

Showing others your exciting samples

It can be really easy. Hold a simple digital camera or your mobile phone camera over the top lens of a magnifier or the eyepiece of a microscope and watch as the image is seen on the screen. When it looks good – 'click' and capture it. If you are using your mobile phone you can instantly share your results with friends. This is really useful when wanting help with identifying.



Soon you will want to take more difficult shots. Perhaps run a movie clip or use special lighting for the microscope to show the detail more clearly in the sample. The camera or mobile phone needs to be more stable. A simple support to hold your recording device close to the eyepiece is relatively inexpensive and can easily be fitted without any special tools.

When the images are input to a computer, they can be stored and shared via email, web services and social platforms.

To learn more about microscopes, find links to useful websites and see great images, visit www.quekett.org

Presented by The Quekett Microscopical Club – Registered Charity No. 232476

Getting started in Microscopy



Magnifiers

Microscopy is a means of magnifying an object so that detail within is made visible. Many people start using microscopes to look at things in nature. Getting started can be very simple, a magnifying glass is the simplest microscope and is often used outdoors to look at samples where they grow.



This is the simplest type of magnifier. It's easy to hold and there is a large area to look through. Hold the lens near the sample and peer through it. The magnification of the main lens is x4 with a small area giving x6. (x4 means the feather appears 4 times bigger).

A better option for taking on nature walks is the folding magnifier, or Jewellers Loupe, as it can be carried in a pocket. A simple folding lens may give a magnification of x6 but there are better lenses often described as a triplet lens which can give magnifications of x8. Hold the lens near the eye and move close to the sample.

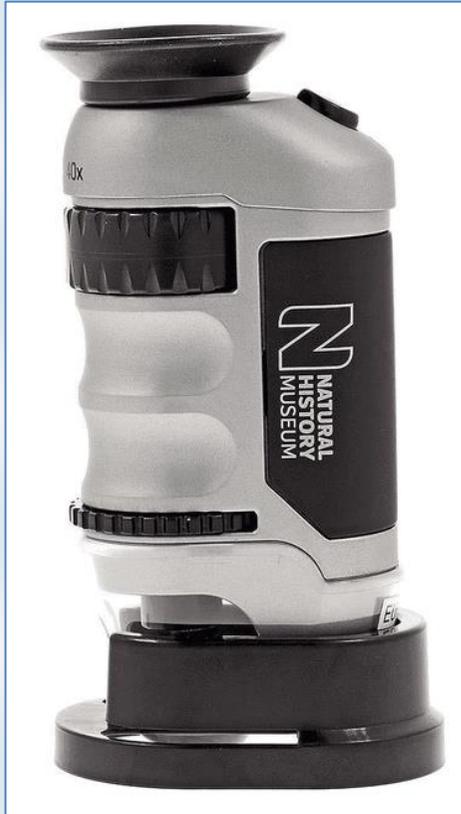
When you are out and about try holding your folding magnifier to your phone camera, you should be able to capture smaller specimens



Other types of magnifier are self-supporting so they can be placed over a sample. These often have a scale at the base so parts of a sample can be measured. This type of magnifier used to be called a 'linen-counter' and was used to count the number of threads in a woven material.

A simple microscope to start with

A simple microscope may give a magnification of x20-x40. This needs a stable base to hold it steady and some way of getting light onto the sample.



This type of microscope is available from the Natural History Museum. It has two lenses, one at the top of the microscope close to the eye – called the eyepiece and another near the sample called the objective. There is another lens which changes the magnification from x20-x40. The microscope can also be focused – that is, the objective lens adjusted to give a sharp image. There is a built in LED light to illuminate the sample.

If a sample appears to be solid, perhaps a piece of lichen, the surface can be examined by lighting it from above the surface. Just put the microscope over the sample.

To see all the detail in a small organism in some pond water, the best images are seen by shining light through a drop put onto a clear piece of glass or plastic called a slide. There is a slot in the base of the microscope to hold the slide and the light is reflected back from a small screen below.



Although these microscopes can be used outdoors, we can often see more if we collect a very tiny sample and take it home to examine it later. But always be careful when collecting anything – many things in nature are rare and should be preserved in their habitat.

A proper microscope

These are the types of microscope you may use to examine things back home. There are the two lenses to give a good image, the eyepiece and objective, but the magnification can now be higher. Many nature samples can be examined at up to about x50 using a stereo microscope – a dual lens system means a stereoscopic image is formed so it is easy to manipulate samples viewed with top light or by light transmitted through the sample. For examination at higher magnifications, from x50-x400 a compound microscope is needed. Most people will start with a simple transmitted light microscope where the light is directed through the sample using a condenser lens.



Modern Stereo Microscope



Modern Compound Microscope



Older form of Compound Microscope

There are many microscopes to choose from. Old 'second hand' microscopes are often available. Get advice from a Club, a shop or the Internet on the best microscope for you.

Many samples in nature have to be prepared so they can be examined at the higher magnifications. They may be cut or dissected to give a thin sample which may need to be stained with special dyes. This is another skill to learn.

