Hook Tools

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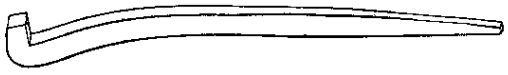
Those that attended Reg Sherwin's demonstration on the 25th November last year may have been intrigued by the hook tool he demonstrated for hollowing. This is not a recent invention – I have reproduced the diagrams and text from "The Handyman's Book" which was first published in 1903, exactly a century ago. The copy I have is a reprint by Ten Speed Press (ISBN 0-89815-203-8) and may still be available from the Woodcraftsman in Edenvale.

"Hook tools (see right) when properly made, are easily used, and will cut rapidly even into hard African black wood. Before using a hook tool, bore a hole to nearly the full depth to be hollowed, and begin at the edge of the hole with a light cut, the edge of the tool being almost horizontal. The hook tool must be well sharpened before using. The slips for whetting the tool are made from pieces of ragstone; these are bought in rough splinters, which require to be dressed to the proper shape. Water is the lubricant used when sharpening the tool. Fix the T-rest close to the work so that the arm-rest will have as little overhang as possible. The handle of the arm-rest (see right) is held under the left arm, whilst the hand takes a firm grip of the shank close up to the T-rest. Lay the hook tool across the bend of the arm-rest and start the cut. If the tool is found to be cutting too deep, it should be held on its side in a scraping position until the cut is felt, and its cutting edge can then be raised to an angle of about 45°, at the same time drawing both arm-rest and hook tool outwards and towards the turner."



"(The turner's arm-rest is a tool used in conjunction with the hook tool and several others. Time is economized by its use, as it enables the operator to turn inside work without setting the T-rest at right angle to the lathe, as he would have otherwise have to do. It also gives the turner greater control over the tool. The arm-rest is made from 3/8-in. square iron about 10½ in. long; one end of the rod is bent upward to form the rest for the hook tool, the other end is forged into a tang and driven into a suitable handle, often measuring 2 ft. long.)"

Reg Sherwin gave us instructions on how to make a hook tool from Silver Steel. Werner Heise then took orders for those wish to buy them – he will make some. These are without handles - being turners, we will have no difficulty with making our own handles!

When you make the handle, I suggest you choose a tool of a similar size and shape, with a handle that you like the shape of and copy the handle. Bore out the end of the blank to match the tang of the hook tool before you mount it on the lathe. Then you can locate the hole on the tail center, so that the hole is concentric with the handle. Fit a ferule to prevent the handle splitting when the tang is driven into the handle or in use. A ferule can easily be made from a short length of tubing – brass or copper look nicest, but almost any tubing will do. Turn down the handle around the hole made for the tang so that the ferule can be hammered over the end. Once the ferule is fitted, the handle can be replaced on the lathe and finished. While the handle is still spinning, use a file to smooth any sharp edges of the

ferule. You can also polish it on the lathe. Finish the handle with oil or varnish and cover the ferule as well, to stop it tarnishing.

For those are interested, here are some details of the metallurgy of Silver Steel, to assist you with hardening and tempering a tool made from Silver Steel, should you wish to make your own.

I think Silver Steel falls into the group of water hardening tool steels called the W steels. The cheapest is W1, which has a carbon content of between 0.6 and 1.4%. It is easily hardened and tempered with the minimum of special equipment. To shape the edge, it should be heated to a bright red and then hammered around a mandrill to the required shape. To get the correct hardness on the cutting edge, it must then be hardened and tempered. For maximum hardness, it should be heated to 770°C to 790°C, which corresponds to a bright cherry red and then quenched in clean water or 10% brine. This should give a hardness of 65 Rockwell. To reduce the hardness and improve toughness, tempering to 59 to 61 Rockwell is recommended, by heating to 250°C. This can be done in a domestic oven, or using a flame and watching the oxide colours. Reg Sherwin recommends cleaning the area to be tempered to bright, clean metal so that the colour can be easily seen. Heat the thicker part of the body and draw the heat to the cutting edge, until it reaches a light straw colour, which corresponds to about 250°C. The thicker part can be hotter, and thus softer, as it doesn't serve as the cutting edge, so hardness and edge holding is not as important. As soon as the edge shows the correct colour, it must be quenched, to stop further heat soak from the thicker part of the tool reducing the temper further than intended. If the edge is over-heated, then the hardening process should be repeated. Tempering is important, as a turning tool needs to be tough as well as hard.

Approximate oxide colours and the temperatures that they occur are shown in the table below (how these actually appear to you will depend on your printer and monitor – if you are using black and white, you will need to use your imagination):

Colour	Temp (Farenheit)	Temp (Centigrade)
Light blue	640	340
Full blue	590	310
Purple	550	290
Peacock	540	280
Bronze	520	270
Deep straw	475	245
Straw	440	225
Faint straw	400	200

An alternative to using a flame and drawing the colours as described above is to use an oven. A temperature of 250C can be achieved in a domestic oven, which is convenient because this what is needed for the limited tempering often used for wood cutting tools. Obviously, if an oven is used, then the handle should be fitted afterwards. The temperature control of your oven is probably not exact, but you can use the oxide colours to confirm the temperature.

Contrary to the name, I find that silver steel rusts, being ordinary carbon steel. A coating of wax or varnish will prevent this once your hook tool is finished.