PISCATOR

3rd QUARTER, 1951

No. 19 for September

Journal of the Cape Piscatorial Society

Cape Town, South Africa.

Issued Quarterly by the Society.

CAPE MAY-FLIES

By A. Cecil Harrison

PART X. THE FAMILY EPHEMERELLIDAE: "BLUE-WINGED OLIVES".

"The fisherman who has the B.W.O. on his water and makes a careful study of the insect, may look forward to the time when it appears; it will give him the best sport in the season." (Eric Taverner. Trout Fishing from All Angles. Seeley, Service & Co. Ltd., London, 1929.)

IN the footnote to Part II of this series of articles in PISCATOR No. 10, this family was placed last in sequence. The aquatic nymphs of the family also came last in Pictet's broad divisions of May-fly larvae, viz. "Creeping larvae, like those of the Blue-winged Olive; sluggish, relying on protective colouration and camouflage, and carnivorous".

* * *

The Blue-winged Olive is a fly with a sporting tradition and has a considerable literature. In many of the books written for the benefit of fly-fishermen, dealing with the recognition of natural flies in Britain, it is customary to state the number of tail-whisks, setae or cerci carried by the adults; and in the case of the B.W.O. (as with the true May Fly and the Leptophlebiids) it is stressed that it possesses three whisks — in contrast to the Baetid flies which have only two. The fore-wing of the B.W.O. dun, and its imago stage the "Sherry Spinner", is also somewhat longer than that of the Baetid flies in comparison with the length of the insect's body.

Although the Blue-winged Olive, *Ephemerella ignita*, has a wide range in Britain, it has come to be best known in connection with the "evening rise" on the rivers of the south of England in the summer months. Taverner describes the wings of the subimago as medium slate-blue, the body of the male being distinctly reddish under a general colouration of olive, while that of the female is greenish olive. The female imago emerges from her final moult with transparent wings and a pale green olive body, but this soon becomes yellowish-brown during the egg-laying stage and appears to have a rich sherry colour when the fly is spent. He is an exponent of the use of the Orange Quill, of correct dressing, "as the fly most likely to get trout when they are taking the B.W.O. dun during the evening rise" — "hot orange" being the motif of this artificial, although he gives another pattern with yellow-olive motif for the female dun, and suggests a russet-coloured imitation ("the colour of a river deeply stained with peat") for the spent spinner stage.

The method of egg-laying is rather distinctive, as the female imago of the B.W.O. has often been described as dropping all her eggs into the water in a single mass; instead of continually dipping down to the surface to extrude them a few at a time, or crawling beneath to lay them in patches underwater. Taverner points out that the female spinners are then most distinctive in flight, because the abdomen is curled round as though to hug the egg-mass, with the setae pointing forwards; and that this characteristic attitude of the female B.W.O. spinner, about to drop her eggs, is a sure guide and may prepare the angler for a rise of trout to the spent Sherry Spinner.

This was well described by F. E. Sawyer, the keen observer of the upper Avon in Wiltshire, in the *Salmon and Trout Magazine* for May, 1950. ("B.W.O. Studies of the Sherry Spinner".) The great flights of the spinners, following the course of the river on a quiet summer evening, reminded him of an invasion of thousands of tiny aircraft, all carrying their bomb loads — a compact ball of greeny-brown eggs, around which the insect sometimes curled her three tails. The egg-masses were released from a height of about two feet above the water, but he proved to his satisfaction that the spinners had the instinct to drop into

fast-running water rather than in sluggish pools. Sometimes the spinners fall in great numbers on the surface, bringing about an excited rise of trout; but on other occasions the majority of the spent flies veer away from the river after dropping their loads and die on land.

* * *

When the studies of the Cape May-flies were taken up on the trout streams in 1929, particular attention was given to the possibility that species allied to the "B.W.O." might be present. At that time, only one species of the family had been recorded from South Africa, viz.

Ephemerellina barnardi, Lestage.

This species was named by J. A. Lestage (Belgium) in 1924, and was based entirely on adult flies collected by Dr. K. H. Barnard at altitudes of 3,000 to 4,000 feet in the Hottentots Holland, Great Winterhoek and Wellington mountains in the south-western Cape. The nymph was unknown.

A nymph, attributed to this species, was described by Dr. Barnard in his "S.A. May-flies" in 1932. This specimen was collected in the Cedarbergen, Clanwilliam district, in January, 1930. Subsequent collecting, especially on Table Mountain, left no doubt that the nymph had been correctly assigned, and the further records were given in the Annals of the S.A. Museum, Vol. XXXII, part 6, August, 1940.

The substantial nymph of this species was found in other mountain localities in the south-western Cape, including the head-waters of the Palmiet River, Elgin, and the Sonderend River, Fransch Hoek Pass, but was never collected in the trout streams in the period 1929-1931. More intensive recent research has revealed, however, that stragglers occur at lower levels in the upper Berg River in the Fransch Hoek plantation, altitude about 1,000 ft. (Arthur D. Harrison, 1951.)

The largest nymph recorded by Dr. Barnard, from the Elgin mountains, was 12 mm. long, with cerci 9 mm. long. When fully-developed, they are very solidly built, plump and high, and can be picked off the rock with thumb and finger without damage. He found that they inhabited only those portions of the mountain streams which are shallow and where the water is always rushing tumultuously over the rocks and stones. They are usually a uniform pale brownish-yellow. The gills of this species and of *Lithogloea* differ from those of the nymphs of all the other families in Cape waters, as the second gill forms an oval, elytroid cover concealing almost completely the following gills. The gills on the first abdominal segment are completely obsolete in *E. barnardi,* but rudimentary in *Lithogloea.* These oval plates, carried on each side of the hind portion of the nymph (attached just behind the wing covers) are characteristic of the group and often display light-coloured marks.

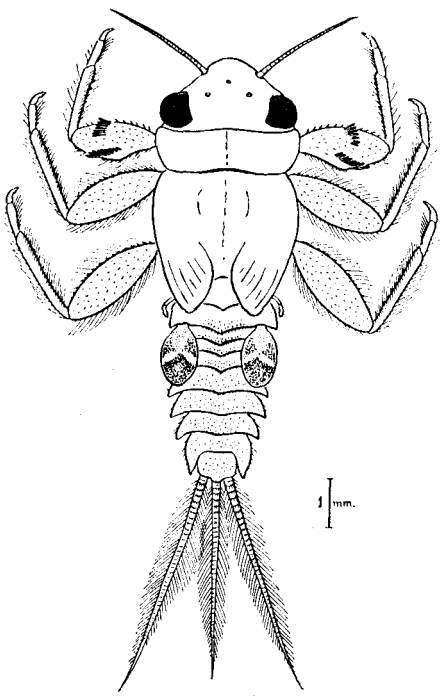
The adults are large and handsome. The body of the male is 8-8.5 mm. long, his wings 9-10 mm. long and his tail cerci 27-30 mm. long. The female is larger, body 9.5 mm., wing 10-12 mm., and cerci 18 mm. long. The dominant colouration in this case is neither olive nor orange, but varying from castaneous to dark Vandyke brown, and in the imago the wings are clear with brownish veining.

It would be a useful addition to the list of natural flies valuable to the trout fisheries, were it not for its residence at higher altitudes and the probability that its time of emergence is nocturnal.

"Blue-winged Orange", *Lithogloea harrisoni,* Barnard. September to March.

The first batch of nymphs was secured in the Dwars River, Groot Drakenstein, on August 16, 1930. The diary entry for that day notes that the river was clear afer a dry spell; a rainbow hen of 9 ozs. was found ascending a small tributary stream on Rhone farm and yielded ripe ova; there was a hatch of September Brown, Chestnut Duns and Yellow Duns, and search in the river

bed produced crawling nymphs — then thought to be those of *Ephemerellina barnardi*. However, when bred out in tanks, they proved to be those of a smaller, unnamed species of the same family, inhabiting streams at lower levels.



K. H. Barnard del.
The Cape Blue-winged Orange Nymph.
(Lithogloea harrisoni).

The nymph of the smaller Table Mountain B.W.O. (Lithogloea penicillata) **can be distinguished from the above by the disc-shaped flattening of its upper leg joints, the presence of a "moustache" of hairs on the front of the head and absence of plumes on the tail cerci. The nymph of the bigger** Ephemerellina barnardi **has similar oval gill-covers, but there are no small rudimentary processes on the first abdominal segment.**

From the correlated material, Dr. Barnard found distinctions justifying the founding of a new genus *Lithogloea* ("Stone clinger").

The nymphs of this species were found to be very common in the upper Eerste River and the Groot Drakenstein Dwars River during the spring and summer months. (There was some confusion between the nymphs of *L.harrisoni* and the next species, in S.A. May-flies, Trans. R.S.S.A., Vol. XX, part III, 1932, which was rectified in Additional Records, Ann. S.A. Mus., Vol. XXXII, part 6, 1940. The locality "Table Mt." should be deleted, as the true *harrisoni* was not found in the Cape Peninsula.) They were found under stones in running water, and in such localities did not carry mud and detritus on the body as additional camouflage (as noted by M. E. Moseley, Insect Life and Fishery Management, 1926, in connection with British B.W.O. nymphs).

In this species, the tail cerci are noticeably plumose, but the nymphs swim clumsily by flexions of the body. The head is small, and the femora are moderately flattened. The elytroid gills resemble those of *E.barnardi*, but, as stated above, a rudimentary gill is present on the first abdominal segment — 2-jointed. When fully-fed, the nymphs are 8-9 mm. long, with cerci 3-4 mm. long. Like those of the Tawny Yellow, *Afronurus*, the nymphs vary individually in colour and markings — yellowish to brownish, with much speckling and mottling, or sometimes a uniform shade.

They are excellent trout food, but alas! the Cape Blue-winged Orange has no characteristic egg-laying flight to bring about a productive "evening rise" of trout. Wild adults were not found at all during the 1930-31 investigations, and breeding in tanks showed that the emergence of the subimago from the nymph was largely nocturnal. The nymphs either crawl out onto protruding stones for the emergence, or sometimes the process takes place on the surface film.

The subimagos were found to be unusually active from the moment of emergence and capable of immediate, energetic flight. The wings are smoky blue and the body colour reddish-brown — more orange than olive. The subimago stage was found to last about 24 hours, or less in hot weather.

The wings of the imago or spinner stage are clear and the body colours brighter, with orange as a distinctive feature. The adults are 6-6.5 mm. long in body and 6.5-7 mm. long in wing, smaller than the English B.W.O. and without the same disparity in wing and body lengths.

"Table Mountain B.W.O.", *Lithogloea penicillata,* Barnard. Spring and Summer.

This species is slightly smaller than *L.harrisoni* and is common in the streams of Table Mountain, including that in the Skeleton Ravine and upper Liesbeek River and the Orange Kloof stream (to Hout Bay). Search in the streams in the National Botanical Gardens at Kirstenbosch will reveal this crawling nymph under the loose stones, and this is continued downstream in the Liesbeek at Bishopscourt, where they form a valuable item in the diet of the young trout. Further afield, mature nymphs were collected in the Hex River by trout (and removed from their stomachs by A.C.H. October, 1931) and found in the mountain streams of the south-western Cape.

The nymphs, 5-6 mm. long, are ochraceous or straw-coloured with darker spots and markings. They can be distinguished from those of *L.harrisoni* by the pronounced disc-shaped flattening of the femoral joints of the legs, a "moustache" or fringe of hairs on the frontal curve of the head, and absence of hairy fringes on the tail cerci.

The flies resemble those of *harrisoni,* but are 5-6 mm. long in body and 5.5-6.5 mm. long in wing.

* * *

Recent research has indicated that the identification of forms belonging to this family of Cape May-flies is by no means complete.

BROOK TROUT ON "THE STAIRCASE"

By Herman J. Ackermann.

DURING 1947 and the following year I made several trips up the "Diepgat Kloof", down which the main stream of the Lourens River flows, in an attempt to get rainbow trout established in the very highest reaches of the stream. (See page 79 of PISCATOR No. 7, September, 1948.)

Altogether I took up only 30 fish ranging from 5 inches to 12 inches in length—to water previously untenanted by trout. These were planted in various pools, and during the following three years we saw some of them fairly regularly. There were three particularly nice fish in three different pools that seemed to stay where they were. But we never found any signs of spawning activities, although we saw these fish at all times of the year, nor did we ever see any small fry in the more likely places, although we searched very carefully.

Well, all this boils down to the fact that I had become just about fed-up with these rainbows by the end of 1950, and one week-end when we were camped in the Picnic Bush, I made a trip up to Diepgat and caught two of the best fish I could find up there. They were about 14 inches long, but although they looked very healthy they were not in particularly good condition. One was a female, and she had a lot of dead eggs inside her.

This experiment with the rainbows was clearly a failure and it was time to start thinking of something new.

By this time I had gathered all the information available about the newly-introduced American Eastern Brook Trout, *Salvelinus fontinalis,* at Jonkershoek. It was with keen interest that I followed their progress at the Hatchery, ever since the first news about them came out. As far as I could ascertain, it seemed that they would be the answer to the problem of the upper reaches.