A Note on Dissecting Needles

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When dissecting insect larvae, plant ovaries or soft bodied marine animals the instrument of choice is the dissecting needle. The type often supplied and cheaply available from China has a 6mm or so metal handle and a 1mm diameter, or larger, tapered needle. These are much too large for delicate work. An alternative type with a thinner needle usually has a wooden handle. Personally I find wooden handles quickly get ‘messy’ to the touch and I avoid them if I can.

Better are universal needle holders with a ‘pin chuck’ type holder at one end into which an interchangeable needle can be fitted. These are particularly useful when (re)sharpening needles.

For some years I have used hypodermic needles; the 25 gauge ‘orange’ which is about 0.5mm diameter and 16mm long, and the 30 gauge ‘yellow’ which is about 0.3mm diameter and 8mm long. If the plastic ‘female’ fitting on these is pushed over a short piece of plastic taken from the handle of a kiddies’ paint brush they make an ideal dissecting tool. They have the advantage that the needle is sharp and initially free from any extraneous matter which results from the manufacturing process. Their disadvantage is that due to the complex bevel of the needle tip they cannot be resharpened if they become dull in use. At about 10p each that is not a problem. The tip of dull needles can be bent over into a hook for lifting partially dissected items.

If you use a pin chuck type holder or don’t mind a wooden handle then you have a choice, insect mounting pins or sewing needles. Insect mounting pins have the advantage that they are available with diameters as small as 0.1mm though these are very short at 12.5mm. Longer pins sold as ‘Continental s/steel pins No.3’ are 38mm long and about 0.4mm diameter. I’ll suggest a safe way of cutting these to length later. Mine came with a few headless pins 0.25mm diameter which did not need cutting.

Insect pins have the disadvantage that although they are ‘sharp’ and will readily penetrate skin, when examined under a stereo microscope they frequently have material at the tip derived from the sharpening process. This has to be removed before they can be used for delicate work and if they have to be resharpened because they become dull after use, it is very easy to turn the tip resulting in an attached filament of metal which has to be removed.

As the metal is relatively soft insect pins can be bent to form a right angle probe which can be useful in cleaning up a dissection or disarticulating tissue.

The alternative is to use small diameter sewing needles. These are more springy and harder than insect pins, allowing them to be ground to a finer point without turning the tip. The types to look for are ‘Sharps’ and ‘Quilting’, which are somewhat shorter.

There is no universal system of coding of needle diameters. Nominally size 12 have the smallest diameter, but a number 12 Quilting needle may have a greater diameter than a number 10 Sharp from the same manufacturer. I use John James number 12 Quilting needles with a diameter of 0.5mm and a length of 2.5cm.

Like insect pins the manufacturing process leaves metal at the tip of the needle. Under a stereo microscope this appears as a kind of mushroom shape which obscures the tip and has to be removed before the tip can be ground to a fine point. Producing a sharper point is not difficult provided you have access to a stereo microscope to follow the grinding progress.

Sharpening is done on a FINE grinding stone. These are sometimes called an ‘oil stone’ or an ‘Arkansas stone’. I picked mine up at a flea market for a few pounds. It is easier if the needle is mounted in a ‘pin chuck’ handle.

To remove the mushroom of metal left by the manufacturer hold the needle at a shallow angle to the stone by pressing gently with the index finger of the none dominant hand and with the dominant hand move the tip of the needle back and forth along the stone, rotating it all the time. Check using the microscope every 5 or so strokes after first removing the grinding swarf by drawing the tip through a clean ½ inch paint brush.

Once the mushroom has been removed repeat the above process, but lift the needle tip before pushing it forwards only allowing it to contact the grind stone as it is drawn backwards.

It is useful to carry out the process with the stone on a piece of clean whitish cloth. This hold the stone in place, prevents needles rolling around and holds any fine metal swarf which can easily be gathered up on a magnet. Don’t magnetise the needles as this makes them much more difficult to clear of swarf.

The cloth can also be used to safely break needles and pins to length. Put the needle and the cutters on the cloth. Fold the cloth over these and put your hands under the top layer of cloth. Make the break or bend the pin. The cloth catches any bits of flying needle which can be gathered up with the magnet. About 1m square works well.

If you don’t have needle holders with a pin type chuck and don’t want to use wooden dowel, the plastic handle of a kiddies’ paint brush can again be used. Cut off the bristles about 1mm from the end of the metal ferrule and push the pin or needle down through the remaining bristle ends. A dab of rapid set epoxy will fix it in place. Pound shops sell packs of suitable brushes.

When a plastic paintbrush or a piece of dowel is used as a handle the safest way to push the pin or needle into place is using a surgical needle holder which can be bought for a few pounds on eBay. These look like scissors but they have parallel jaws and a locking mechanism which ensures that once the needle is gripped it is held very firmly and cannot slip or move sideways. Instructions for using them can be found on YouTube.

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