhithrogena semicolorata* Curt. has occurred very frequently. Nymphs were taken on 7th May from the stream running out of Scarcroft Lake. Adults were first seen on 18th May, when they were quite common at Harewood Bridge. A

pair was taken at Scarcroft on 30th May, and in the utmost profusion at Meanwood Beck on 4th June. At Pool on 8th June, it was again common, and two males occurred at Harewood Bridge on 22nd June. Our last record of this species is a female from Scarcroft on 6th August.

*Siphonurus lacustris* Eaton. Only a single female of this insect has been noted at Meanwood Beck on 4th June. The may-fly was flying down stream in a series of short flights, in the intervals of which, she rapidly immersed the apex of the abdomen in the stream. This was done a number of times, and on each occasion it is presumed one or more eggs were deposited.

*Baëtis pumilus* Burm. was first seen at Harewood Bridge on 18th May, where it was very abundant, and subsequently at the same locality on 22nd June. A few males were seen at Walshford Bridge on 2nd August, and it was common at West Tanfield on the same day.

*Baëtis rhodani* Pict. has occurred commonly in many localities. It was first seen on 6th April at Birstwith. A few specimens were taken near a small stream at Adel Willows, Leeds, on 6th May. It was common at Ascot Hill, Leeds, on 9th May, and at Meanwood Beck on 11th. A few were captured at Harewood Bridge on 18th, and at Scarcroft on 30th May. At Meanwood Beck on 4th June a single representative occurred, and a few at Roundhay Park on 27th June. Our last specimen was taken at Adel Willows at the beginning of September.

*Baëtis tenax* Eaton was common at Harewood Bridge on 22nd June, and again at West Tanfield on 2nd August.

*Baëtis bioculatus* Lin. A few taken at West Tanfield on 2nd August. Nymphs of several species of *Baëtis* have occurred in abundance in the streams and rivers visited. As in the case of the genus *Ecydonurus*, the nymphs are extremely difficult to identify, and must be left for further study.

*Centroptilum luteolum* Müll. first appeared on 18th May at Harewood Bridge, when a single male subimago was captured. It again occurred at a small stream running into Meanwood Beck on 4th June, and at a stream running out of Scarcroft Lake on 6th August. A male, taken at the latter locality, formed the prey of a specimen of the Ceratopogonid—*Palpomyia flavipes* Mg. The dipteran was seen to be supporting the whole weight of the may-fly during flight, and when netted, was found to have its proboscis thrust into the may-fly's thorax, and its spined fore femora clasping the sides of the thorax.

- Cloëon dipterum* Lin. Nymphs were very numerous at Askham Bog on 13th June. A single adult male was taken. All the nymphs were subsequently bred and some of the females lived as long as a month, while one specimen, emerging on 14th June, survived until 20th July. A single female was taken at Blackmoor, near Shadwell, on 25th June.
- Cloëon rufulum* Müll. Females occurred sparingly at Scarcroft on 6th August.
- Cloëon simile* Eaton. This addition to the county list is represented by six males taken at Sherburn-in-Elmet on 16th September.
- Paraleptophlebia submarginata* Steph. One female subimago at Meanwood Beck on 11th May, and two females from Scarcroft on 30th May, are our only captures.
- Habrophlebia fusca* Curt. A single male near Roundhay Park on 15th August.
- Ephemerella ignita* Poda. Very abundant at Scarcroft on 6th August. Nymphs probably of this species occurred at West Tanfield on 2nd August.
- Eurycaenis harrisella* Curt. is a further addition to the county list, and its inclusion is based upon two dead specimens obtained at Boroughbridge on 2nd August, together with a subimaginal pellicle from West Tanfield on the same day. The specimens were obtained from cobwebs. Living examples must be sought for in these localities at an earlier date as the species was evidently over on the occasion of our visit.

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**The Geology of the Whitehaven and Workington District**, by T. Eastwood, E. E. L. Dixon, S. E. Hollingworth and B. Smith. London: H.M. Stationery Office, xvii.+304 pp., 6/- net. This is a delightful example of the wonderful results which can be obtained by co-operation. Quite apart from the geological survey, as such, which has been made by the officials, there is a wonderful amount of information obtained from borings, of which over 300 records have been utilised, of details of old mines; and, in addition, various experts in different branches of palaeontology have voluntarily given their services in the interests of the Survey in order that the record shall be absolutely perfect. The ground covered by this is one of the oldest mining areas in the country, in addition to which it is of extraordinary geological interest, both from the point of view of solid and drift. The officers have taken full advantage of many classical memoirs which have been issued by amateurs in the past, with the result that H.M. Government has obtained an enormous amount of valuable scientific and economic information at a minimum cost to the tax-payers. We should like to congratulate Sir John Flett and all concerned on the successful production of a memoir which will be the standard work on the district for many years to come. We also are glad that the powers who be have decided to put an adequate cloth cover on this particular publication, and we would draw attention to the reasonable charge for this volume.