

Underwater

Amazing Life Underwater



Ponds are rich in surprising forms of life for the microscope.

A pond is tranquil and calm, full of extraordinary forms of life and deceptively easy to drown in, not necessarily in that order. On the surface you will find the duckweed *Lemna*, which has flowers the size of sand-grains. You might find *Azolla*, a floating fern containing colonies of a microscopical alga, *Anabaena*, which finds the fern cells a secure home and helps capture solar

energy. You are unlikely to see the *Anabaena* cells with a QX3, but the cells of *Azolla* show up well under high power. You will also find pond lice and water-fleas. If you study *Daphnia* or *Cyclops* you may well observe the reproductive stages. Inside the bodies of *Daphnia* you should find eggs that hatch into free-swimming young. *Cyclops* is named after a one-eyed



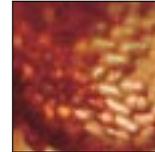
The floating fern *Azolla* is found in pools and lakes 10x.



With the 60x lens the delicate architecture is visible.

Greek god (yes, mythical Cyclops had only one eye too) and carries its developing eggs inside two egg-sacs either side of the tail. *Cyclops* adults sometimes have parasites attached to the outside. These organisms are a lot more complex and interesting than the fictitious creations in sci-fi movies. Stagnant water may seem disgusting, but is rich in fascinating organisms. Put a drop of green-coloured pond water onto a glass slide and add a cover-slip. Be careful; cover-slips break easily and broken glass is sharp. Under 10x you won't see much, but under 60x you will begin to see minute cells moving about. Study the specimen at 200x and you will see the individual swimming cells. *Chlamydomonas* and *Euglena* are among the commonest, but algae like *Ceratium* produce poisons that can kill cattle. You won't be able to identify which is which with a QX3. If you have access to a conventional microscope you can see far greater detail, although it won't be so easy to take the pictures. You should also look at the colonies of filamentous algae you find in ponds. These algae are often

nicknamed witches' hair, but under the microscope you can observe the filaments close up. Cells of *Spirogyra* have a spiral chloroplast containing chlorophyll, which makes them easy to identify.



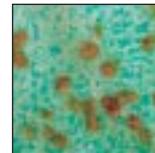
Use bottom light to reveal the cell structure at 200x.



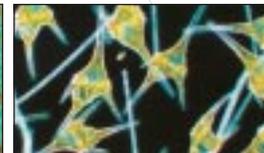
Carefully add a coverslip to a drop of pond-water on a slide.



A digital microscope can be used poolside with a laptop.



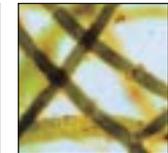
Green pond water at 200x reveals individual algae.



Under a conventional microscope, the alga *Ceratium* is expertly captured by Hilda Canter-Lund, a famous freshwater biologist.



Cells of the alga *Cladophora* at 10x show growth in long filaments.



***Cladophora* cells grow in branching filaments - 200x.**



***Oedogonium* filaments at 200x do not branch like *Cladophora*.**



Under the 200x lens, you may find filaments of *Spirogyra*.



A preparation of the waterboatman, *Corixa* at 10x.



The water-louse at 10x makes a good video sequence.



A mature *Cyclops* at 200x with one eye and two egg-sacs.



***Cyclops* with a single egg-sac and a parasite on the tail.**