Usable Wooden Planes

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The origin of the plane can be traced back at least to the Romans, and probably further back in time. The first planes were undoubtedly wooden, but even the Romans were aware of their shortcomings, and produced bronze infill planes to work around them. Wooden planes are still produced by Primus, amongst others. These are somewhat more sophisticated than those I have found readily available second hand, but even they can have shortcomings. Bridging the gap between wood and iron planes are the hybrid planes. These are infill planes such as the Norris that are now highly prized. These have an iron sole and sides that are filled in with wood to provide the handle and support the cutter. Modern equivalents are available from Holtey, St.James Bay and others (at eye-watering prices). Also to be found are the less successful Stanley transitional planes (wooden sole and iron internals), which are rather rare these days.

Modern Primus Plane

Modern St.James Bay Infill

Modern Stanley #4

For a plane to be usable for anything more than rough work, the user needs to be able control the geometry of the cutter and the sole to a very fine degree. The sole must be flat at certain points to be able to control the depth of cut as it moves over the work piece. The cutter must be firmly located with respect to the sole so that it doesn't move when it encounters differing grain during the cut. To control the quality of the cut, the geometry of the mouth (the gap in the sole between the front of the sole and the edge of the cutter) must be settable to as narrow gap as required.

A good quality modern iron plane such as the Stanley Bailey or Record #4 meets these requirements in most respects. It has a heavy body made from gray cast-iron that is very rigid. The cutter is attached to a solid iron wedge that closely locates the blade with respect to the sole. The depth of cut can be finely adjusted, as can the mouth when required for fine work. Good modern iron planes such as the Stanley Bailey and Record models meet most of these requirements, albeit with some judicious fettling (flattening of the sole and the frog, trimming the cap iron to mate properly with the cutting iron, etc). Some people hold that even these planes are inadequate, seeking out the heavier Stanley Bedrock models (no longer made), a new Lie-Nielsen or one of the exotic in-fills mentioned above. Alternatively they replace the standard cutter with a thicker, more traditional carbon steel type for more rigidity and better edge holding. The acid test is being able to take paper-thin shavings of end grain of a really hard wood.

Against these requirements, one must compare the average wooden plane. It has a sole that moves with humidity changes. The body is usually made of quarter-sawn beech selected and oriented to minimize movement. But, you still can't be sure that the plane you carefully adjusted last week will hold the same setting when you pick it up today. More tapping and trying may be required till the same setting is reached again. Wooden planes work well with soft woods, but hard woods are another challenge. They often don't have the rigidity and repeatability for fuss free work that their

iron descendants manage. More importantly, the sole wears with use, and few have an adjustable mouth. As soon as the mouth opens out, you have the potential for tear-out.

Tear-out can occur when the cutter encounters some grain that tends to lift with the cut, leaving great big craters in an otherwise smooth surface. With an iron plane, a sharp cutter in a closely set mouth will help to reduce tear-out to a minimum. With a wooden plane, as the sole wears the mouth opens out. I have a couple of examples that have clearly been used till they have mouths wide enough to admit a finger tip. Ideally, the mouth should be around a millimeter or two - larger for rough work and smaller for finishing. To make these planes usable, a new sole could be made to take up the wear and reduce the mouth to a usable gap. Alternatively, if the sole hasn't worn too much, an insert could be made up to fit into a shallow rebate just ahead of the cutter. This could be glued in or even made adjustable. A hard wood such lignum vitae would have traditionally been used for this.

An alternative solution is to fit a metal sole. I have an example of a 400mm (16") square wooden jackplane that has clearly seen substantial use. At some stage, the previous owner (J. Kitchin) attached an aluminum alloy sole using screws to the beech-wood body. Clearly, the mouth had become too wide with wear, and the aluminum sole solved the problem of further wear and the wide mouth. The cutter was ground with a pronounced curve, so this plane was clearly used for rough work – a scrub plane for rapid stock removal. The cutter is hand forged, and marked "BRADES & CO WARRANTED CAST STEEL"- probably made using the traditional crucible process, so I expect it is conventional high carbon steel (1% C). It is 4.3mm thick at the business end, tapering to 2.8mm at the other end. The cap iron is 3.5mm. (Compare this with modern iron planes that have a 2mm iron and 2mm cap iron.) No flexing here. This would help to make up for the less rigid wooden body to make a very capable tool. It has clearly seen some use as shown by the wear on the cap iron, and the progress of the marks down the slot from the screw holding the cap iron onto the blade.

When I found this plane, the mouth was still rather wide, so I redrilled the screw holes in the wooden base and moved the metal base-plate forwards about 6mm, to reduce the mouth to about 2mm. It now makes a useful plane for roughing out – the body is more comfortable to hold than a metal plane. (I'll bring this plane to the next general meeting for those interested to look at it.) I would still turn to my iron #4, #5 or #5½ for final finishing though.

To sum up, none of the old wooden planes I have found to date have really been usable as found, but I have described some remedies. More details can be found in Garret Hack's excellent reference "The Handplane Book" from Taunton Press on planes (Hardware Centre).

Wooden planes do have their fans, but one has to be realistic about their shortcomings.