

A RE-EXAMINATION OF THE UPPER TERTIARY MAYFLIES DESCRIBED BY ETHERIDGE AND OLLIFF FROM THE VEGETABLE CREEK TIN-FIELD

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(Plate x.)

Etheridge fil. and Olliff described under the name *Ephemera culleni* a series of fossil mayfly nymphs from the youngest Tertiary stanniferous lead of the Vegetable Creek Tin-field near Emmaville, New England District of New South Wales. The beds are generally considered to be of Pliocene age. There was no designated holotype and they figured nine specimens in their plate. The specimen considered as an adult with a partly preserved wing and described first in the description of the species is best considered as the holotype of *culleni*. This specimen, Figure 5 of the plate, bearing the numbers D112 and F1323, is not an adult but only a nymph. Lying close to it is fragmentary plant tissue showing cellular structure which was considered as the wing of the specimen. Figure 9 of the plate shows a quite different type of nymph of which there are further unfigured specimens.

The two species present in the material are very different, even to the extent of being placed in different families, the Leptophlebiidae and the Baetidae.

From the very good state of preservation, with the nymphs mainly lying flat and undistorted, it would seem that they were living on the mud in which they are now preserved. This would indicate very slow flowing water or more probably standing water. If the water was only of a semi-permanent nature the nymphs would die as the mud dried up, the Leptophlebiidae crawling around and dying outstretched, the Baetidae, with their shrimp-like springing, tending to be slightly curved and lying on the side in some cases.

Family LEPTOPHLEBIIDAE.

Genus *Atalophlebia* Eaton, 1881.

Genotype, *Ephemera australis* Walker, 1853.

This is one of the common Australian genera of the family. The nymphs can be found in fast-flowing streams or sluggish to even standing waters. There are only one or two species which can survive in water which stops flowing for some part of the year. Amongst these is *A. costalis* Burmeister, a species very common along the east coast.

The nymphs of this family found in these beds are of the *costalis* type, and I consider there can be little doubt that they belong to the genus *Atalophlebia*, s.s.

Atalophlebia culleni (Eth. fil. and Olliff), 1890.

(Plate x, figures 1-5.)

Ephemera culleni Etheridge Junr. and Olliff 1890, *Mem. Geol. Surv. N.S.W.*, Pal. 7:8.

Nymph.—The complete structure, excluding the abdominal gills, is known. The description is based largely on four of the specimens figured by Etheridge and Olliff and three additional specimens, one of a juvenile specimen and the others of complete nymphs, one showing clearly the caudal setae.