

Chapter 8

Mounting

A mountant is a liquid medium that permeates the spaces between and through the sections thus filling any air gaps that would otherwise blur the image. When the mountant dries and sets, it permanently seals and holds both the sections and coverglass in place.

For wood sections, the mountant should also have a refractive index (R.I.) close to that of glass. Light rays, unless refracted by the section, then pass through slide, mountant and cover as though they were solid glass.

For permanent mounts, a resin mountant is essential. The old, tried and tested one that has been around for well over a hundred years is Canada balsam, a natural resin exuded from the balsam fir, *Abies balsamea*. Unfortunately it is now very expensive, being five to eight times dearer than the synthetic substitutes. Two types are available: dried Canada balsam dissolved in xylene and natural filtered Canada balsam. Only the former is suitable for section mounting, natural filtered balsam is used for mounting rock samples and lens making.

Synthetic resin mountants are obtainable under a variety of trade names; Numount, Ralmount, Practa-mount etc. Although cheaper than natural balsam they are eminently suitable for section mounting. All these balsam substitutes are dissolved

in xylene and as with Canada balsam, thorough dehydration and clearing is essential.

"Euparal", a mixture of camsal, sandarac, cineole and paraldehyde, and the similar, but no longer available, Gurr's Neutral Mounting medium are resin mountants which can be mounted from 95% alcohol but mounting from absolute isopropanol or Euparal essence is preferred.

Balsam type mountants generally take several weeks to dry in a warm atmosphere. For routine pathological work where speed is essential, synthetic polymer mountants such as DePeX (or DPX) were developed. These are more suitable for very thin zoological and botanical sections and smears. With thicker material such as wood, the mounts often develop air vacuoles which are difficult or impossible to remove.

Eukitt™ is another rapid hardening mounting medium manufactured in Germany which I have tested following its recommendation by a wood institution technician. Unfortunately, although it is very convenient to use, after two years, the covers of many slides appeared to lift from the sections and the mount developed large air spaces. I now regard it as a semi-permanent mountant eminently suited to the quick mounting and examination of wood specimens but not for archiving.

Eukitt™ acrylic resin medium is water clear and has approximately the same refractive index as glass and balsam. It hardens at the coverglass edges in 20 minutes at room temperature but for wood sections, slides should be left for at least two days; I prefer a week before cleaning is attempted. Like balsam, the solvent is xylene. Its use differs slightly from Canada balsam and is described later.

Storing resin mountants

Stock supplies of resin mountants should, for preference,, be stored in dark coloured, narrow-necked bottles. As required for use, transfer to a 15 ml jar. In both cases, it is almost impossible not to leave traces of mountant around the bottle or jar threads which dries making later cap removal difficult. Smearing petroleum jelly on these threads before replacing the cap alleviates the problem and to a large extent saves time and one's temper. Resin mountants, particularly when kept in 15 ml jars, thicken in storage. If used on an irregular basis add a drop or two of xylene after use to retain the proper consistency but add only sufficient to cover the mountant surface with a thin film of xylene.

In these notes, I have used 'balsam' as an overall term to cover all resin type mountants similar to Canada balsam. Although their chemical composition differs from the natural product, their use is similar.

Water based mountants, such as glycerine jelly, Farrant's medium and N.B.S. Aqueous cannot be considered permanent although slides may last a

number of years. Some mountants gradually leach the stains from the sections. All require the edge of the coverglass to be sealed to prevent ingress or loss of water.

A few simple accessories make section mounting easier.

Balsam rods

Most microscopy books suggest applying the balsam to the slide with a 'balsam rod' a glass rod with a small bulb at one end. The bulbous rod end is dipped vertically in the balsam and the required amount transferred to the slide.

A simple device for controlling the depth the rod is dipped in the balsam and thereby the amount taken to the slides is shown in Fig. 8.1. The glass rod is passed through a rubber electrical grommet inserted in a metal 'penny' washer. Penny washers have a large outer diameter compared to the bore size. The grommet, a sliding fit on the rod, is adjusted to give the correct immersion depth in the balsam and is returned to the balsam jar after each use. A more Heath-Robinson method is to use a thick card disc with rubber bands on either side replacing the grommet. Both suffer from the disadvantage in that the washer tends to stick to any balsam around the jar rim requiring two hands, one to hold the jar the other to remove the rod.

Section lifter spreader

Instead of a glass rod I prefer an aluminium section lifter (Fig. 8.2). The flat end 'spoons' balsam from the bottle and knife-like spreads it evenly

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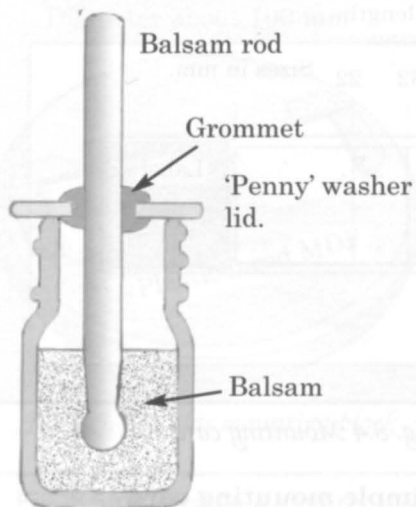


Fig. 8.1. Balsam rod with 'penny' washer lid



Fig. 8.2. Section lifter

A convenient holder for the balsam and section lifter is shown in Fig. 8.3. After applying the balsam the section lifter is laid in the holder and surplus balsam drips back into the bottle. The arrangement works equally well with a glass balsam rod.



Fig. 8.3. Balsam and section lifter rack

and quickly on the slide, an advantage for the relatively large area covered by wood sections. If only a small amount of balsam is required, such as when the mountant hasn't completely filled the area under the coverglass, only the tip is dipped into the balsam and then applied to the edge of the coverglass.