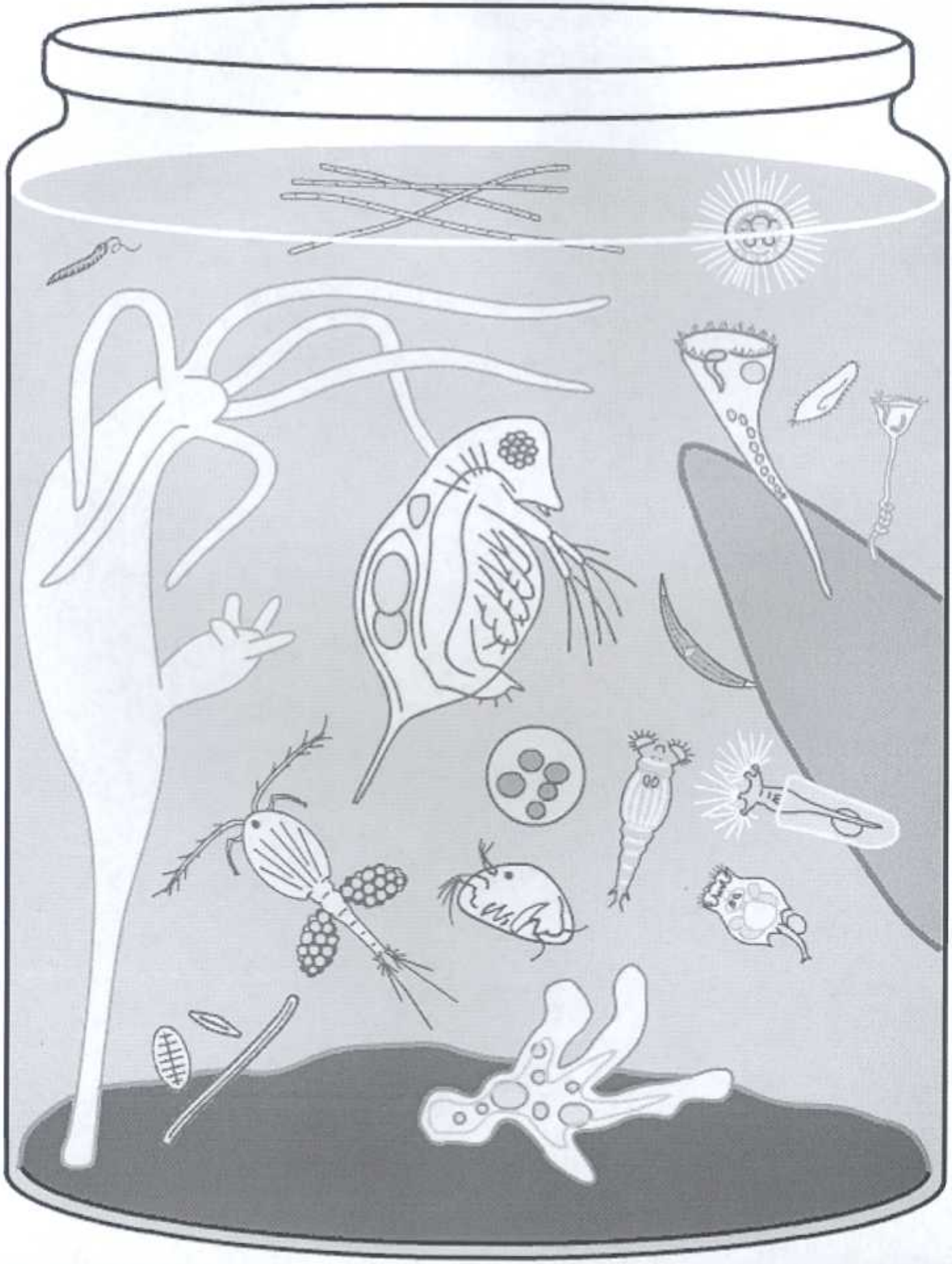
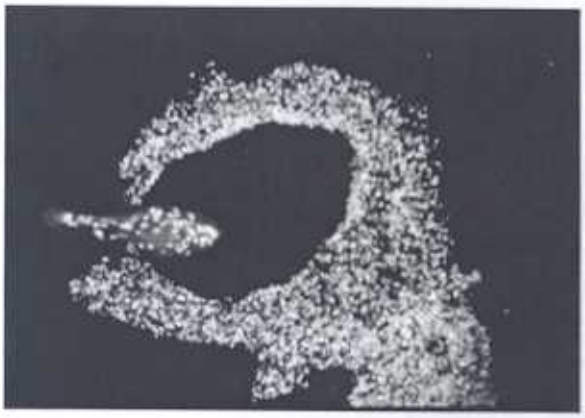
Microorganisms Commonly Found in Pond Water



AMOEBA

Amoeba includes hundreds of different organisms, ranging in size from about .25 to 2.5 mm (about 0.0098 to 0.098 in). Amoeba may look like a blob, but each species has specific shapes and appearance. They have false feet, pseudopodia. These pseudopodia are used for moving and for feeding.



Amoeba engulfing a paramecium

An amoeba, a single-celled organism lacking internal organs, is shown approaching a much smaller paramecium, which it begins to engulf with large outflowings of its cytoplasm, called pseudopodia.

Amoebas are considered the most primitive animals. Some species live on aquatic plants and some in moist ground; others are parasitic in animals. At least six forms of amoeba are parasitic in humans. They cause diseases that often occur in epidemics when raw sewage contaminates water supplies or when soil is fertilized with untreated human wastes.

Reproduction of an amoeba

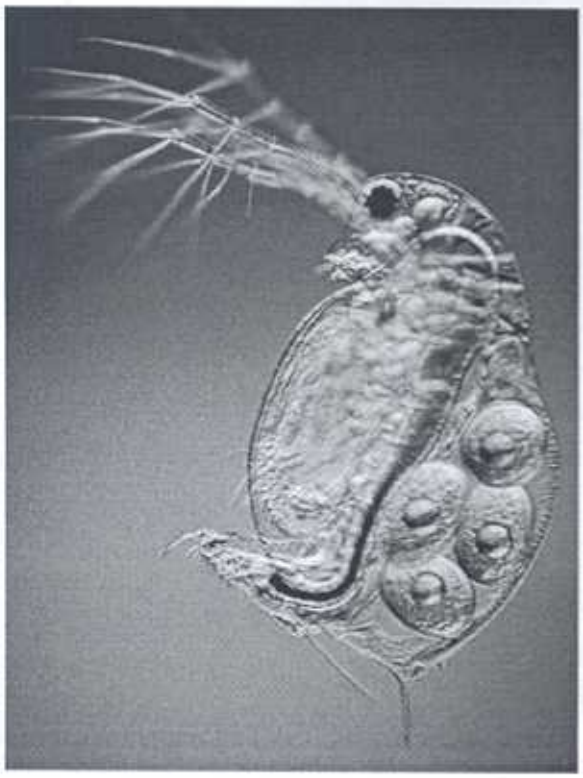
The single-celled amoeba demonstrates a simple method of reproduction; it divides in half by a process called fission, producing two smaller daughter cells. After a period of feeding and growth, these two daughter cells will themselves divide in half.

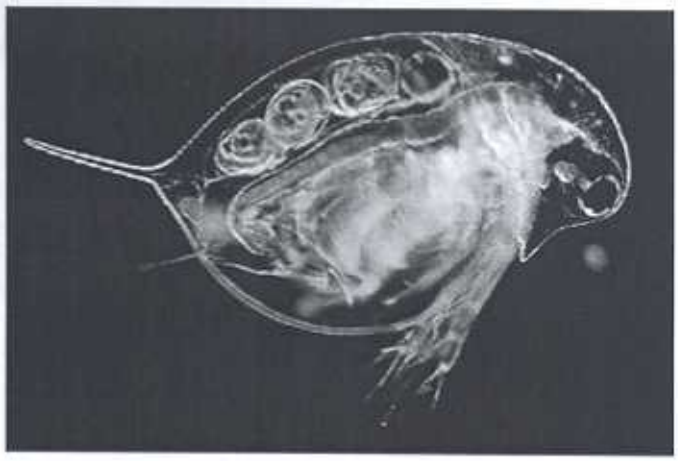
DAPHNIA

Daphnia, or water fleas, are part of the crustacean group that is found in freshwater ponds. This is the group of animals that is best known for the crabs and lobsters. But they have many microscopic relatives. They all have segmented limbs and a hardened external skeleton.

They are the most numerous organisms in freshwater zooplankton. They can be seen with the naked eye because some species can reach a size of almost 6 millimeters.

One of the most obvious features is the large antennae. They use them for locomotion, or movement. Above the antennae you can see the large eyes. It looks like a single eye but it consists of two compound eyes that are fused together. Inside the protective shell lies a row of five or six pairs of feet they use to filter food that they must take in.

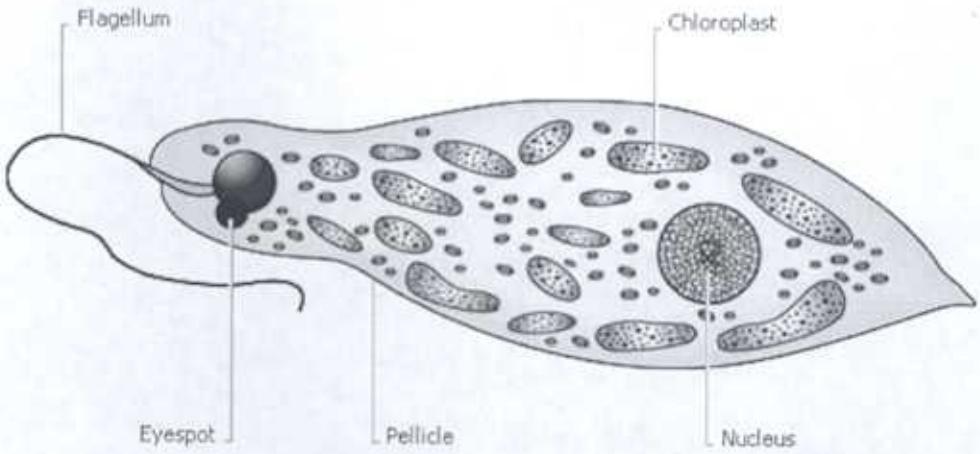




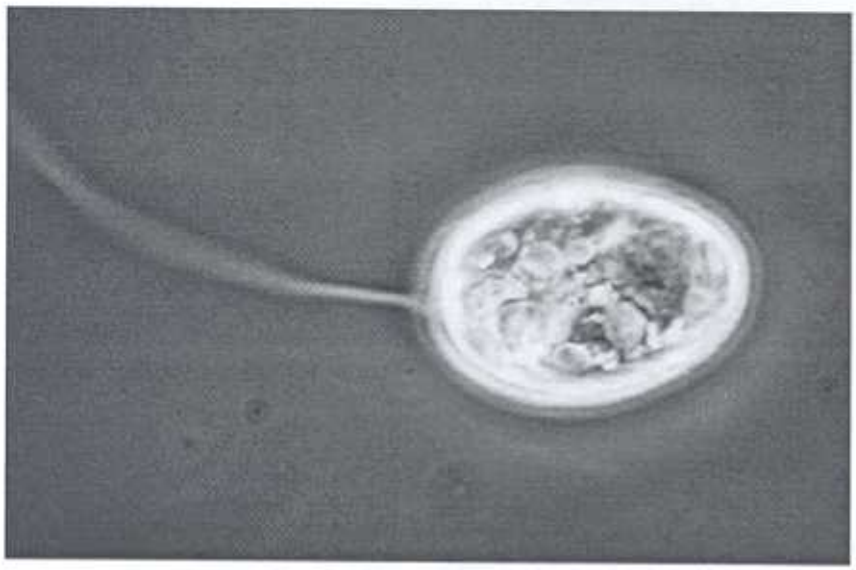
Daphnia is one of the more common waterfleas. The gut is green of digested algae. The eggs are clearly visible.

EUGLENA

Euglenas are one-celled organisms common in freshwater habitats, but are sometimes found also in marine environments. They range in size from 1/1000 to 1/100 of an inch (0.025 to 0.254 millimeter) long. These organisms have both animal and plant characteristics. They frequently make their own food. However, some feed like animals.



There are over 800 "species" of Euglenas. They have spindle-shaped bodies with a pair of flagella, or whip-like appendages used to swim. Euglena will also make a crawling movement by changing the shape of its body. Many of them have chloroplasts which gives them a green color. Euglenas also have an eyespot that allows it to move toward or away from light. They reproduce by fission, or dividing in two.

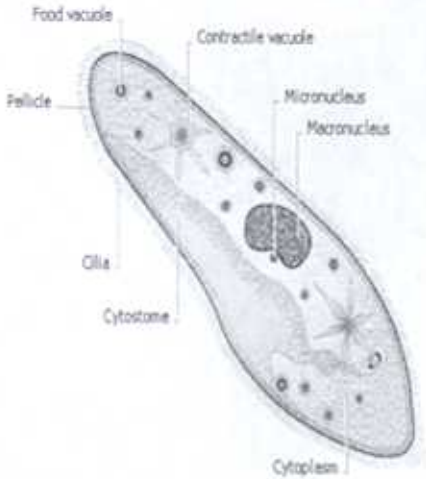


Euglena with a whip-like tail

The euglena is a single-celled alga with two or several flagella (depending on the species) located at one end for locomotion.

PARAMECIUM

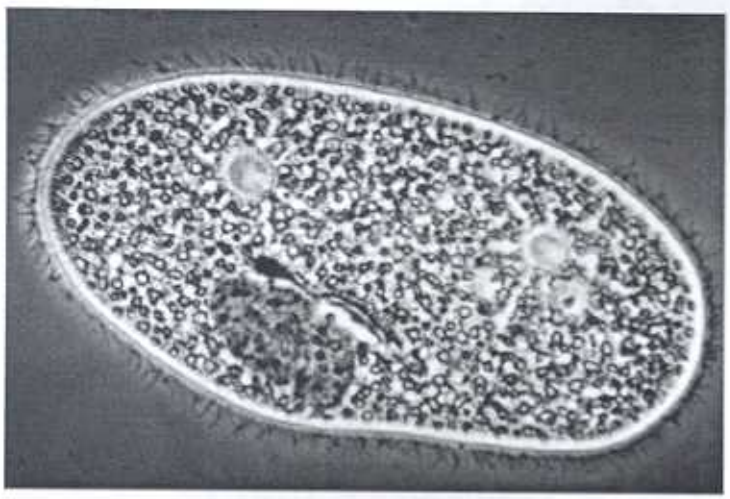
Paramecium are found in freshwater ponds throughout the world. They are one-celled organisms usually less than 0.25 mm (0.01 in) in length.



Paramecia have a slipperlike shape and are covered with about 2,500 tiny hairlike projections called cilia. These cilia move back and forth like oars to help the paramecium move about. When a paramecium hits an obstacle, it it backs away at an angle and starts off in a new direction.

The paramecium eats tiny organisms, such as bacteria, that are swept up by the cilia into an indentation called the oral groove.

A paramecium has a large nucleus called a macronucleus, without which it cannot survive, and one or two small nuclei called micronuclei, without which it cannot reproduce.

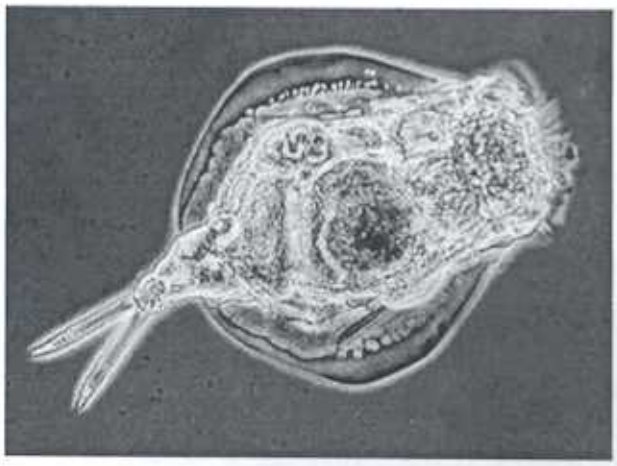


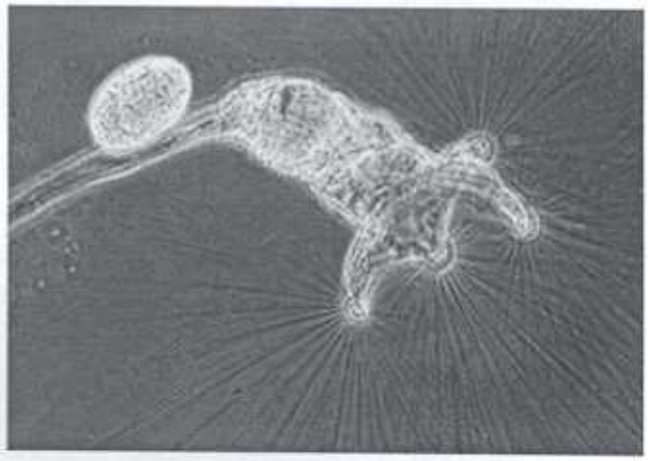
Ciliated protozoans such as the paramecium pictured here are single-celled organisms that propel themselves by minute, hairlike projections called cilia.

ROTIFER

Rotifers are multicellular, generally microscopic, aquatic animals that are abundant worldwide. They are about the same size as the larger unicellular organisms. They don't have a lot of cells, less than 1000.

They are a group of microscopic animals that live just about anywhere there is fresh water, including lakes, ponds, streams, puddles, ditches, wet shorelines (especially sand), and even on wet mosses. Some rotifers spend most of their lives swimming around, but most attach to one place and stay there for the rest of their lives.





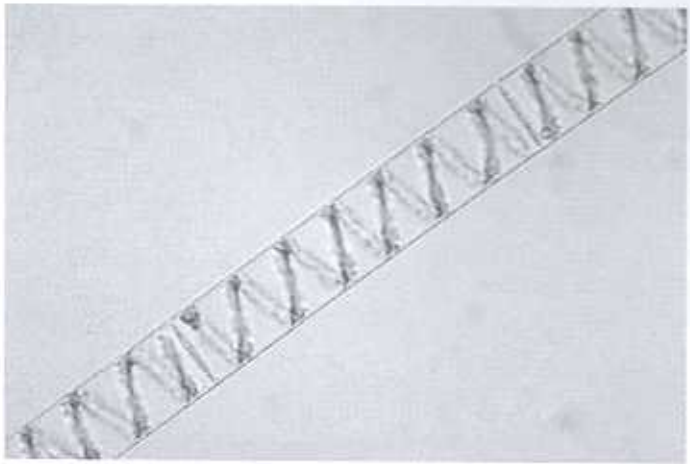
Each rotifer has a clear tube it can pull itself into, like a turtle. Rotifers have a cylinder-shaped body made of three sections: head, trunk, and foot. The "foot" usually has two "toes" at the bottom. The head of a rotifer has a large, cup-shaped mouth, surrounded by cilia, tiny hair-like things which wave back and forth.

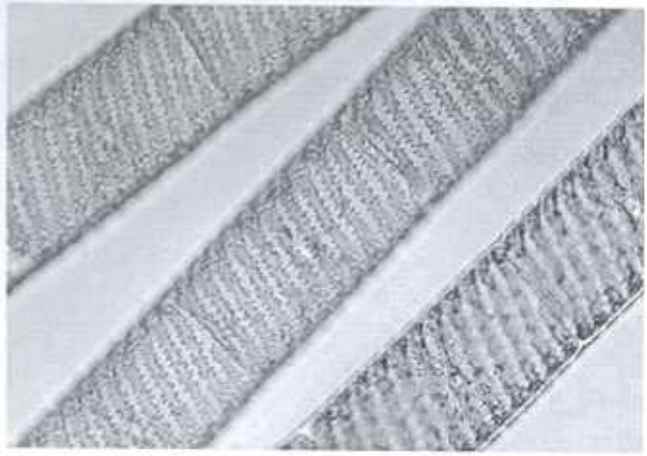
To eat, a Rotifer extends its body fully from its tube and waits for small swimming organisms to get close. Once an organism touches the rotifer's cilia, it gets sucked into its mouth. Common foods of rotifers include: algae, amoeba, and paramecium. They'll pretty much eat anything that fits into their mouths.

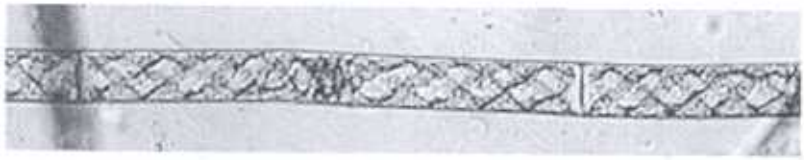
SPIROGYRA (GREEN ALGAE)

Algae vary greatly in size and grow in many diverse habitats and there are more than 400 species around the world. Although most algae grow in fresh water or seawater, they also grow on soil, trees, and animals, and even under or inside porous rocks, such as sandstone and limestone.

A common alga is the spirogyra. This type of algae owes its name to a chloroplast (the green part of the cell) that is wound into a spiral, which makes it easily to recognize. If we look at a filament of Spirogyra with the microscope, the first thing that attracts attention is the chloroplast, a narrow, banded spiral with serrated edges. It is formed by single cells that are arranged end to end to form long threads, filaments. These filaments can be up to many centimeters long.







SPIROSTOMUM

The spirostomum can grow to a size of more than 4 millimeters. When observed swimming, it looks like a little worm. This one-celled organism is totally covered with hairlike 'cilia'. Spirostomum, like many cilates, feeds on bacteria. They are swept into the mouth opening with a row of specialized fused cilia. The mouth opening is very small and can be found on the side of the body.

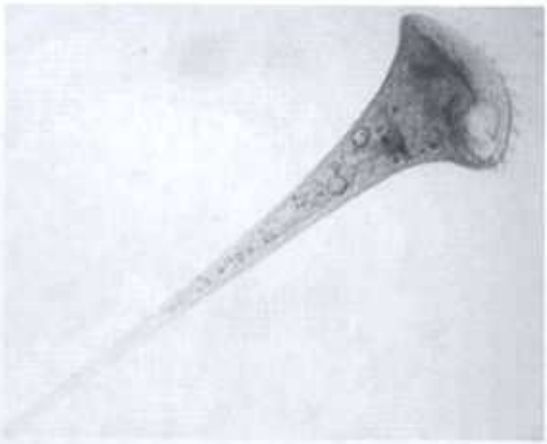
One of the remarkable things of Spirostomum is the way it can contract. The organism can contract its body to 1/4 of it's length in 6-8 milliseconds.

Like many large single celled organisms it has not one nucleus, but many. The nucleii form a long strand, like a string of pearls, visible as the lighter structure in the right image.

The pictures show the Spirostomum stretched (left) and contracted (right).

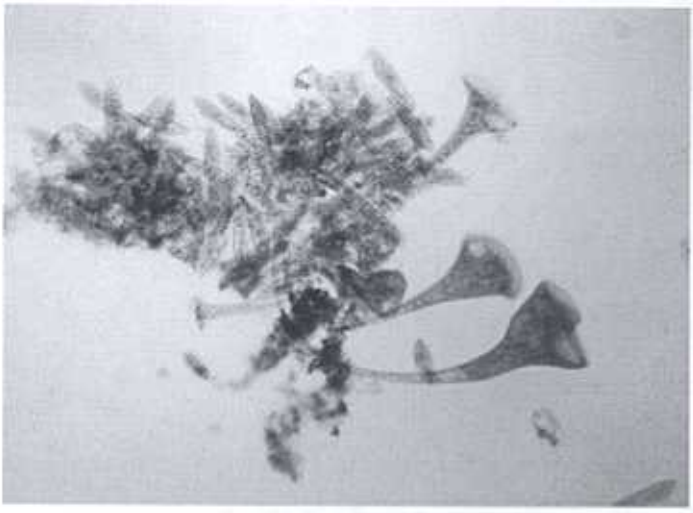
STENTOR

Stentors are usually found in freshwater ponds. They look like trumpets. When attached to something, the Stentor has a trumpet shape. Any disturbance makes the whole body contract to become a blob. It shrinks back and contracts then reaches out and stretches while feeding. They can be up to 2 millimeters (0.08 inch) long



A key identification feature is the presence of cilia (minute hair-like projections) on the oral region and along the sides of the organism. The Stentor beat the cilia and create a vortex like movement with there cilia drawing in single celled bacteria to feed on.

The Stentor is remarkable for its regenerative powers; a fragment as small as one-hundredth the volume of an adult can grow back to a complete organism.

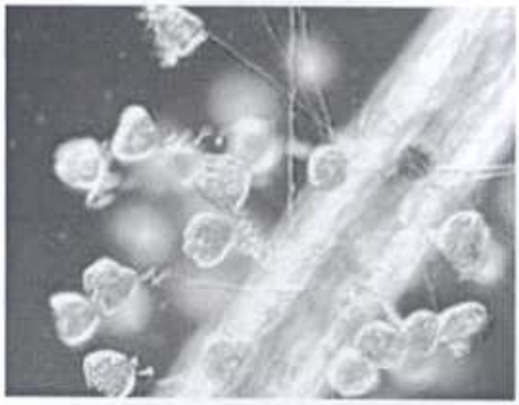


Stentors and Paramecia

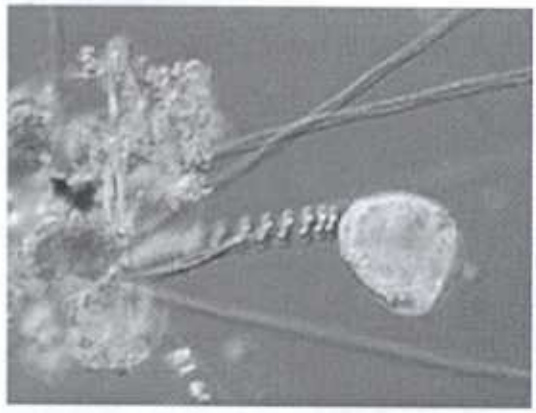
When the Stentors get together, there's hardly a parking place left to be found anywhere!

VORTICELLA

Vorticella are one-celled organisms. When it is extended, it looks like a bell. Extending from the bell, is a stalk that can be pulled into a tight spiral when the organism is disturbed. Once the disturbance is gone, it will slowly extend the stalk. The bell of a vorticella is 150 micrometers (1 micrometer = 1 millionth of a meter) and the stalk can measure up to 1 mm.

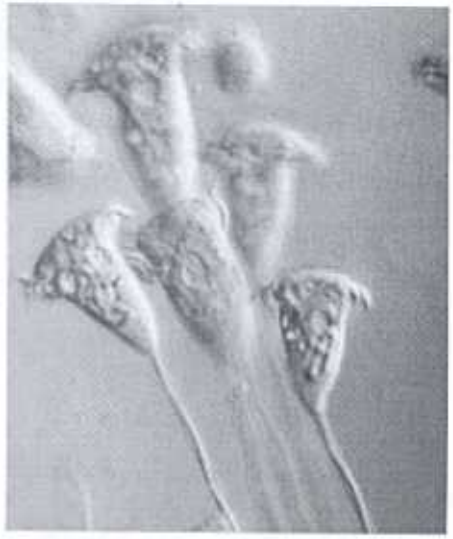


Vorticella attached to duckweed rootlet



Vorticella, pulled back on it's coiled stalk

Vorticella is an organism that attaches itself to other animals. They possess cilia (tiny hairlike projections) which they use for movement and feeding. Vorticella feeds by means of cilia which are present around the margins of its cavity ("mouth"). The movement of the cilia create a current of water, a vortex, which directs food particles towards the cavity. After food has entered the cavity, the stalk of the organism retracts and the food is "swallowed."



A group of Vorticella feeding.