

TRICORYTHUS, A GENUS OF MAYFLIES.

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The genus *Tricorythus* was proposed by Eaton in 1868, to contain a mayfly from Egypt, described by Pictet in 1843-1845 as a *Cænis*. Subsequently a species described by Burmeister in 1839 as *Oxycypha discolor*, from the Cape of Good Hope, was added. Burmeister's genus *Oxycypha* consisted of two species of *Cænis* and one of *Tricorythus*; as *Cænis* Stephens dates from 1835, by the "elimination method," followed by many zoölogists, we should be obliged to use the name *Oxycypha* for *Tricorythus*. The first species of *Oxycypha*, however, was *Cænis dimidiata*. A third *Tricorythus* was reported by Eaton in 1884 as coming from the Malay Archipelago, but the species was not named, the material being inadequate for a satisfactory description.

So far, no species of the genus had occurred in America; but in the *Biologia Centrali-Americana* (1892) Eaton described a new species, *T. explicatus*, collected by Morrison in "Northern Sonora," which, it is understood, may mean northwestern Mexico or southern Arizona. The same species was recorded from Jalapa, Mexico, by Banks in 1901, and from Copper Basin, Ariz., also by Banks, in 1903. On October 7, 1905, many mayflies were found emerging from a stream a few miles from Boulder, Colo. At the same time and place nymphs were collected, but no flies were bred from observed nymphs. When we came to examine the insects, we believed that we had a new species of *Cænis*; but Dr. Needham, to whom we sent specimens, kindly pointed out that they were apparently Eaton's *Tricorythus explicatus*, and later enabled us to examine Eaton's description and figures, which had not been accessible. Upon comparing our material with the published account of *T. explicatus*, it was evident that the species was the same, and that the range must be extended some hundreds of miles northward. It is probable that Boulder represents nearly

one extreme of climate possible for the insect, as with us maturity seems only to be reached quite at the end of the season.

The genus *Tricorythus*, nevertheless, has a much more northern range; for Dr. Needham also pointed out that his *Cænis* (?) *allecta*, from Ithaca, N. Y., should be known as *Tricorythus allectus*.

The nymph of *Tricorythus* is not certainly known. The *Cænis maxima* Joly, from France (near Toulouse) was referred by Vaysière to *Tricorythus*, and is provisionally accepted as such by Eaton, though with considerable hesitation. It is known only from the nymph, which is figured in detail by Eaton, and it is significant that no adult *Tricorythus* has ever been seen in France or nearer thereto than Egypt. This nymph has all the essential characters of a *Cænis*, differing only in slight details from the known members of that genus. Dr. Needham (*Bull.* 86, *N. Y. State Museum*, p. 48) has described the nymph of *T. allectus*, not, however, going into very minute details. He has very kindly sent us some of these nymphs, stating, however, that they were not bred, and that he is now doubtful whether they should not be referred to *Cænis hilaris*, which was found at the same place. We find these nymphs to agree, so far as can be seen, with *Cænis*, and it is perhaps safe to dismiss them as not pertaining to *Tricorythus*.

There now remains the nymph collected near Boulder, at the locality of *T. explicatus*. It certainly has no intimate relationship with *Cænis maxima*, or with Dr. Needham's specimens. These have the large maxillary palpi of *Cænis*, while ours has the same palpi greatly reduced, and altogether as in the *Ephemerella* series. The mandibles of our nymph greatly resemble those of *Cænis maxima*, but they are not unlike those of other allied genera. The maxillæ are about as in the "nameless ally of *Ephemerella*," figured by Eaton in his monograph, Plate 38, Figs. 4, 5. The labrum presents nothing especially remarkable; the claws have about ten little denticles on the inner side; the gill lamellæ are not fringed; and while there is a large elyroid lamella, as in *Cænis maximus* and in true *Cænis*, it is not subquadrate, but triangular. There are no rows of dorsal hooks on the abdomen, so that in Needham's table of nymphs of the *Ephemerella* type ours falls

with the nameless one from Colorado, figured by Eaton on his Plate 39. It agrees with that also in the robust form, but differs in the structure of the head, etc.

If the Boulder nymph really belongs to *Tricorythus*, as seems hardly doubtful, it apparently follows that that genus has been derived from the *Ephemerella* series by the loss of the hind wings and reduction of the venation, and has really no intimate relationship with *Cænis*.