PREPARING SPECIMENS FOR MICROSCOPY WITH JEWELLER'S FORCEPS

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To achieve best results when viewing specimens with the compound microscope the tissue sample has to be thin and of small size. Specimens collected with jeweller's forceps achieve both these requirements. Results are best with fresh material but the technique can be used on dried specimens which have been rehydrated in water or dilute ammonia.

What is needed is a fine pair of jeweller's forceps, sharpened to a delicate point until they are really sharp to the touch. If you are short sighted, specimens can be taken without magnification. However low power magnification (x3 - x4 magnification) helps in taking these very small specimens. This is provided by reading glasses or stamp collectors' or modellers' magnifiers which are worn like reading glasses. The powerful magnification of a dissecting microscope is not required.

Gill edges are taken with the forceps parallel to the edge of the gill, picking the smallest possible piece of tissue (fig 1). The specimen should be almost invisible to the naked eye. If it is mounted in dilute Congo red and the cover slip is tapped with the end of a pencil shod with rubber, the cystidia separate easily even in such species as *Mycena galericulata*.

Caulocystidia are shown well in specimens taken by passing the point of one blade of the forceps through the upper stipe, taking the smallest possible amount of the stipe in the grip of the forceps and then stripping it downwards till it pulls free from the rest of the stipe (fig 2). Mounted in dilute Congo red and tapped with the rubber-shod pencil, the fibres of the stipe separate to show the caulocystidia.

I find the pileipellis more difficult to interpret, but taking a tiny 'scalp' with the forceps (fig 3) and tapping it with the pencil often produces clear images, especially if examined under oil immersion.

To show basidial bases for clamps the same technique applied to one surface of a gill yields small enough specimens to show numerous, well separated basidia.

Over the years I have tried every method that I could find to get decent preparations to examine. Often I have to make a preparation over and over again before I get the information I need. This method is the best yet for me. It yields more excellent views of individual cells on the first attempt than any other I know.

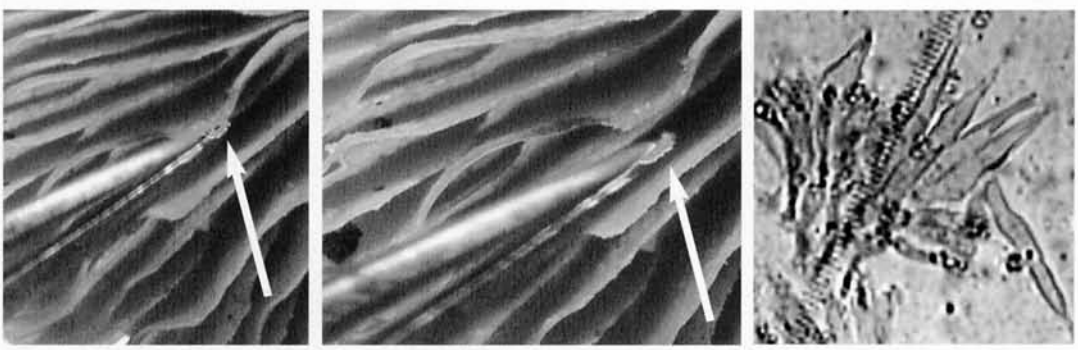


Fig. 1. In taking a specimen from the gill edge only the tiniest piece is needed to study gill edge cystidia (cheilocystidia). This specimen is almost too big!

Technical note

The photomicrographs are taken with a Phillips ToUcam webcam using Richard Shotbolt's software package. This package is designed to measure spores, basidia, etc. It also enables the capture of images from a webcam attached to the microscope for recording microscopic details. The software, called MycoCam, is available as a download for a 30-day trial and/or for purchase from Richard Shotbolt himself at http://www.shotbolt.com/shop.htm .

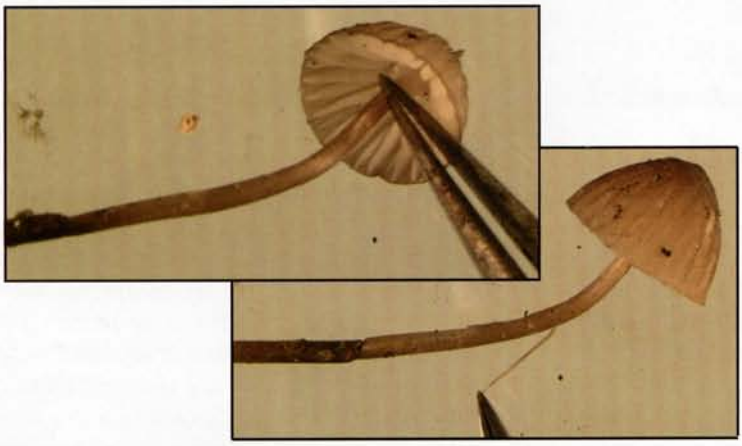
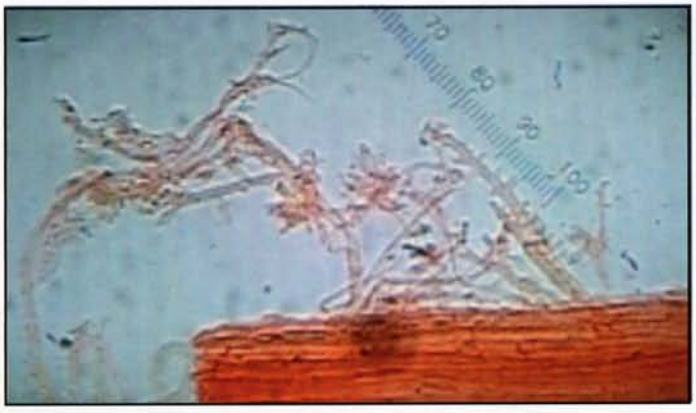


Fig. 2. To produce a thin sample for stem cystidia (caulocystidia), pass one blade of jeweller's forceps tangentially through the stipe near the gills, grip the slender piece of tissue and pull it down to release the specimen. Orientation is assured by not letting the piece go until it is laid on the slide in the mounting fluid. (*Mycena galopus*).



Caulocystidia of the same *Mycena galopus* prepared as shown above.

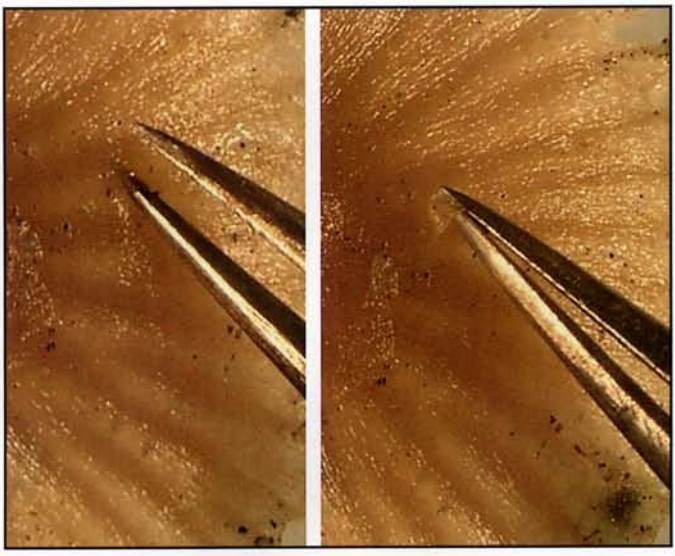


Fig. 3. A 'scalp' is taken by passing one blade of the forceps just under the surface of the cap cuticle (pileipellis). Then, the tiny specimen is gripped and pulled free. It is placed, top up, in the mounting fluid and covered with the cover glass before being tapped with a pencil with an eraser on it.