

Hand sectioning and staining botanical subjects – first trials

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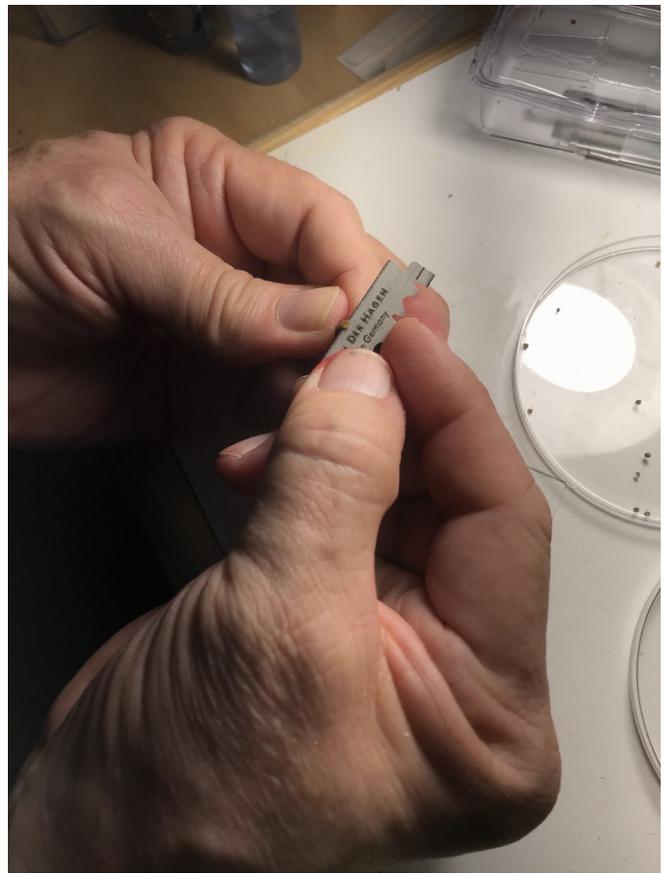
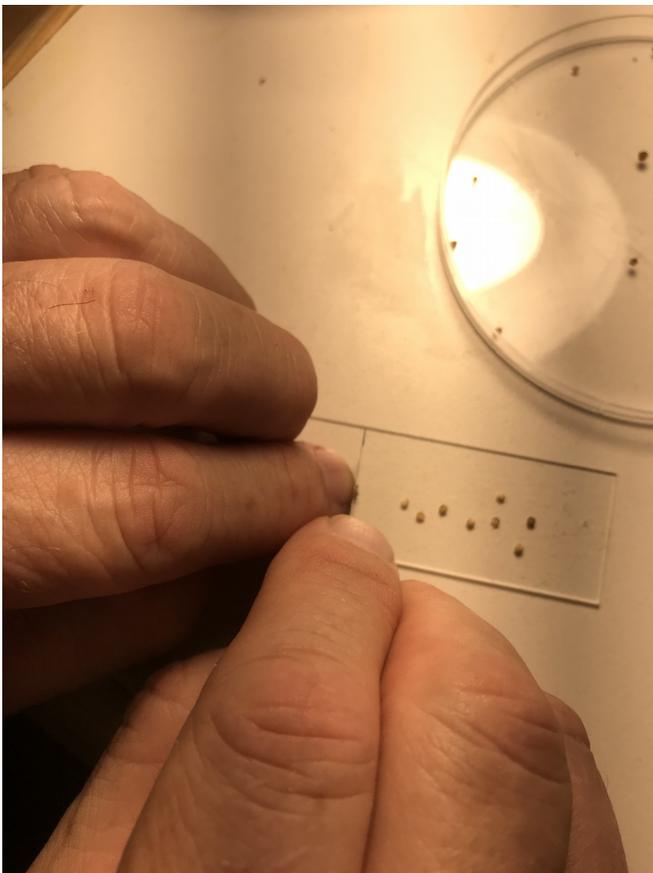
I've been interested in microscopy since I was a boy, but life intervened and I wasn't able to pursue it as a hobby for many years. A few years ago, my interest was rekindled with the acquisition of a B&L Dynazoom. Recently, I was given a Seiler Westlab II, and I also have access to a basic Olympus CH-2 at work. Since the pandemic, I've been spending much more time enjoying the hobby.

I've been especially inspired by the plant sections I've seen on various forums and websites and by the many articles I've read on *Micscape*. Lacking a microtome, I've starting making hand sections of the various plants growing in my yard, with varying success.

Typically, I've used fresh specimens of grass, plant stems, and leaves. I've been troubled with bubbles in the final mounts which is partially due to the mounting technique and air trapping, but also to continued oxygen production in the live tissue. I've since started placing samples in a fixative for 24-48 hours before sectioning to see if this helps.

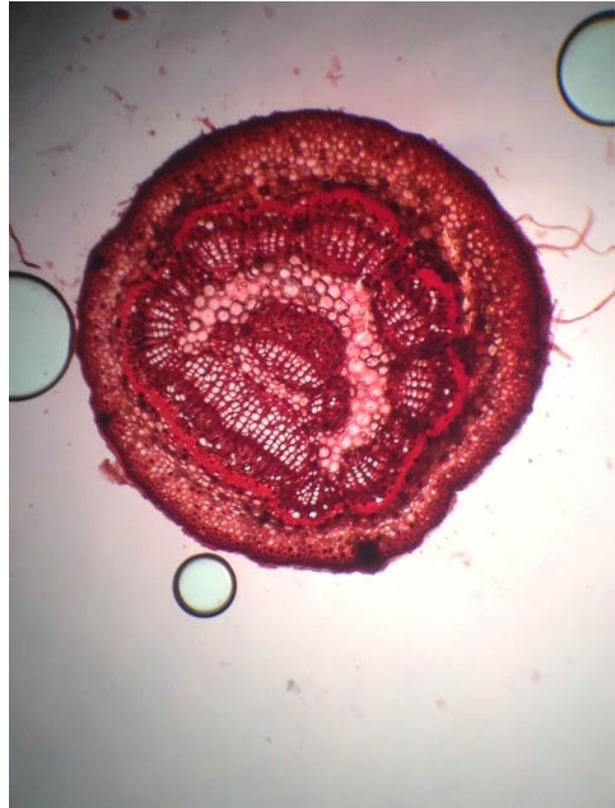
For this article, I'm preparing hand sections of the petiole from the sweet gum tree, *Liquidambar styraciflua*.

There are basically two ways to make and sections: lay the specimen down and guide the blade with the fingernail or hold the specimen in one hand and slice it holding the blade in the other. The photos below illustrate each method. I've used both and it depends on which one gives me the best section.

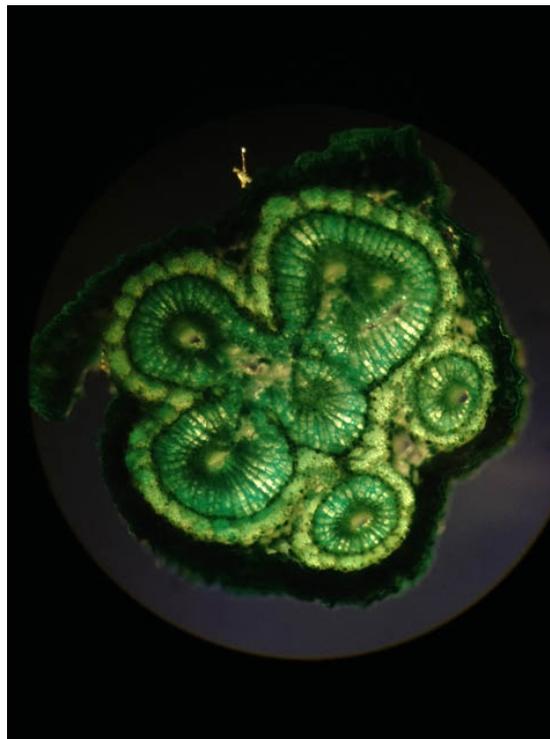


In the second image, that's Safranin on my thumb, not blood! After making several sections, usually I can tell if some are too thick or only partial cuts, etc. I'll select several and examine them first under low power before staining, usually with Toluidine Blue. After reading the late Walter Dioni's excellent [articles](#), I've become a fan of PVA glue as a mountant except that sometimes the stains run. These sections were mounted dry with broken coverglass spacers under the actual coverglass and the entire mount sealed with nail polish. For my early attempts, I've been pleased. Pictures of these sections follow, as well as others to be included as space allows. I hope my attempt encourage others to try hand sectioning and exploring the plant life in your yard or garden.

Results



*Left: 'Owl' – Hickory leaf stem, unstained. Objective 40X, darkfield.
Right: Maple petiole CS, Safranin stain.*



Sweet gum petiole, upper left – Safranin, upper right – TBO. Above – MG, polarized light.

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