

colourless blood-cells; whereas the most ancient single-celled plants encased by their membranes were no longer able to do this, and could admit through it only fluid nutrition (by means of diffusion).

The *Whip-swimmers* (Flagellata), which we consider as a third class of the kingdom Protista, are of no less doubtful nature than the Amœbæ. They often show as close and important relations to the vegetable as to the animal kingdom. Some Flagellata at an early stage, when freely moving about, cannot be distinguished from real plants, especially from the spores of many Algæ; whereas others are directly allied to real animals, namely, to the fringed

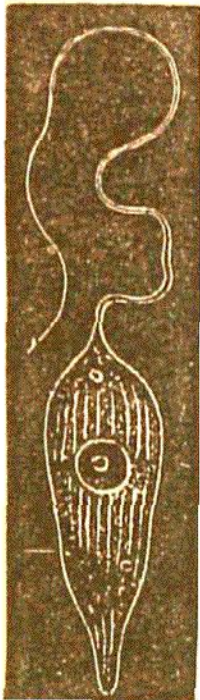


FIG. 11.—A single Whip-swimmer (*Euglena striata*), greatly magnified. Above a thread-like lashing whip is visible; in the centre the round cellular kernel, with its kernel speck.

Infusoria (Ciliata). The Flagellata are simple cells which live in fresh or salt water, either singly or united in colonies. The characteristic part of their body is a very movable simple or compound whip-like appendage (whip, or flagellum) by means of which they actively swim about in the water. This class is divided into two orders. Among the fringed whip-swimmers (Cilioflagellata) there exists, in addition to the long whip, a short fringe of vibrating hairs, which is wanting in the unfringed whip-swimmers (Nudoflagellata). To the former belong the flint-shelled yellow *Peridinia*, which are largely active in causing the phosphorescence of the sea; to the latter belong the green *Euglenæ*, immense masses of which frequently make our ponds in spring quite green.