



Larva of *Corethra*. A, dorsal view. B, side view. X8. After Prof. L. C. Miall, "The Natural History of Aquatic Insects," 1895. MacMillan & Co., London.

GLASSWORMS

(*PERIDINIUM AND THE PHANTOM LARVA IN STEENBRAS AND MUIZENBERG RESERVOIRS*)

By MISS EDITH L. STEPHENS, Botanical Department, University of Cape Town, 18/8/38

ON page 8 of the Society's report for 1937, Mr. Harrison stated that three trout caught at Steenbras Reservoir in March, April and May of that year contained large numbers of the aquatic larvae of a "Corethra" midge (*Chaoborus* sp.). This larva, which was identified by Dr. K. H. Barnard of the South African Museum, is called the "Phantom Larva" in England, and "Glass Worm" in America, both names referring to its remarkable and almost complete transparency when alive. It looks like a half-inch thread of glass moving in the water.

As neither fly nor larva had been recorded from South Africa, Mr. Harrison suggested that I should try plankton-netting to find the larva in the reservoir and to ascertain its food-supply. Through the kindness of a member of this Society, Mr. E. J. Steer, I was able to visit Steenbras on Nov. 2nd, and use a finest-mesh plankton net from the water-tower platform, but a fair number were taken from the deeper water beside the retaining wall. There were present also a small *Daphnia* and the Dinoflagellate *Peridinium tabulatum*, both in fair amount. (These Dinoflagellates are motile one-celled algae, and rank next to diatoms as the chief food-producers of the ocean, though in fresh waters they are usually not nearly so important.) The other constituents of the plankton (several diatoms and rotifers, a Copepod, and an occasional blue-green alga) were very scanty in comparison.

The relative size and the relative abundance of *Peridinium*, *Daphnia*, and Phantom Larva at once suggested a food-chain with *Peridinium* as the basal food-producing organism. Examination of the food-canal of the *Daphnias* showed that they had evidently been taking in *Peridinium*, though it is rather a large mouthful for a small *Daphnia*. Whether the *Daphnia* in turn is taken in by the Phantom Larva cannot be proved till feeding-experiments are carried out, for the transparency of the larva is largely due to the fact that it does not swallow the solid part of its food, so no evidence can be gained by examination of its food-canal. The back of its mouth is closed by a circular fringe of stout bristles by which the body of its victim is kept from passing down while the salivary secretion acts on it, so that only the fluid products of digestion enter the stomach, the rest being rejected. But as its usual food is small aquatic animals such as *Daphnia*, it is fairly safe to presume the same here. *Peridinium* also is sizeable

enough to be part of its diet, being a rounded cell one-twentieth of a millimetre in diameter; this may sound a very small morsel, but the larva itself is only $\frac{1}{8}$ of an inch long. (The Daphnia is very small.) As long as the three members of this food-chain flourish in Steenbras Reservoir, trout should do well up to about three years old. For larger fish the larva is probably rather too small and active to be a main source of food supply.

Muizenberg Reservoir was visited on November 28th by the writer and Mr. Harrison, when plankton netting from the retaining wall showed the same food-chain to be present. Here again the other constituents of the plankton were comparatively negligible. Dr. Barnard subsequently visited the reservoir and obtained larvae which he was able to keep alive through pupation till the fly emerged. It proved to be almost certainly a new species, which still awaits description. In all essentials, however, it and its larva correspond to the description and pictures of *Corethra* in Miall's excellent popular book, "Aquatic Insects", which should be in the possession of every keen angler. Reports of its occurrence elsewhere in S. Africa would be welcomed.

Peridinium tabulatum may be regarded as the most important constituent of the plankton in the two reservoirs, both in number and as a basal food-producer. As it has a rather wide range of pH tolerance (it has been found by the writer in the neutral to rather alkaline water of rainy-season pools and ditches on the Cape Flats), its dominance in the acid waters of these reservoirs need not indicate a preference for acidity, but may simply be due to its being better able than most algae to resist their pH of about 4.5. Its swimming powers would assist it to retain its "place in the sun" in these deep waters. Desmids and other algae occur in the shallows where streams enter and springs ooze from the banks, but they do not seem to get into the deeper waters where the Phantom Larva was found.

(*Corethra* glass worms were found packed in the stomach of a 12 inch rainbow trout caught in the municipal reservoir at Maclear in May 1951. PISCATOR No. 18, page 38.)
