

How Microscopes Began

You sit looking at the microscope, wondering what to do with it. You are not the first. People have been wondering that for 400 years. In 1663 Robert Hooke had one in London and drew fleas and head-lice. He also discovered cells. His results were published in an impressive coffee-table book and soon everyone was talking about microscopes. One person who read the book was a Dutch shopkeeper named Antony Leeuwenhoek (say his name 'lay-wen-hook' and you have learned your first bit of Dutch). He made tiny lenses not much bigger than a pinhead, and fixed them between metal plates to make a microscope the size of a stamp. With them Leeuwenhoek discovered microbes. In 1723 he died, and 100 years later a Scottish surgeon named Robert Brown bought a brass microscope and used it to discover the cell nucleus. By

Robert Hooke's microscope of 1665 with oil-lamp.



Leeuwenhoek's lens was trapped between metal plates fitted with focussing and positioning screws.



Antony Leeuwenhoek's handmade microscope around 1700.



A flea as Robert Hooke saw it with his microscope.



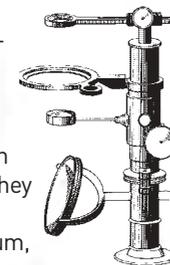
Curved bacteria seen through a single-lensed microscope.

the late 1800s microscopes were being made in large numbers. They were made of lacquered brass and steel and had powerful lenses. People had them at home and even used them to entertain their friends. After the Second World War ended, in 1945, new microscopes were developed that didn't use light. Some used ultra-violet or even x-rays to create an image. Others used electrons. The main problem with electron microscopes is that they could only look at specimens in a vacuum,

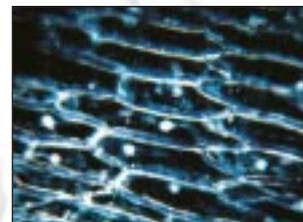


Brian working with Dr Debbie Stokes on an environmental scanning electron microscope (ESEM).

which prevented people from studying living specimens. One of the latest inventions is the environmental scanning electron microscope or ESEM. This is excellent - you can look at specimens in an atmosphere, such as living insects and plants. And something else has happened, too: more and more microscopes are controlled by computers. Their results are analysed by computers, too, and this is bringing us into a new age - the era of the digital microscope.



The microscope with which Robert Brown studied the nucleus.



Cell nuclei in onion tissue seen through Brown's microscope.



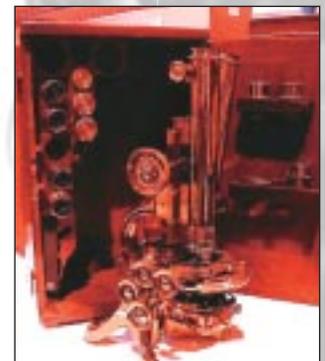
An living insect's knee-joint taken with the ESEM.



An early electron microscope from 1956.



Fly imaged in a 1951 x-ray microscope.



A popular microscope of the 1880s made by Swift & Son of London.