

TECHNIQUES

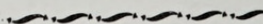
For inserting rubber stoppers in vials of alcohol: Of the many assorted objects I have used to permit the escape of air or excess fluid while pushing the stopper into the mouth of a vial, the most satisfactory is an I-shaped piece of flexible plastic widely used in clothing stores for attaching price tags or instructions to items of merchandise. Simply snip off one of the anchor ends, leaving the other as a handle on the remaining long T-shaped piece. The vertical portion of the T is inserted between the stopper and the lip of the vial before pushing the stopper in. The horizontal arm or handle makes it easy to pull the plastic piece out after full insertion of the stopper. (A half-straightened paper clip will serve the purpose, but may at times chip the glass or scuff the stopper.)

For micro-manipulation of exceedingly small and delicate objects: For a simple probe, the best is a relatively stiff, tapering hair such as an eyelash (or a vibrissa from some mammalian pet). By cementing the base of the hair into the tip of a syringe needle, and attaching the base of the needle to any desired handle (paintbrush handle, matchstick, etc.), a very serviceable probe can be constructed easily. For comparably delicate forceps, the best I know of are sold by Macmillan Science Co. (formerly General Biological) of Chicago, under the Turtox-Cambosco trade name. They are made in Germany of spring steel, and may be adapted to various functions by sharpening or rounding the tips and by altering the angle at which they are bent (e.g., if the arms are straightened, the forceps may be used for extracting minute eggs or larvae from the bottom of a 1-dram vial). In the catalog they are listed as microdissection forceps, but I find them much less useful for that purpose than good sharp-tipped stainless steel watchmakers' forceps (of which the best, in my opinion, are those made by Hamilton Bell in Switzerland).

For micro-dissection: The most useful instrument in my microdissection kit, with the possible exception of my ultra-sharp-tipped Hamilton Bell forceps, is simply a 26-gauge syringe needle of the disposable type many diabetics discard daily. Mine is mounted on a watercolor brush handle. This serves better than any micro-scalpel I have seen, at least for my purposes. I haven't bothered with iridectomy scissors for years. A useful modification is readily made by bending the sharp tip of such a needle so that it is recurved. In the microdissection of very small, smooth, hard-bodied beetles such as elmids it is sometimes quite difficult to hold the body in place while removing some desired part. My thanks to Susan Meyer for devising one helpful instrument for this: attached to a watercolor brush handle is a piece of teflon tubing about 20 mm long, 3 mm inner diameter, with a slight notch or nick on one side of the free end of the tubing. The specimen is held down by pressing the notch upon it.

For dislodging tightly-clinging elmids such as *Dubiraphia*, *Ancyronyx*, *Macronychus*, and *Stenelmis* from submerged stumps, roots, or logs that cannot be lifted out of the water—try a toothbrush.

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