KEEPING THE CORE

PETER SMITH

Wood pith is often thought of as something to avoid when turning. But Peter Smith argues that, provided care is taken, attractive vessels can be created with the pith still in the walls.

Peter Smith of Cincinnati, Ohio, has been turning part-time for several years now. He is a native of Aberdeen, Scotland.

Peter concentrates mainly on bowls of all shapes and sizes using the rich variety of native hardwoods found in the Midwest.

'Bowl fever' has burned up most of his spare time in the last few years. Two aspects of faceplate turning fascinate him — the technical expertise required in producing thin, uniform bowls, and the aesthetic aspect which is the balance of form, woodgrain, and weight.

The interplay of both of these factors he finds provides endless and ever rewarding challenges.

His main theme is to simplify, closing in on the classical forms for bowls and vessels which have evolved in many ages and cultures.

While turning is satisfying, giving rapid results, it is also an unforgiving craft.

Peter's rule of thumb is that if a piece, once off the lathe, needs explanation or reveals flaws that attract attention away from the basic design, then it is scrapped.

In between bowls and the demands of job and family, Peter finds time to turn out small turned objects such as tops, thimbles, boxes, pens, and letter openers.

It's against the rules, but hollow vessels can be turned with the pith as a major design element. The conventional wisdom is that the pith, or centre of a log should be avoided when turning, as pith is the most unstable part of the log and any changes introduced by drying out create concentrated stresses at the centre causing radial splitting.

In some timbers these splits grow wide and deep and can make a log useless for turning. In other woods, such as walnut, they are fairly superficial, extending into the wood about 12mm ½", and this can be sliced off to provide a fresh surface.

Traditional bowl shapes will distort badly and split with the pith, which is why, if you want to make a salad bowl, cut it out (FIG 1). To make use of the pith in a turned piece needs special design considerations.

Using the pith is not a new technique. I learned it at a workshop given by David Ellsworth. Indeed, the cover of the book *The Art of the Turned-Wood Bowls* by Edward Jacobson (1985) shows a sphere by David with the pith clearly visible.

As Ellsworth said, "If I followed the rules, I would not be making these hollowed-out vessels in the first place."

To start, the wood must be freshly cut and green. If allowed to dry out, the log will inevitably split. The basic shape for these vessels is a thin-walled hollow sphere.

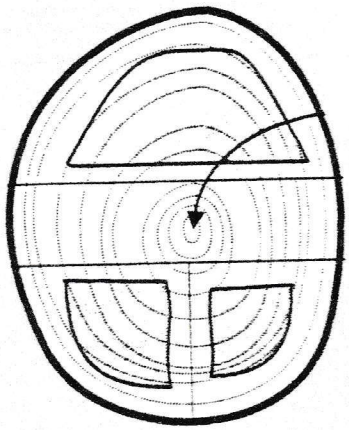


FIG 1 Traditional cut — 3 bowls

in-saw cuts

A sphere, by its nature, resists distortion as the wood dries. Thin walls are necessary, as any thickness will prevent the elastic deformation needed and create splits.

Even when these two needs are met, a small amount of splitting may occur, but these can be filled and will not usually detract from the design.

An advantage of this technique is that small logs of

DEC. 1994

even 125mm 5" to 150mm 6" DIA can be used. These would not make useful open vessels but can be turned into elegant hollow spheres.

I used wood from a limb a neighbour cut off an old apple tree to turn a series of bowls with the pith included and to explore styles.

Apple wood is particularly good because it distorts so much on drying. Indeed, the usual technique of rough turning a bowl, then letting it dry out for two to three months before final turning to shape, is often useless with apple because the blank will severely distort into an oval and by the time this is trued, little wood is left.

This characteristic of apple can be used to good effect if carefully balanced. Photo 1 shows a small-footed flat potato crisp bowl made from a crotch piece of the limb which has distorted nicely.

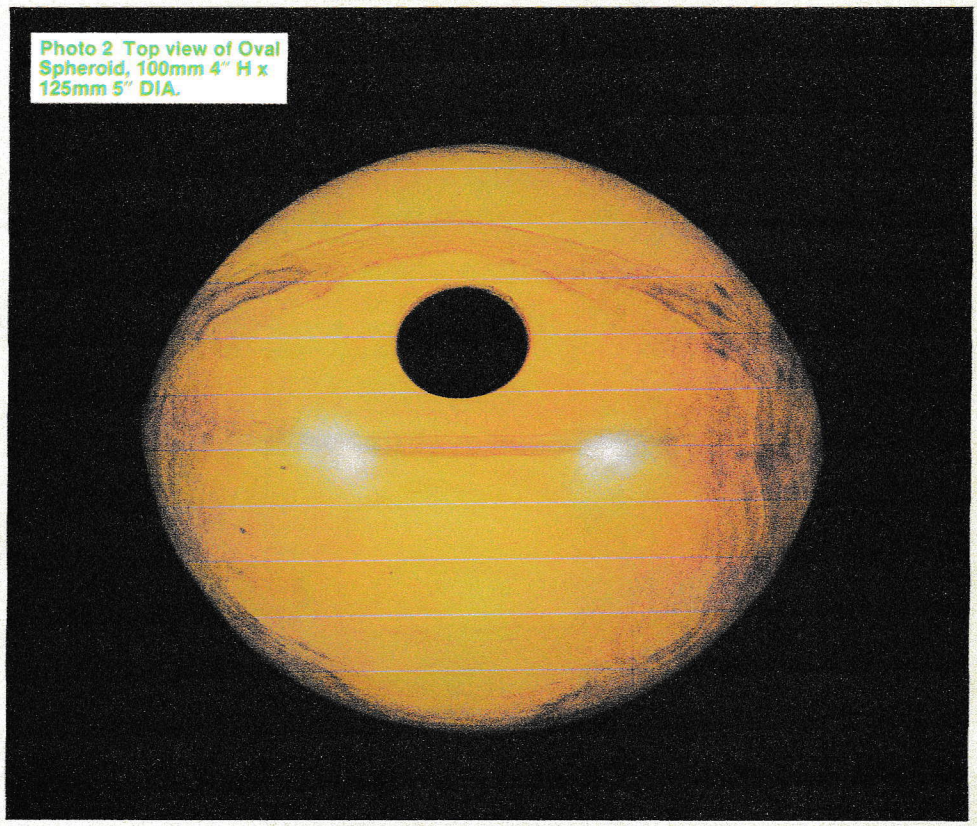


Photo 2 Top view of Oval Spheroid, 100mm 4" H x 125mm 5" DIA.

Photo 1 Potato crisp applewood bowl, turned wet, 190mm 7½" DIA.

I started turning a series of hollow spheres as thin as I could through as small an opening as possible. Within a day of completion these vessels began to change shape and by the time they had stabilised two or three weeks later, had often distorted into rugby ball shapes (Photo 2).

Photo 3 shows a small cup-like vessel with a wide top. The distortion here is severe, turning the opening into an oval and bulging out the sides with the pith. This is interesting, but not elegant or finally acceptable. ▶

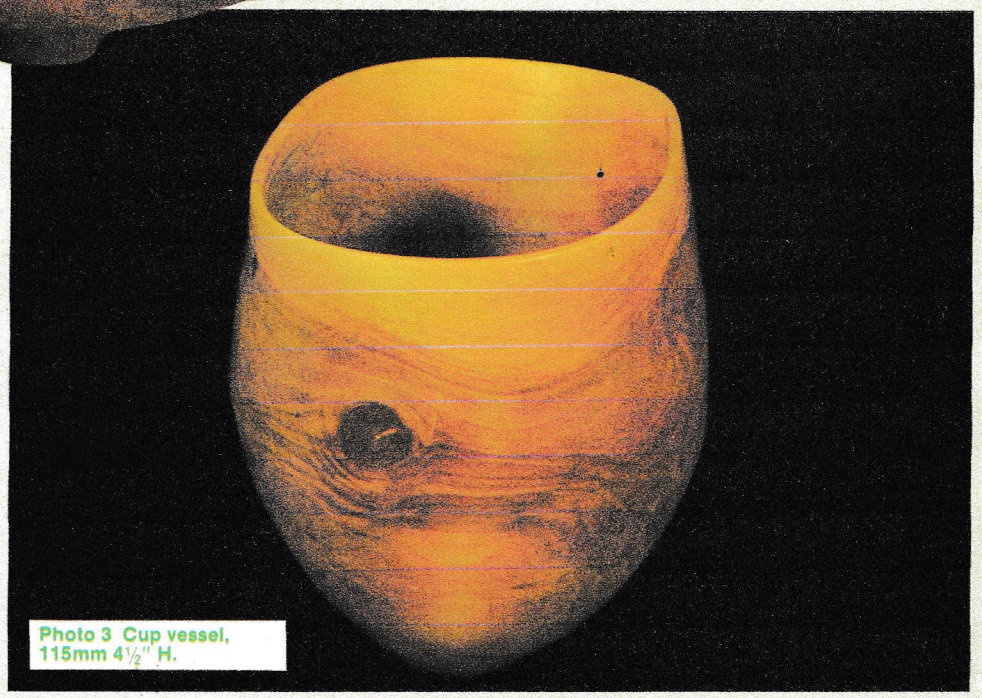
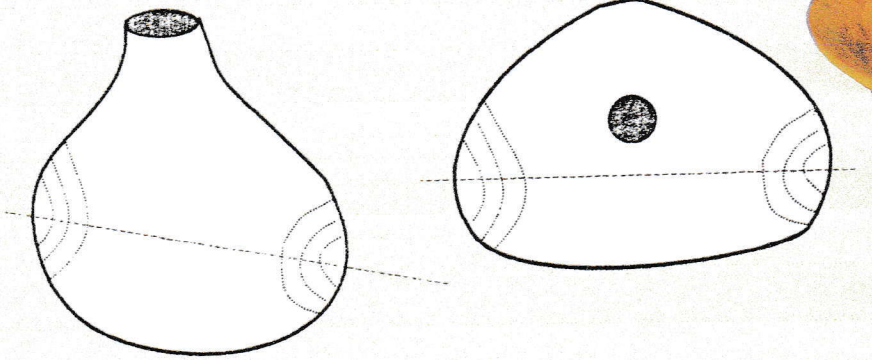
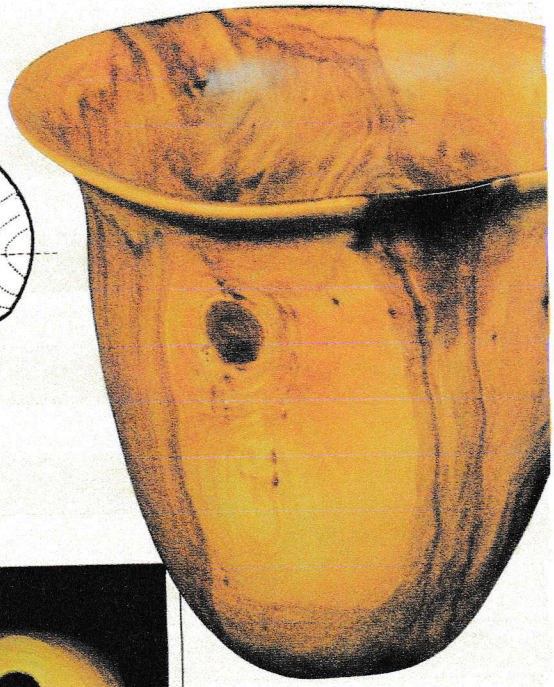


Photo 3 Cup vessel, 115mm 4½" H.

FIG 2 Piths off-centre, vertically (left) and horizontally.



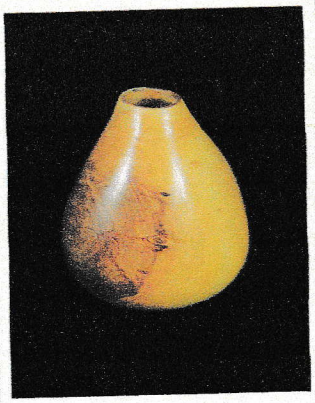


Photos 4 and 5 show the results of careless positioning, also shown in FIG 2.

In Photo 4, one centre is not at the same height as the other and the vase leans to the side, while in Photo 5 the piths are not opposite each other through the centre, and the bowl has distorted into a triangular shape. Since all art is finally a question of balance, and the balance of these bowls is not good, they both join the reject pile.

Finally, Photo 6 shows a variation which is not recommended, namely turning the bowl directly with the grain (see also FIG 3).

Photo 4 Leaning vase, 125mm 5" H.



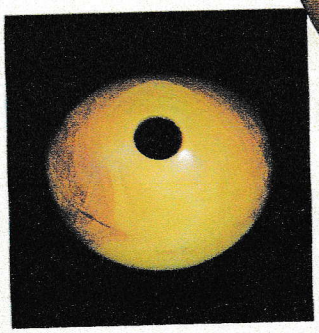


Photo 5 Triangular vase, top view, 75mm 3" H x 100mm 4" DIA.

Photo 6 Bowl with centred pith, 140mm 5½" H.

Photo 7 Base of bowl with centred pith.

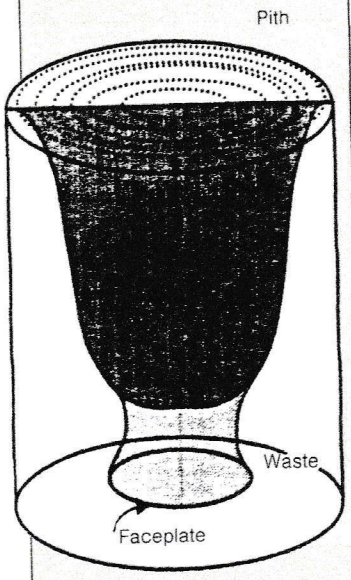


FIG 3 Bowl form with pith in centre.

Although distortion of the final vessel is relatively slight, making the bowl involves cutting into end-grain, which is unpleasant work and eventually the pith in the foot of the bowl has little flexibility to relax and splits are likely.

Photo 7 is a close-up of the base of the bowl. The pith is slightly off-centre and a large crack has developed. This was filled with the traditional glue and sawdust and is not serious. But on the whole, the problems here outweigh any advantages.

If the above variations demonstrate some of the ways not to turn these vessels, the results when all factors work well are rewarding — unique vases which distort symmetrically and show a balance which is aesthetically acceptable (Photo 8).

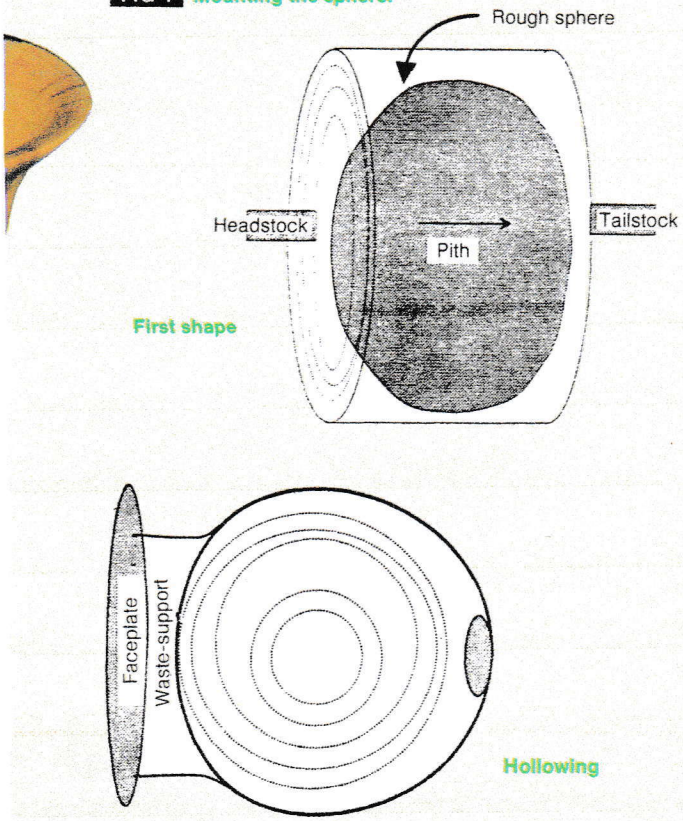
The process of working with pithy wood is as follows. Mount a log slightly longer than it is wide between centres, balance, then turn to a cylinder and rough turn down to a crude sphere (FIG 4).

Ensure the tailstock is constantly tightened, as the drive centre will slowly dig into the soft endgrain.

Remove the log and turn it 90 DEG, remount between centres and turn to a more complete sphere, making sure the pith centres are symmetrical and the marks of the drive centres are cut away.

Flatten one end to take the faceplate (or use waste wood glued on with cyanoacrylate glue for smaller pieces), remount and true up into a spheroid close to final form, leaving plenty of support at the

FIG 4 Mounting the sphere.



bottom for now.

Aim for flowing curves and balanced proportions. The surface should be approaching its final shape and smoothness, as once the bowl is hollow and thin, there is little opportunity, and much danger, in reworking the outside.

Begin the hollowing out with a small, about 25mm 1" DIA opening, and gouge vigorously with either the Ellsworth bent tool, the Stewart hooker, or the Thompson lance, depending on size and facility.

After every major cut, the lathe is stopped and the debris cleaned with a shop vac or blown out with compressed air.

The hollowing out is a slow process and must be done carefully to avoid deep grooves in the wall which will cause problems later. Take the whole sphere down to about 10mm 3/8" wall cross-section.

At this time, finalise the shape of the bowl bottom, cutting away the bulk of the waste but still leaving 50-75mm 2-3" of support at the faceplate, and using the parting tool to define the bottom of the vessel.

Now the wall can be brought down to its final thickness of 6mm 1/4" or less by very careful — and nerve-racking — cutting, measuring and scraping. Doubled-ended callipers, 180mm 7" and 255mm 10", are useful measures of wall thickness, or you can use the latest technique of a fibre-optic light inside the sphere to show the wall thickness.

There is no easy way to complete this stage. The general rule is practice, practice, practice, and start at the top and work down the side carefully.

When final thickness is achieved, turn to the bottom of the bowl, finalise the lower hips and reduce the attachment to the waste block to a minimum (-25mm -1"). Now finish the surface, as described.

When parted from the waste, reverse the sphere into a cup chuck lined with foam, bringing up the tailstock to hold this in place and turn a small indentation in the bottom, then sand and finish.

Remove from the lathe, cut off the supporting cone with a small chisel, and hand finish.

Photos 9 and 10 show some of the tools used in hollow turning. Most use 5mm 3/16" or 3mm 1/8" square cobalt-steel toolbits.

For the simple homemade cutter designed by David Ellsworth, the neck of the square bit is ground round and superglued into 5mm 3/16" drill hole in a bent 10mm 3/8" rod. This is versatile and useful for the top shoulder work but vibrates as it is extended into the bowl more than 50-75mm 2-3".

The Stewart hooker is well-known and deservedly popular, using both a 5mm 3/16" bit, or the more aggressive 3mm 1/8" cutter, which can be adjusted to various angles and, most usefully, replaced with a scraper blade to smooth out the grooves left by the cutter.

Jerry Glaser's swivel head boring bar is also shown, which ▶

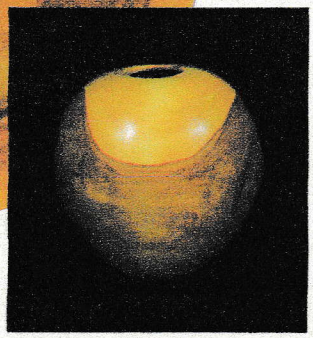


Photo 8 Symmetrical vase, 150mm 6" H x 125mm 5" DIA.

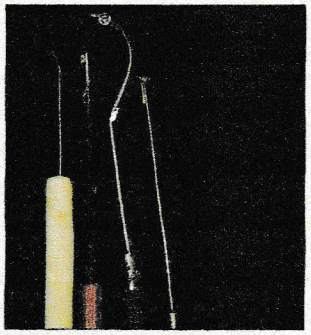


Photo 9 Hollow-turning tools.

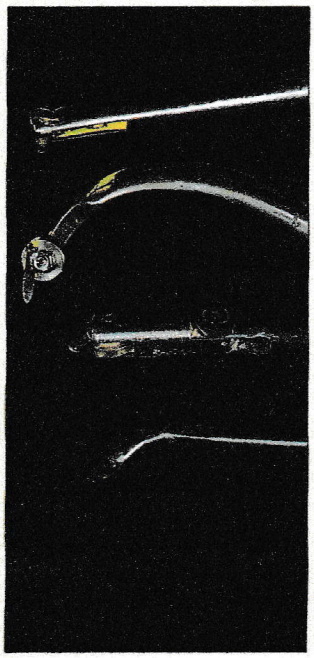


Photo 10 Detail of cutting bits.

works for depths up to 230mm 9". A Jim Thompson lance is a much bigger affair but can provide delicate and clean cuts in larger bowls.

Each of these tools has its strengths and idiosyncrasies and all can be used in the process. Again, the only real secret to success is practice.

There are many ways to finish bowls. The method I have developed and used successfully can be applied to most turned objects, not just hollow spheres, and gives superior results.

Four basic steps are involved: 1 sealing, 2 power sanding; 3 oil hand sanding and 4 buffing. When the final shape has been reached and most tool marks removed by careful gouge work, use 100 grit paper to lightly sand the spinning surface.

Then the surface of the wood needs to be sealed with a lacquer-based sanding sealer which is liberally applied and then wiped off.

I use Deft Wood Finish, for two reasons. First it seals the wood and stiffens the grain, because sanding wet wood is ineffectual and the sealer sets the wood fibres. Second, as the wood darkens with the sealer, grooves and uneven surfaces stand out and suggest further tool work.

The bowl is then left to dry for 20-30 minutes, long enough for a lacquer-based thinner. This is often an awkward break in the flow of the work, but it can be constructively used for reflecting on the process — and making a cup of tea.

When the sealer is dry, it should be sanded, first by hand using 100 grit paper and then with a power sander, using Power-lock 100 grit 75mm 3" discs, which give a smooth finish to the sealed wood. At this stage, tool marks and ridges can be sanded out and feathered in. After 100 grit, a 150 grit disc is useful.

When the surface is smooth enough, an oil finish is applied and rubbed into the spinning bowl, using low revs (about 400 RPM) to stop the sandpaper skating over the surface.

The sequence is 150, 220, and 320 or 400 grit, with lots of Watco's Danish oil and hand rubbing. After final sanding is complete, the 'mud' wiped off and the surface relatively dry, the bowl can be parted from the lathe.

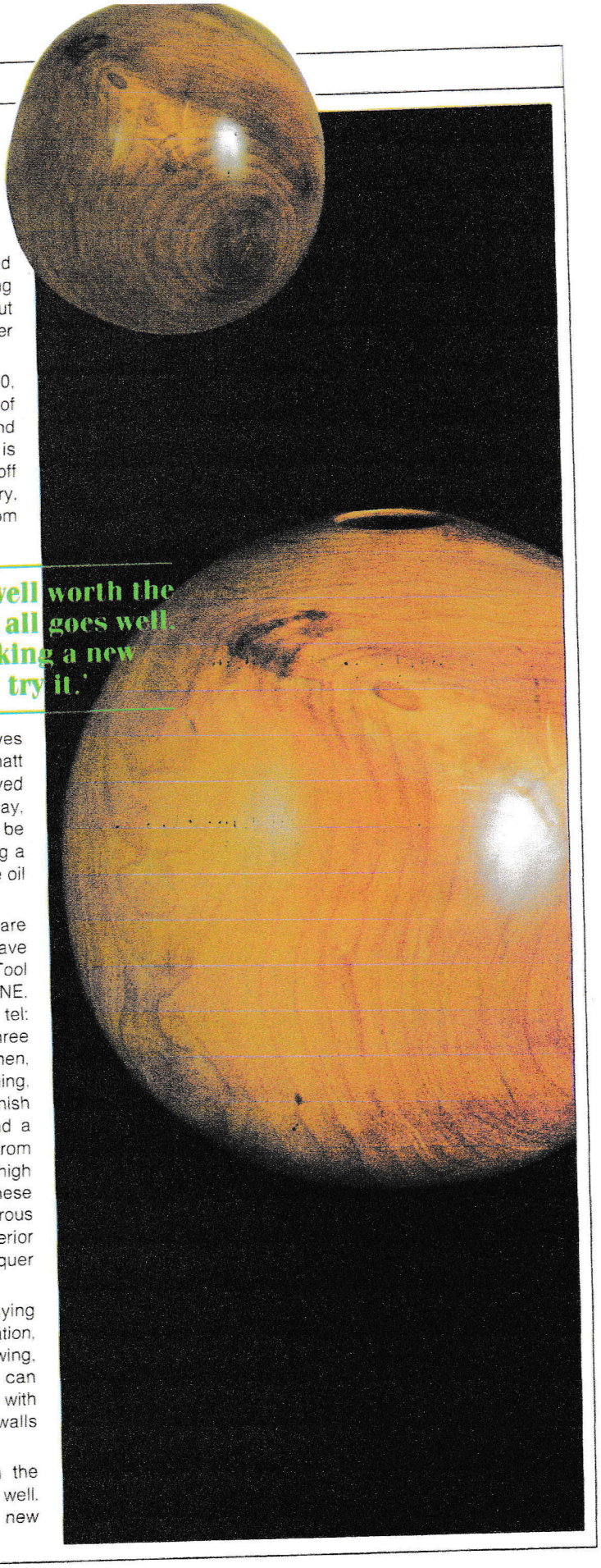


Photo 11 Cherry sphere, 255mm 10", with only minor distortion and splitting.

'The results are well worth the extra effort when all goes well. Woodturners seeking a new challenge should try it.'

The above sequence gives an attractive silky smooth matt finish which can be preserved by a few coats of artist's spray, Acrylic Matt. It can also be improved by a gloss buffing a week or two later, when the oil has totally dried.

Various buffing systems are available. The best I have found come from The Beall Tool Co. (541 Swans Road NE, Newark OH 43055, USA; tel: 614-345-5045) and uses three wheels: one made from linen, with Tripoli for rough shining, one with White Diamond finish to give a finer sheen, and a Carnuba wax wheel made from cotton which provides a high gloss durable wax finish. These three steps give a deep, lustrous surface to the wood, superior to any varnish or lacquer application.

So, as you can see, paying attention to the grain orientation, careful turning and hollowing, and giving a fine finish can create attractive vessels with wood pith still in the walls (Photo 11).

The results are worth the extra effort when all goes well. Woodturners seeking a new challenge should try it. ■