Notes From The Dovetail Corner
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It's time for a little "plane" talk. Often, I prefer an antique, properly tuned hand plane to any modern plane. Like many of you, I have an assortment of hand planes including a Ryobi electric hand plane. Its a great tool for some things like edging a 16 foot long, crooked floor board or flattening the corners of a twisted board that is too wide for my jointer. However, for most of the time, it stays in its case.

My collection of wooden planes is a lot more useful. I have the modern Radi-Planes to chamfer and round the arris (corners) of stock. These work wonders on straight grained woods such as cherry, maple, pine and walnut. All preset, they finish the job before I could even get a router out of its case and setup. It's a different story with cross grained woods such as knotty pine or curly maple. The coarse set of the Radi-Plane tears out pieces here and there and leaves the edge a mess. Not the right tool for this job!

I also have a set of antique beading planes, 1/8, 3/16, 1/4, etc. Like the Radi-Planes they do a great job on straight grained woods and are the tool of preference because of their ease of use. Six passes with a beading plane and you're done! However, for cross grained wood it's the router or the shaper every time. It is amazing though, how well a torn bead will cleanup with sandpaper and your eye will never notice the difference in size between the heavily and lightly sanded areas.

My favorite plane is a Stanley Bailey No.4. Properly tuned up and with a razor sharp blade the No.4 will smooth the surface of any wood that I have ever encountered. I think I have almost every model of the No.4 from the original Leonard Bailey design through all the improvements that Stanley put in after they bought Bailey in the 1869. You can tell the difference between models at a glance by looking for the patent dates under the handle in back of the frog.

My engineering background, made me study the tuning of this plane. I compared it to several other Stanley planes such as the No.7 jointer, the No.5 fore plane, the 93 rabbet plane and the 060 low angle block plane. All except the 060 and the 93 have the plane iron set at a 40 degree angle to the surface of the wood with the 27 degree bevel down. The 060 and the 93 irons are set at a 13 degree angle with the 27 degree bevel up giving an effective angle of 40 degrees. This might lead one to conclude that they would all perform the same, but they don't.

This led to a more detailed study of the factors that govern the cutting ability of a plane. As you may already know, these include the bevel angle, sharpness and amount of set of the cutting iron, the grind and setting of the chip breaker iron, the flatness of the sole, the width of the throat and the lateral setting of the blade.
The chip breaker iron is the most neglected part of a plane. Its edge should be ground as carefully as the cutting iron to insure that it meets the cutting iron tightly all the way across. Any gap here is sure to cause the shavings to work under the cap iron and clog the throat.

After grinding the proper bevel on the cutting iron and polishing its edge to razor sharpness, I place the chip breaker on it with its edge 1/64 to 1/32 inches above the cutting edge. For hard to work, cross grained woods keep the distance to 1/64th. 1/32nd is fine for thick shavings from straight grained pine.

Examine the sole of the plane. It should be flat and not hollowed out around the mouth. If it is, flatten the sole with some silicon carbide paper on the top of the table saw. This is described in several books on planes.

Next, place the cutting iron assembly on the frog and adjust the edge until it is just flush with the surface of the sole. The gap between the cutting edge and the front of the throat should be same as the distance from the cutting edge to the chip breaker (1/64 to 1/32). These distances determine the ability of the plane to break the chip before it splits into the wood too deep and the settings are critical for best performance on wild grained wood.

If necessary, move the frog to get the proper throat opening width and make sure that it is the same width all the way across. Stanley patent date APR-19-10 is for the vernier adjustable frog. Prior to that patent, the frog was held on to the sole casting with just two screws which made it very difficult to adjust accurately.

Finally, set the cutting iron for a very thin shaving all the way across the throat and try the plane. I found that for curly and birdseye maple, shavings 0.5/1000 (.0005) inches thick is about right. 1/1000 will work most of the time and 1.5/1000 is very borderline. I determined these thickness by measuring shavings with a machinist’s micrometer. A shaving of 2 to 3/1000 of an inch is ok for straight grained pine but is too thick for most work that I do.

Tuned up and set for the finest shavings, I have little problems using the No.4 on figured maple or even end grain. What a pleasure to cut difficult to work woods and leave a fine, polished surface straight from the plane. The No. 5 and 7 can be setup in the same way and will work as well. However, they are too big and heavy for most work except flattening a large surface or straightening (jointing) an edge which is what they were really designed to do.

The No. 93 rabbet plane and the 060 low angle block plane do not have chip breakers and that is the reason that they do not handle cross grained woods as well as the No.4. However, with a narrow throat and a very small set, they do remarkably well even on end grain or figured woods.

My No.93 was purchased by my uncle about the turn of the century and is identical to today’s manufacture. We will talk about the Stanley No. 55 Multiplane another time.

If you are interested in further reading, I especially recommend:
1. Restoring, Tuning & Using Classic Woodworking Tools by Michael Dunbar