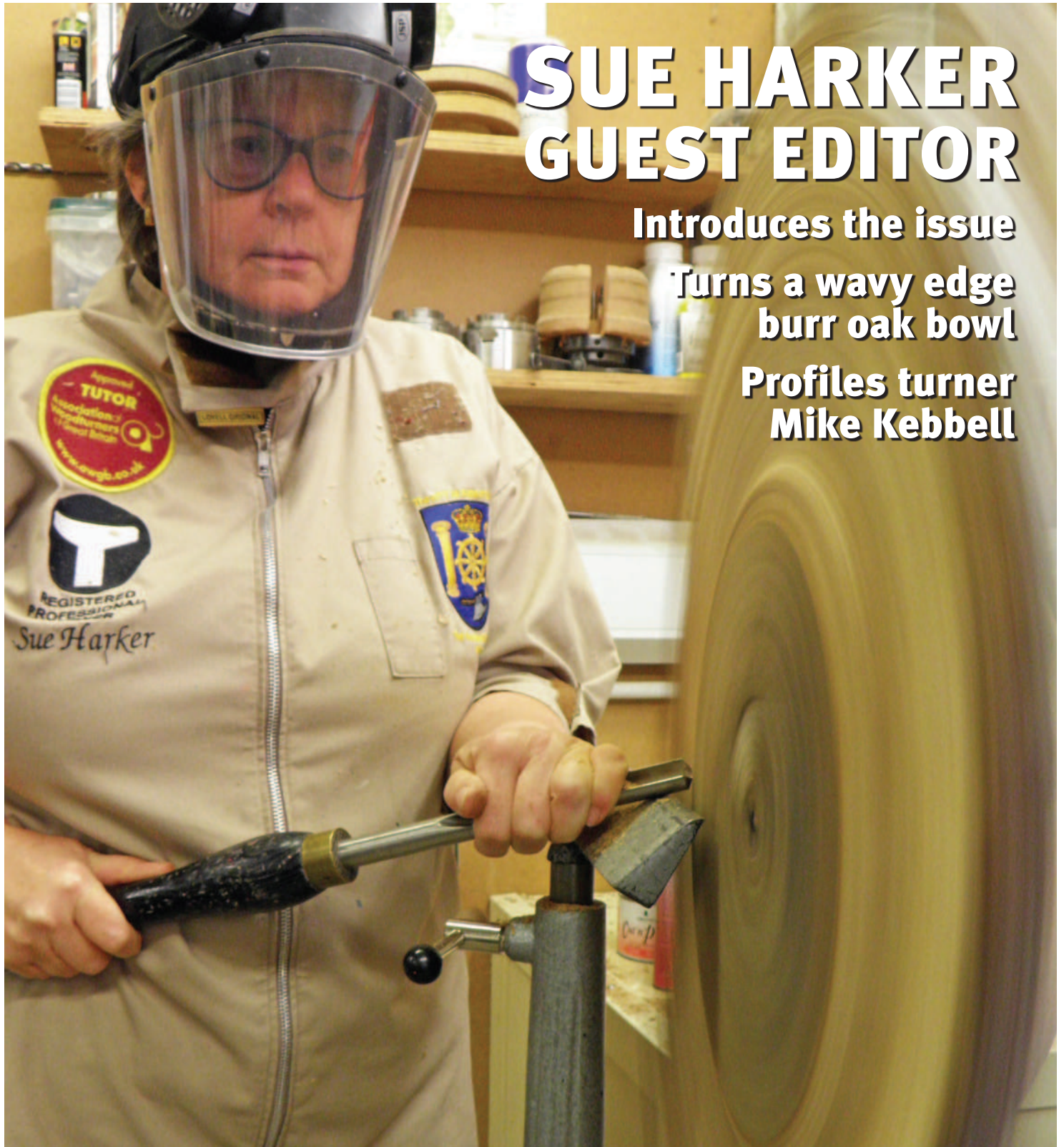


Woodturning

THE WORLD'S LEADING MAGAZINE FOR WOODTURNERS



SUE HARKER GUEST EDITOR

Introduces the issue

**Turns a wavy edge
burr oak bowl**

**Profiles turner
Mike Kebbell**

PROJECTS King Arthur's chalice • Bon-bon dish
• Wooden buttons • Sewing tidy • Striped spindles
TECHNICAL Tips for turning pine • Dust control

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Guest editor's letter – Sue Harker



After giving quite a bit of thought to the subject of this letter, and changing my mind several times, I decided to talk about what is being done and what more can be done to generate interest in the craft of woodturning. Woodturning clubs, particularly in the UK, usually consist of people close to, or past retirement age. So, my question is: 'What can we do to ensure that interest in our craft continues to grow?'



PHOTOGRAPH BY SUE HARKER

Throughout my career in woodturning, I have encountered a steady stream of people, usually, but not always, coming up to retirement who want something to fill their time. They had encountered woodturning in school and remembered the satisfaction of making something from wood. So, woodturning became their hobby of choice. Although it is encouraging to know there were people who had experienced the craft at an early age who were now taking it up, it made me think about what was going to happen to the youth of today – they are not lucky enough to have a taster at school, so they need to be introduced to woodturning from other sources.

If you type 'woodturning for young people' into your internet search engine, you will see a plethora of woodturning clubs offering youth training. The AWGB and The Worshipful

Company of Turners sponsor a youth training programme and offer grants to clubs for developing youth sections. They also offer training for club members to be able to offer woodturning classes to Scouts.

I am sure there are many woodturners who have been involved in this and credit goes to you. We can all do our bit to spread the craft far and wide. Of course, it does not have to revolve around young people, however they are potentially the turners of the future.

Live demonstrating at craft fairs tends to pull in a crowd, people who may never have seen anyone turning before, not only children but adults too. This is a good platform for spreading the craft. A simple thing all woodturners can do is encourage their children, nephews and nieces, friends, and neighbours' children to have a go in their workshop under their

guidance. This needs to be undertaken with an appropriate adult present for those children under the age of 18 – the appropriate adult might take up turning, another turner for the future. My husband Graham and I have done just that, two of our granddaughters and several nephews and nieces as well as brothers have all made items under our guidance. Who knows, they may start the craft later in life?

Staying with teaching the younger generation theme, I am introducing a woodturner I have known for the past seven years. He dedicates his time to teaching, he took advantage of the Scout programme and instructor training run by the AWGB and is currently introducing woodturning to Scout groups in the Humberside area. Look out for his profile in this issue.

Happy and safe turning, *Sue Harker*

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Cover image by Sue Harker



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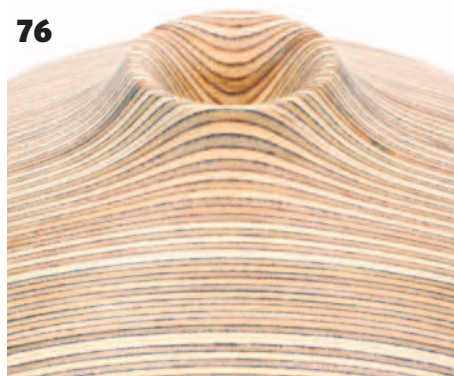
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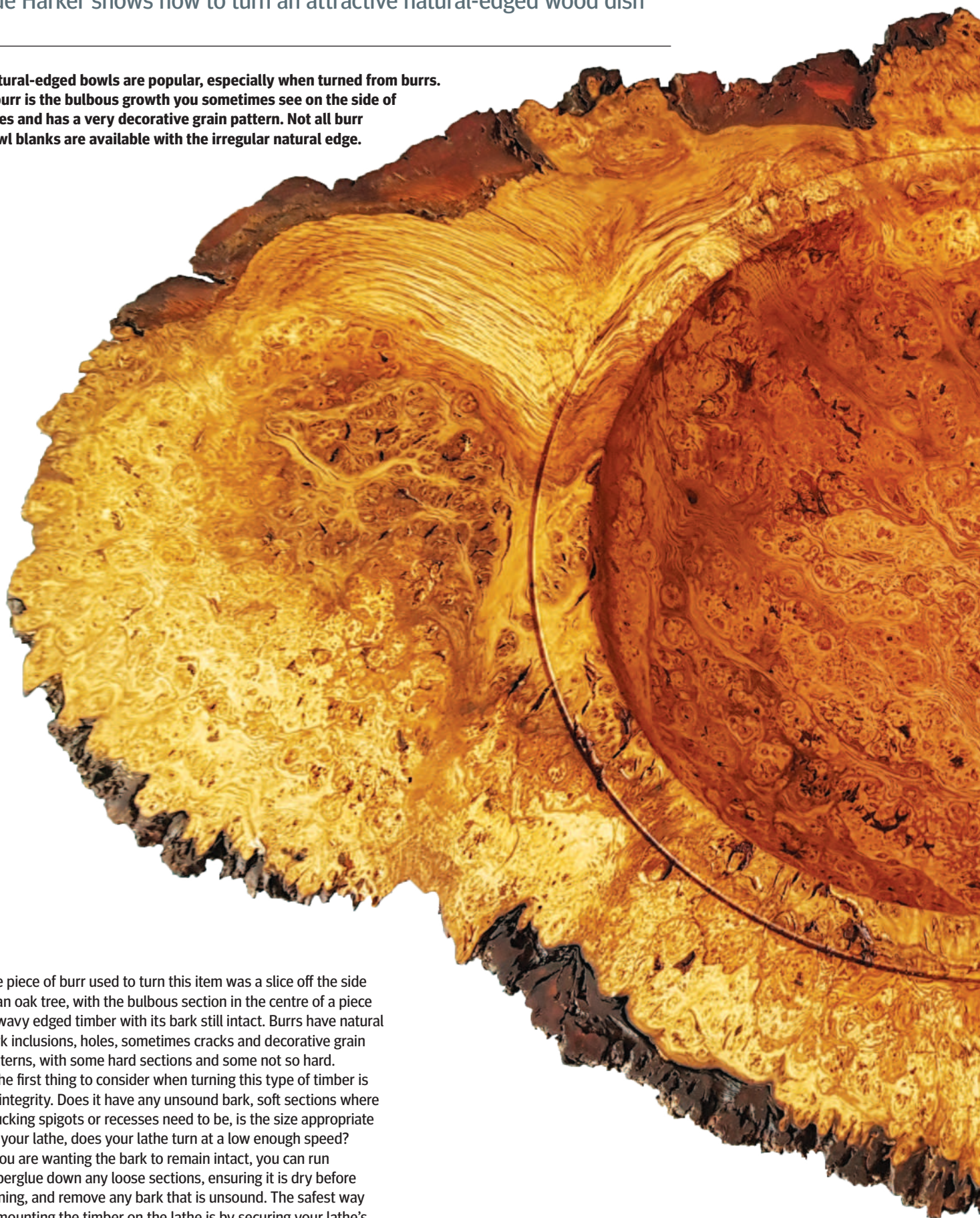
HEALTH & SAFETY

Woodturning is an inherently dangerous pursuit. Readers should not attempt the procedures described herein without seeking training and information on the safe use of tools and machines. All readers should observe current safety legislation when turning and wear appropriate personal protective equipment (PPE) and respiratory protective equipment (RPE).

Wavy edge burr oak bowl

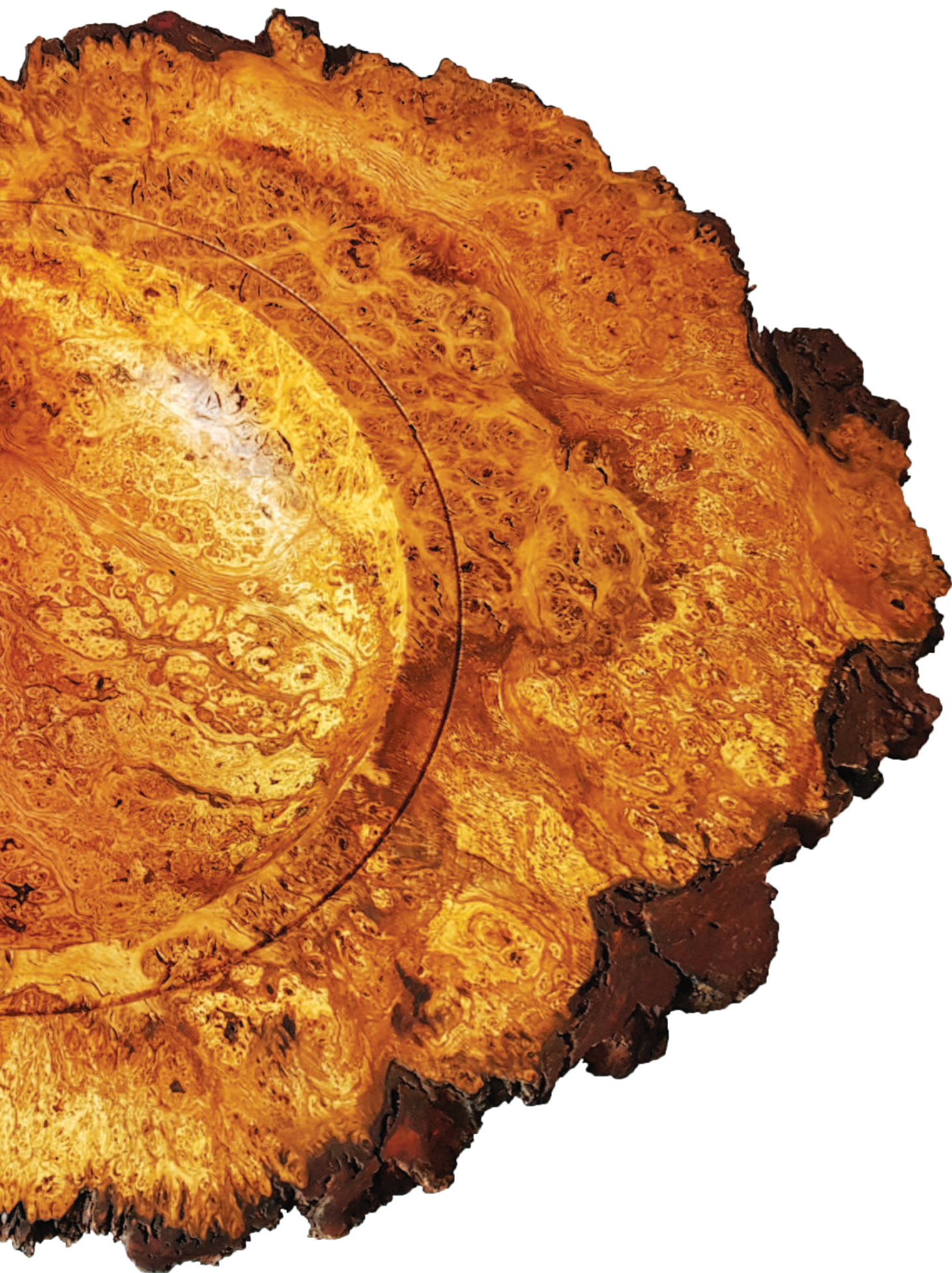
Sue Harker shows how to turn an attractive natural-edged wood dish

Natural-edged bowls are popular, especially when turned from burrs. A burr is the bulbous growth you sometimes see on the side of trees and has a very decorative grain pattern. Not all burr bowl blanks are available with the irregular natural edge.



The piece of burr used to turn this item was a slice off the side of an oak tree, with the bulbous section in the centre of a piece of wavy edged timber with its bark still intact. Burrs have natural bark inclusions, holes, sometimes cracks and decorative grain patterns, with some hard sections and some not so hard.

The first thing to consider when turning this type of timber is its integrity. Does it have any unsound bark, soft sections where chucking spigots or recesses need to be, is the size appropriate for your lathe, does your lathe turn at a low enough speed? If you are wanting the bark to remain intact, you can run Superglue down any loose sections, ensuring it is dry before turning, and remove any bark that is unsound. The safest way of mounting the timber on the lathe is by securing your lathe's faceplate, or a faceplate ring designed to fit your chuck jaws, to the flat side of the blank.



Plans & equipment

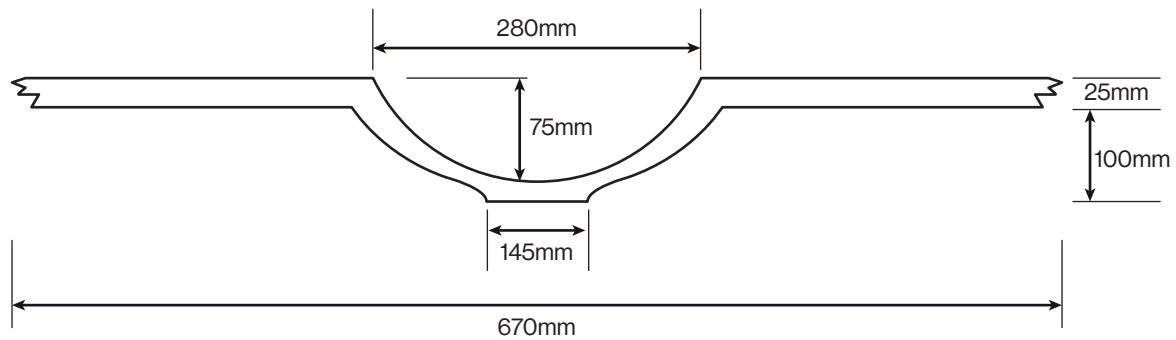
Materials

- Piece of wavy edge burr oak measuring approx. 670mm maximum length x 470mm maximum width
- Scrap of wood approx. 55mm x 55mm x 45mm long for the faceplate centring jig

Tools & equipment

- PPE as appropriate
- ½in standard grind bowl gouge
- ¾in standard grind bowl gouge
- ¾in long grind bowl gouge
- ¼in parting tool
- Flat-sided skew chisel

- Rotary sanding arbor
- Faceplate ring
- Battery drill
- Proxxon grinder
- Abrasives, 120, 180, 240, 300, 400 grit
- Sheet sander



HEALTH & SAFETY

- Due to the imbalance of the burr, start the lathe at the slowest speed possible and slowly increase until the lathe starts to vibrate slightly, turn down a fraction until the vibration stops. When some of the bulk has been removed, the lathe speed might be able to be increased slightly.
- When the underneath of the bowl has been shaped, check to ensure there are no unsound sections. Any large cracks may need to be filled. If the timber is in danger of splitting badly then abort the bowl turning.

Top tips

- Use a wide, flat sander to sand the bowl's wings. This will help to keep the wings flat. Stubborn areas can be sanded by hand or by using an arbor fitted into a drill bit, then smoothed over with the flat sander.
- When applying oil to the bowl do not apply too much – any oil that has soaked into the burr's natural cracks will ooze out and result in glossy areas. Keep checking the timber for this – if there are areas of excess oil, wipe off before it dries.



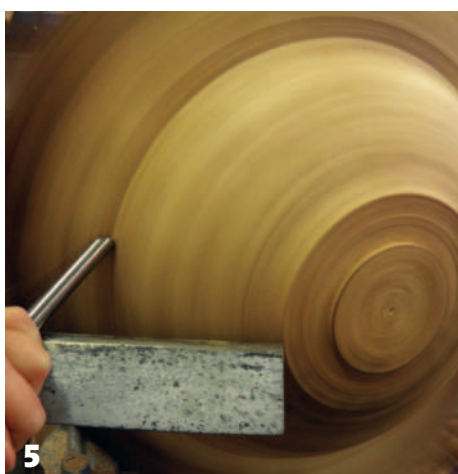
How to make a faceplate centring jig

Mount a piece of timber approx. 55 x 55 x 45mm in the jaws of your chuck and turn a diameter approx. 6mm wider than the recess in your faceplate ring. Cut a shallow spigot the correct diameter and depth to fit into the faceplate recess. While still in the lathe, drill all the way through the jig with a drill bit the correct diameter for your bradawl to fit through. Part off the lathe.

1 Mark the centre of your timber so the maximum bowl size can be achieved. Push a bradawl through a centre-finding jig like the one shown in Top tips. Place the faceplate ring over the approximate area and locate the point of the bradawl with the centre mark. Push the centring jig into the recess of the faceplate ring while the bradawl is still located into the centre mark.

2 With the bradawl firmly located in the centre position, hold the faceplate ring in place and fix screws into the holes around the ring. These screws need to be a reasonable length so they have a secure hold in the timber.





3 Mount the timber on the lathe, securing the faceplate in the jaws. Reduce your lathe to its lowest speed, ideally below 200rpm. Slowly increase the speed until the lathe begins to vibrate, then reduce it a fraction until the vibration disappears. This is the lathe's comfortable speed for the size and shape of timber being turned. With a ½in standard grind bowl gouge, gently turn the timber into the underneath shape of the bowl. This is a slow process but quite therapeutic.

4 Continue removing excess timber to create the bowl shape. Still using the ½in standard grind bowl gouge, cut a flat section across the base, approx. 145mm diameter – this is where the foot and spigot will be formed. Next, using a ¼in parting tool, cut a spigot the correct size for some large jaws. Here I am cutting a spigot at 85mm diameter to fit my step jaws. These jaws have a dovetail, so a dovetail is cut into the spigot using a flat-shaft skew chisel laid on its side.

5 From the diameter of the foot, refine the shape of the bowl and create the wings along the wavy edge. Most of the time you will be cutting into nothing, so hold your tool steady on the toolrest and take gentle cuts. Next, using a ¾in-long grind bowl gouge, define the area where the bowl and wings meet. Cut the bowl shape towards the wings using the tool in a bevel supported cut, then when the tool reaches the transition between bowl and wings, rotate the flute towards the wings and lower the handle, using a pull cut to refine the wings with shearing cuts.

6 With the shape achieved, sand the bowl using a rotary sander. Only sand the solid sections, not the wings, while the bowl rotates. Start with 120 grit and work through 180, 240, 320 and 400. The wings will need sanding by hand.

7 Lay the bowl on a flat surface or leave on the lathe and use a spindle lock to stop the piece rotating. Sand the wings using a flat sander with the same grits as previously used, only moving on to a finer grit when all marks are removed. Blend the sanding into the area already sanded when the bowl was on the lathe.

8 With large jaws fitted to the chuck, re-mount the bowl using the chucking spigot cut earlier. Starting at the outer edge, true up the front face – several passes will be required to achieve the desired thickness.

9 Make a pencil mark on the front of the bowl as a reference for where the underside finishes. To do this, select a narrow area on the bowl wings and measure from the edge to the start of the underneath of the bowl. Transfer that measurement to the top of the bowl and draw a pencil line around the timber. This reference mark allows you to gauge how thick the bowl is when turning out the inside.

10 Approx. 25mm to the right of the reference mark, start to remove the centre of the bowl, working in steps, as you would for any bowl. Finish the first 25mm to the desired wall thickness before moving on to the next 25mm.

11 As you work down the bowl in 25mm increments, also reduce the centre section. This creates space for the toolrest to be secured closer to the internal shape of the bowl, thus reducing the amount of tool overhanging the toolrest. Continue with this process until the entire centre of the bowl has been shaped.

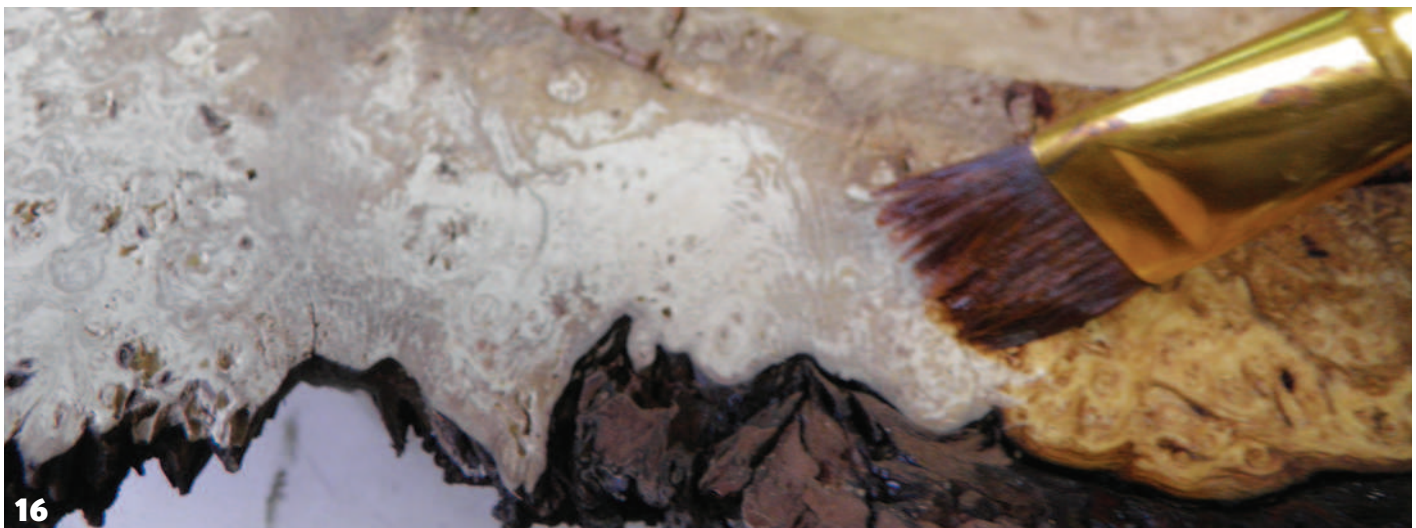
12 Using a 1/8in parting tool, create a V-groove on the reference line drawn earlier. This groove adds the feature of picture framing the bowl. If you prefer you can omit this detail.

13 Using an arbor mounted in a drill, sand the internal shape of the bowl and the solid area on its front face. Work through grits 120, 180, 240, 320, 400. Using the abrasive folded in half, sand the V-groove.

14 With the bowl still fixed on the lathe and the spindle lock located to hold the wood stationary, sand the wings of the bowl using a flat-faced sander, blending into the section already sanded while the lathe was rotating. Start with 120 grit and work through 120, 180, 240, 320, 400. Remove the bowl from the lathe and lay on a flat surface. Using a grinder, gently remove the chucking spigot, leaving the surface slightly lower than the finished foot base.

15 Using a sanding arbor fitted into a drill, sand this area until smooth, with no evidence of having had a chucking spigot there. When the desired finish has been achieved, blow out the dust from all the crevices, I use a compressed air gun for this.

16 Apply finishing oil to the entire bowl. For this, I used a brush to ensure all areas received a covering. To achieve the desired finish, several coats of oil will be needed, leaving to dry between coats. ●



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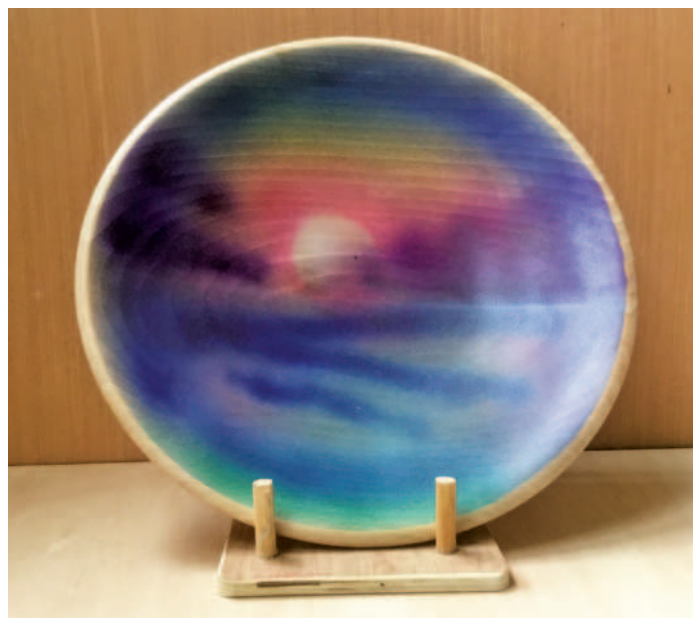
A photograph of Mike Kebell, a man with glasses and a friendly smile, standing in his workshop. He is wearing a tan jacket with several patches, including a Scout group patch and a 'Tutor' patch. The workshop is filled with various tools, wood, and equipment, creating a busy and creative atmosphere. The title 'Teaching turning' is overlaid in large white text.

Teaching turning

Sue Harker introduces former student turned tutor, Mike Kebell

I have chosen Mike Kebell to feature in this issue's profile; he is a hobby turner with a passion for helping others learn the skill of woodturning. Initially, he started a lunchtime club at his wife's school, which proved to be popular. He now instructs the teenagers who attend Scout groups in Humberside. I first met Mike approximately 7 years ago when he attended an AWGB workshop I was holding. He showed great promise and his enthusiasm for woodturning was evident.





Hello Mike, tell us about your background and training.

I gained a PhD in chemistry in the early '80s and then spent my working life in manufacturing industries as a process engineer. I specialised in fan engineering and dust filtration – very handy for a woodturner.

What led you to start woodturning?

From a child I always liked working in wood. There were woodturning articles in the magazines I read and in about 2000 I just jumped in at the deep end with a DML 36SH and a collet chuck.

How do you like to work, what are your favourite tools and why?

I get a compulsion to make something or practise a technique almost at random. I love a good finish, so if I get the chance to make planing cuts with the skew I am wholly absorbed – it is a fantastic de-stressing habit.

What inspired you to pass on your skills to the younger generation?

I love how readily youngsters get interested in whatever I do with them and, unlike adults, they are very good at showing their pleasure (or otherwise!). I met my children's D&T teacher and was taken with his enthusiasm, which ended up with me running a lunchtime turning club for him working through the whole of year seven (11 year olds), two at a time, each making a pen in about 30 minutes. Then I found the AWGB Let's Teach Turning course and gained my Approved Tutor badge. This is an excellent way for anyone to teach themselves turning, let alone others – hats off to the AWGB team.

How did you get involved with the Scouts and what do you get from your involvement?

I got a phone number for a local contact from our community magazine and was quickly invited to demonstrate at our village Explorer Scouts section. The demo only went for a few minutes before the leader asked how the Scouts could participate, and tag-turning was born.

Working with young people allows me to enjoy their enthusiasm and energy – there is nothing to beat the grin you get when the piece comes off the lathe and the youngster sees what they have made. Scout leaders are very welcoming and creative. I have run three lathes to deliver individual projects lasting the full session in groups where leaders run other activities alongside the turning.

How do you plan your tutoring?

There is no longer a woodturning badge for Scouts (probably due to a lack of tutors) but there is the AWGB Scout Pack, which teaches older Scouts both spindle and faceplate work. Otherwise I fit in with section programmes or district and county camps. I am on the programme for two days at the Poacher International Jamboree next year – it would be nice to do the full week but the effort is quite exhausting...

Describe your workshop – what is the set-up and how long have you been there?

My workshop is in the garage – everything has to be very carefully placed so that the cars fit the gap, which has been getting steadily



smaller over the years. I have a Nova DVR with an extra bed section so I can turn metre-long canes or get the tailstock well out of 'turner's elbow' territory.

How does your design process work?

This is mostly demand led – one of the family or a Scout leader finds something they like and makes a request, then my preferences tweak the project. I think that I get my money's worth from just making an item, so I never charge for my turning. This is very liberating and leaves me free to produce what I like.

Which woods do you most like working with and why?

I work almost exclusively with native timbers, most frequently with ash. I find an endless fascination with the grain patterns and steer away from decorative work that hides the wood. For this reason I like airbrushing with translucent pigments.

Do you work with other materials as well, and how do they compare?

I have made my share of acrylic pens – durable, attractive colours, but the way the swarf sticks to everything and needs interruptions to clean off the work puts me off.

What sort of finishes do you prefer and why?

After being introduced to the Beall Buffing System I usually use this

for my finishing, so high-gloss carnauba wax. The Chestnut Foodsafe oil is also a big favourite for the way it makes grain patterns 'jump' into life.

What inspires you and where do you get your ideas from?

My wife is very keen on spinning/knitting, sewing etc., so there is a theme of making items for these crafts. I love the traditional names – who else has heard of a 'niddy noddy'?

How have the Covid-19 pandemic and lockdowns affected your work, and do you think any of the impact will be long term?

Particularly with all the emphasis on mental health problems, the past 18 months have underlined the value of the hobby both to the turner and to their friends and family. I made lots of small items to give away for Scouts Camp at Home weekends and for neighbours. Maybe one of the local kids I gave magic wands to will come back with mum or dad and have a go for themselves? If all the people who bought new equipment during lockdown keep up with their new hobbies it will be healthy for woodturning, if not there should be a few secondhand bargains around!

What do you do when you're not woodturning?

If the weather is reasonable I will be gardening or walking the Yorkshire countryside. If it is bad weather I sit and paint model soldiers – again, very relaxing. ●

King Arthur's chalice

Les Symonds makes the second in a short series of chalices, this month dedicated to King Arthur

For my second project involving a chalice dedicated to an historic character, I turn to King Arthur, or Arthur Pendragon as we know him here in Wales. Arthur is one of those wonderful characters for whom fact, myth and legend all play a part in our perception. That there was such a king is a known fact. That he was Welsh is a little dubious, although there is much evidence to support the fact that he was a Celt, and that he lived in the western lands of Britain, such as Cornwall, Wales or Ireland, but who knows?

I have carried out a little research into chalices as historic artefacts, and examples from this period in history (5th century AD) rarely appear with inset stones, but frequently have a bulbous area on the middle of the stem to aid the drinker's grip. Our chalice, therefore, is a work of speculation, celebrating the legend as much as it celebrates the man. I have used beech as it is suitable for food and drink receptacles, although as it is unlikely ever to be used, other timbers could be substituted.

For the revelries of the Arthurian banquet, I have decided to bind the stem with leather to afford, along with the stem bulb, ample grip, thus doubly ensuring that the chalice full of mead does not slip from the drinker's hand. At the base I have set 12 dowels, equal in size and colour, into the chalice. These represent the number of positions at the Round Table, occupied by Arthur and those knights whose names are most frequently associated with Arthurian legends. What we do know of the Round Table is that it promoted equality, so accuracy in the choice of timber colour, in turning and in setting out the dowels will be important.



HEALTH & SAFETY

- As projects go, this is quite a safe one with no technically challenging aspects. One H&S aspect worth mentioning is the need to take care when cutting a deep groove with a parting tool, such as those conducted at the very start of the project, and when shaping the base.
- Another would be the need to exercise caution when roughing large square sections. Beware the rapidly spinning corners! Keep the toolrest close and always rotate the workpiece by hand before switching on.

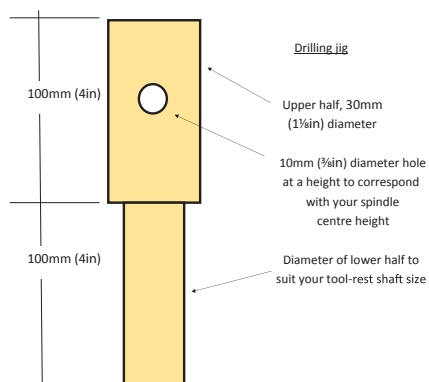
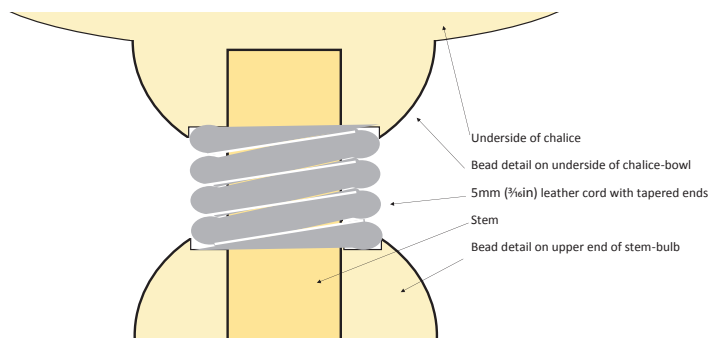
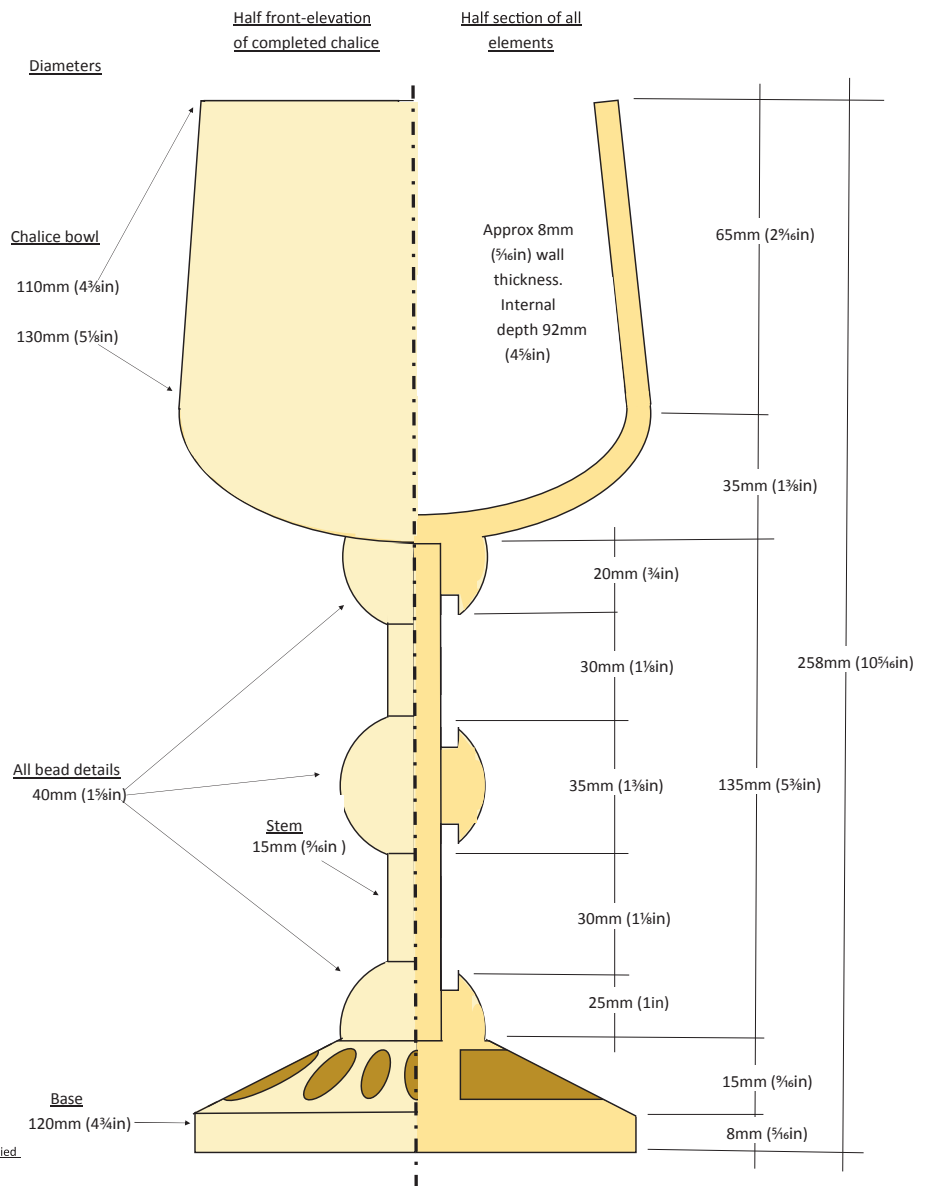
Plans & equipment

Materials

- All main components from European beech
- Chalice bowl – 160 x 150 x 150mm
- Stem – 135 x 20 x 20mm
- Stem centre bulb detail – 50 x 50 x 50mm
- Foot/base – 60 x 130 x 130mm
- Dowels – Walnut 12 @ 40 x 10mm diam
- Abrasives to 400 grit
- Two-part epoxy adhesive
- PVA adhesive
- Aerosol acrylic satin lacquer
- 6mm leather cord (black)

Tools & Equipment

- PPE as appropriate
- Lathe with indexing facility
- Drive and live centres
- Chuck with 40mm jaws
- Spindle roughing gouge
- Skew chisel
- Parting tool
- Spindle gouges
- Hollowing tool and scraper
- Steel rules
- Thickness callipers
- Jacobs chuck for tailstock
- Forstner bits – 10mm, 15mm and 25mm
- Craft knife
- Hand drill



Top tip

Jam chucks

We've all struggled at some point to make a jam chuck that is the perfect fit we are aiming for, gently shaving away fractions of a millimetre, only to discover that we've taken just a little too much material away and our jam chuck is not as tight as we'd hoped.

With the type of jam chuck that we are using in Steps 12 and 13, simply apply a few drops of water to the jam chuck, wait a minute or so and then press the workpiece into place. The chuck will swell a little (often as much as a millimetre) and may well solve the problem for you, but work quickly before it dries out.

1 Mount the chalice bowl blank on the lathe between centres and reduce it to a 135mm diameter cylinder using a spindle roughing gouge, taking care with the last few cuts to achieve as clean a surface as possible. Form a chucking tenon to suit your chuck on the headstock end, and a 25mm long x 45mm diameter tenon on the tailstock end, modifying just the very end of the tailstock tenon so it fits your chuck.

2 Remove from the lathe, set the chuck tenon you just cut at the headstock end into your chuck and return it to the lathe, then use a small spindle gouge or skew chisel to square off the end grain of the tenon at the tailstock end of the workpiece.

3 Use a 25mm Forstner bit to drill a socket into the end of this tenon, to a depth of 5mm. Remove the 25mm bit from the chuck and replace it with a 15mm bit, then drill this hole to an overall depth of 20mm.

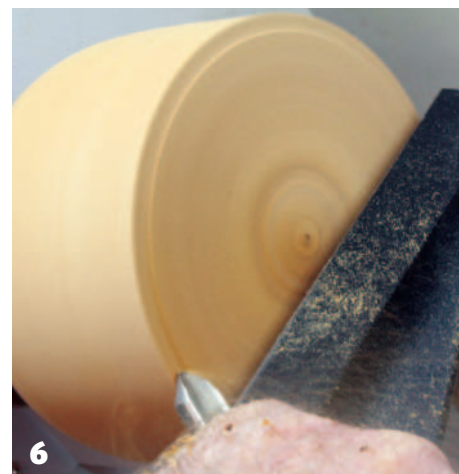
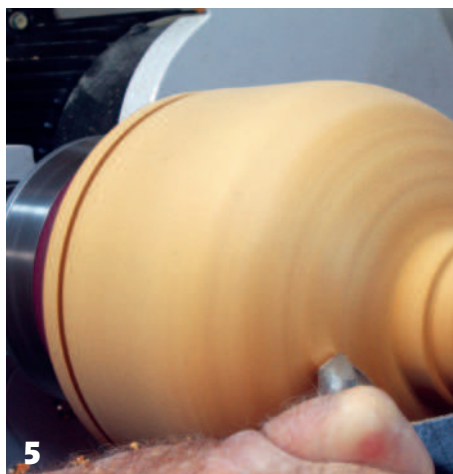
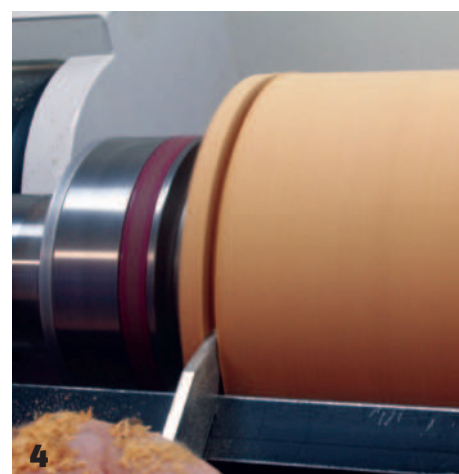
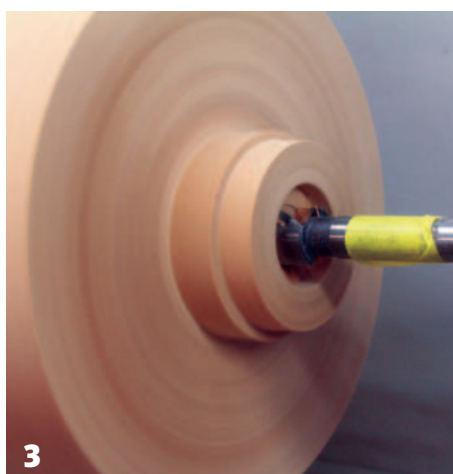
4 Mark a pencil line around the workpiece, 100mm to the left of the tenon that you drilled in the previous step, then use a parting tool to cut a groove immediately to the left of the pencil line, to a depth of about 15mm; thus defining the top rim of the chalice.

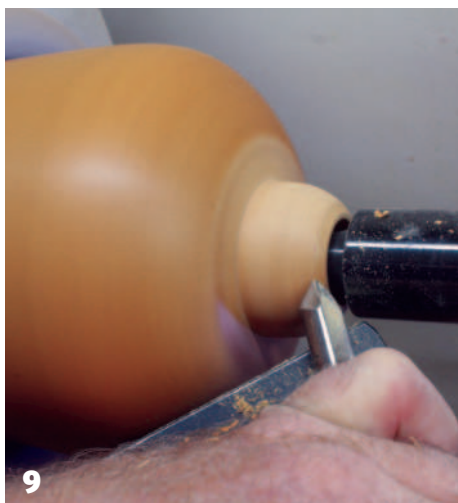
5 Using a skew chisel, a bowl gouge or a large spindle gouge, shape the outer wall as shown in the drawings. Note that the widest point of the bowl is 130mm diameter at 35mm up from the bottom, and that at the rim it is 110mm diameter. At the bottom of the chalice bowl, for now, simply continue the shape down to the tenon, but do not cut any further as this tenon is about to be used for holding the bowl while hollowing.

6 Remove the workpiece from the chuck and turn it around so that the top of the chalice bowl can be worked upon. Remove all excess material down to the groove cut in Step 4, cleaning off the end grain with a light cut with a spindle gouge.

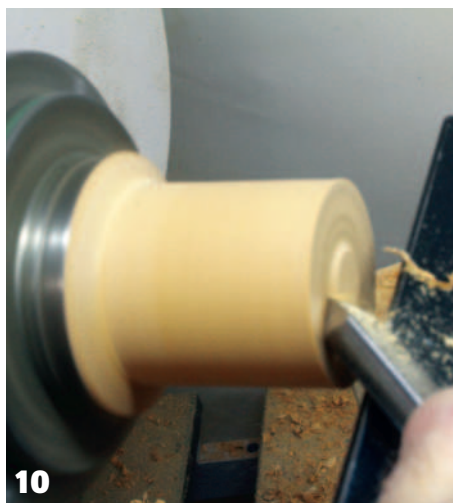
7 Hollow the bowl using your preferred tool, cleaning up with a scraper to bring to a finish: aim for a wall thickness in the region of 8mm and when finished, abrade to 400 grit, inside and out, then apply cellulose sanding sealer.

8 Cut a piece of scrap timber to fit into your 40mm jaws and form a rebate on its outer corner to make a jam chuck to accept the top of the chalice bowl, then bring the tailstock up against the bowl, aligning it with a live centre inserted into the 15mm diameter socket and then pinning it in place with gentle pressure from the tailstock quill. Be sure to use a couple of layers of soft paper on the jam chuck to prevent any marking of the bowl's top rim.





9



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9 Using a spindle gouge, form the bead on the outer edge of the tenon, as shown in the drawing. Abrade and apply a coat of cellulose sanding sealer.

10 Next, turn the bulb detail for the stem. Set the blank into a chuck and reduce it to a little over 40mm diameter, then clean up the end grain at the tailstock end. As with Step 3, drill a 25mm diameter hole, 5mm deep followed by a 15mm diameter hole, but this time to 30mm depth.

11 As with Step 9, use a spindle gouge to form the shape on the outer face of the bulb, referring to the drawings for the dimensions. Abrade down to 400 grit and apply cellulose sanding sealer. Remove from the chuck and set aside for now.



11



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12 Take a piece of scrap wood about 60mm long, set it into a chuck and reduce it to a 30mm cylinder, then use a parting tool to cut a groove 8mm deep, 30mm back from the tailstock end, and finally reduce everything to the right of the groove to a little over 15mm diameter, checking it for precise size by retracting the tailstock and sliding the bulb-detail onto it.

13 Keep its diameter such that the bulb detail is a very firm fit as we are going to use this as a jam chuck to finish off the bulb detail, so slide the bulb right down the stem to the shoulder near the chuck, turn away any excess material and very carefully, using a sharp Forstner bit, drill the 25mm diameter hole, 5mm deep, to match that on the opposite end; this will reveal the 15mm hole running through its core. Abrade and seal any freshly cut surfaces.



13



14

14 With the bowl and the bulb detail complete, now work on the base. Place the blank between centres, reduce it to a little over 120mm diameter and form a chuck tenon on what is to be the underside of the base. Remove from the lathe, set the tenon into your chuck and return it to the lathe.

15 Using a spindle gouge or skew chisel, clean up the end grain on what is to become the upper end of the chalice-base (at the tail-stock end).

16 As in Step 3, drill the 25mm diameter hole to 5mm deep and the 15mm diameter to 20mm deep.



15



16

17 Mark four pencil lines around the workpiece, line A at 25mm in from the end, line B at 33mm in from the end, line C at 40mm and finally line D, 48mm in from the end.

18 Immediately to the right of line A, cut a groove with a parting tool to leave a core, a few millimetres over the finished size of 40mm diameter. If your parting tool feels as though it might bind in the cut, retract it and widen the groove by a millimetre or so to relieve friction on the tool.

19 Turn everything to the right of the groove just cut down to 40mm diameter, which should leave a 40mm cylinder, 25mm long.

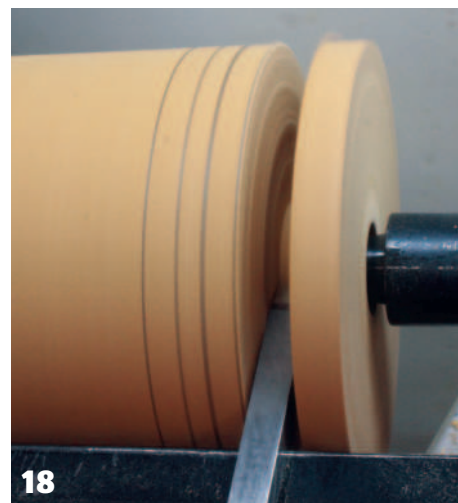
20 Cut the bead detail to match those on the stem bulb and on the underside of the bowl, on to the 40mm x 25mm cylinder just cut. This should create a quarter-circle bead and leave a 5mm shoulder to its left.

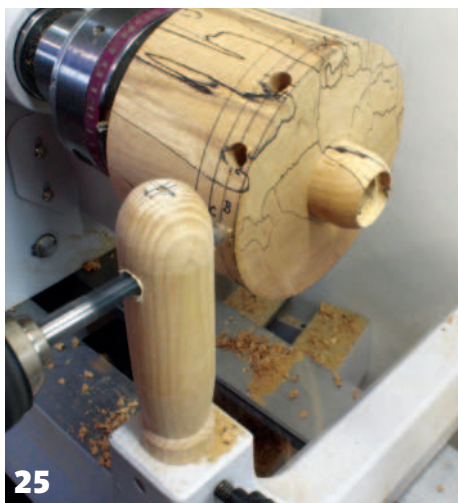
21 Now we start work on the lower part of the base to form the foot of the chalice. This part of the workpiece should have three pencil lines around it. Line A having previously been cut through, leaving lines B, C and D. Line B is going to be the line around the foot marking the centreline of the ring of 12 dowels, so next, use the lathe's indexing facility to mark 12 equal divisions around pencil line B, thus the precise centres of the 12 dowels are now fixed.

22 If you don't have a specialist jig for accurate cross-drilling on the lathe, now is the time to make a simple wooden one. Using the jig-blank, place it between centres and reduce one half of its length to a diameter which fits tightly into the toolrest banjo, where your toolrest stem would normally fit. The rest of the jig is reduced to 30mm diameter along its length (see drawing). NOTE: You'll need to temporarily remove the base of the chalice from the lathe, so remove it with its chuck remaining in place.

23 With the base of the chalice still off the lathe, set the drilling jig into the toolrest banjo and make a mark on it at precisely the centre height of your lathe spindle. At this mark, drill a 10mm hole straight through it, keeping your drill horizontal. Once you have done this, take the 10mm drill out of your hand drill and place it loosely back into the hole in the jig so that it provides a precise centre mark for this hole, in preparation for the next step.

24 Set the base of the chalice back on to the lathe, bring the drilling jig close to it (a couple of millimetres away is fine) and square to it, then line up the centre of the hole in the jig with any one of the 12 positions of the dowel holes. To do this, move the jig to the left or right to line the centre of its hole up with pencil line B (the line that the dowel-hole centres lie on). To line things up vertically, do not raise the jig, but lock the lathe spindle, slacken the chuck slightly and rotate the chalice base a little until any one of the dowel hole centres lines up with the central spur of the drill, then re-tighten the chuck.





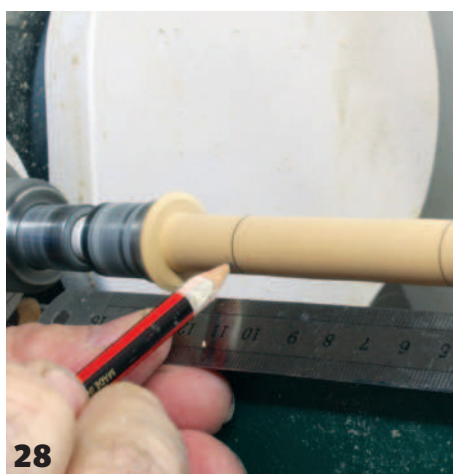
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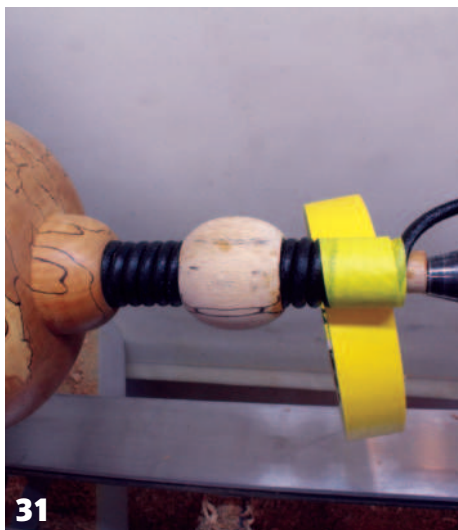
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25 With the spindle locked, drill the first hole, then unlock the spindle, rotating the chuck through 30° and re-locking it, repeating for the 12 holes and drilling each 40mm into the chalice base. If your drill bit isn't long enough, drill the holes as deeply as you can then re-drill to the required depth once the jig is out of the way.

26 Turn the dowels to a close fit and glue them into the holes in the chalice base. Use PVA adhesive and be sure to twist and press each dowel fully home. Bind them all tightly with a few layers of masking tape and don't worry about excess glue seepage as this will easily be cleaned off when the base is turned to shape.

27 When the adhesive is dry, saw away the projecting ends of the dowels and turn the chalice base to the details shown in the drawings. The 12 dowels will appear as oval shapes on the upper face of the foot. When finished, abrade and seal with cellulose sanding sealer.

28 Turn the stem from a single cylinder of oak, 15mm diameter and 135mm long. This requires no further instruction other than to state you need two pencil lines around it, one at 55mm and the other at 120mm down from what will be its upper end when inserted into the chalice bowl.

29 Set the chalice bowl on to the lathe with its top rim facing the headstock, using the jam chuck from Step 8 to support it, then apply two-part epoxy adhesive into the 15mm hole on its underside. Press the top of the chalice stem into the hole and use the tailstock to keep it in position while the glue dries. Note that the insertion of the stem effectively creates a 5 x 5mm groove running around the stem where the end of the leather cord will commence.

30 The leather cord will be wound tightly around the stem, so commence by tapering one end, making a straight, tapered cut across its width and along the first 62mm of its length, then insert this end into the 5 x 5mm groove with a good smearing of epoxy adhesive. Smear further epoxy around the stem, up as far as the pencil line, coil the leather around the stem (up to the pencil line) then wrap with masking tape to hold it in place until it is dry.

31 When the adhesive is dry, remove the masking tape and cut the leather cord back to the pencil line, effectively cutting another long taper along its length, around the stem. The bulb detail can now be slid on to the stem, with epoxy adhesive as required, to conceal the lower end of the leather cord. Repeat Steps 30 and 31 for fixing the rest of the leather cord and the chalice base to the lower half of the stem.

32 All that remains is to reverse turn the chalice to remove the chuck tenon. The chalice will already be set up on the lathe for this; just be sure to leave plenty of time for the adhesive to cure and when turning, take light cuts with a spindle gouge to turn the waste material away, before abrading and applying a few coats of acrylic lacquer. ●



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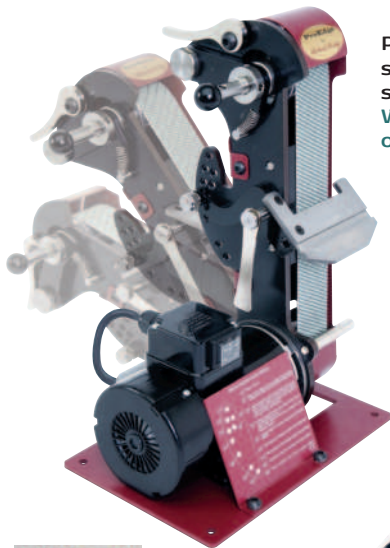


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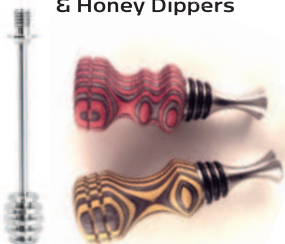


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Vessels of Time

Pat Carroll makes a replica of a clay vessel

Continuing the Vessels of Time series, this piece was inspired by pictures of archaeological pots and vases rescued from historical sites. The wood chosen was beech, for no specific reason other than the size and availability of the wood.



After researching a lot of images, I decided to create an aged vessel with the aim of making it look like a reassembled artefact from bygone days. As the piece progressed, I decided to add texture as I wanted to try to create a manmade feel, not that of something created on a potter's wheel. Several different colours made up the finish, built layer after layer. I didn't

have a specific colour in mind, so aimed for an almost eroded terracotta look. As I neared completion of this reassembled vessel, I felt something was missing. It turned out that something needed to be missing, hence the reason why I removed one of the sections, which gives the appearance of the last piece of the jigsaw ready to be fitted.

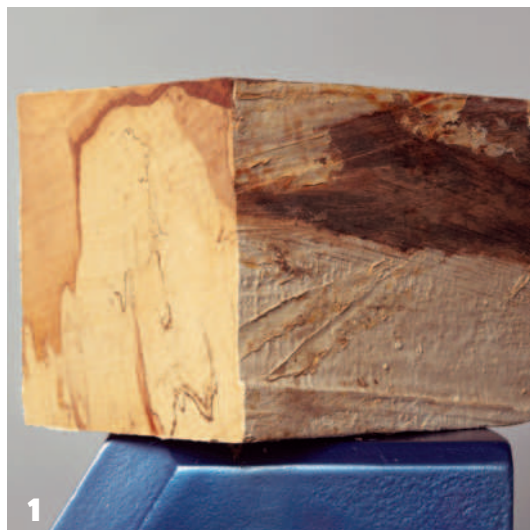
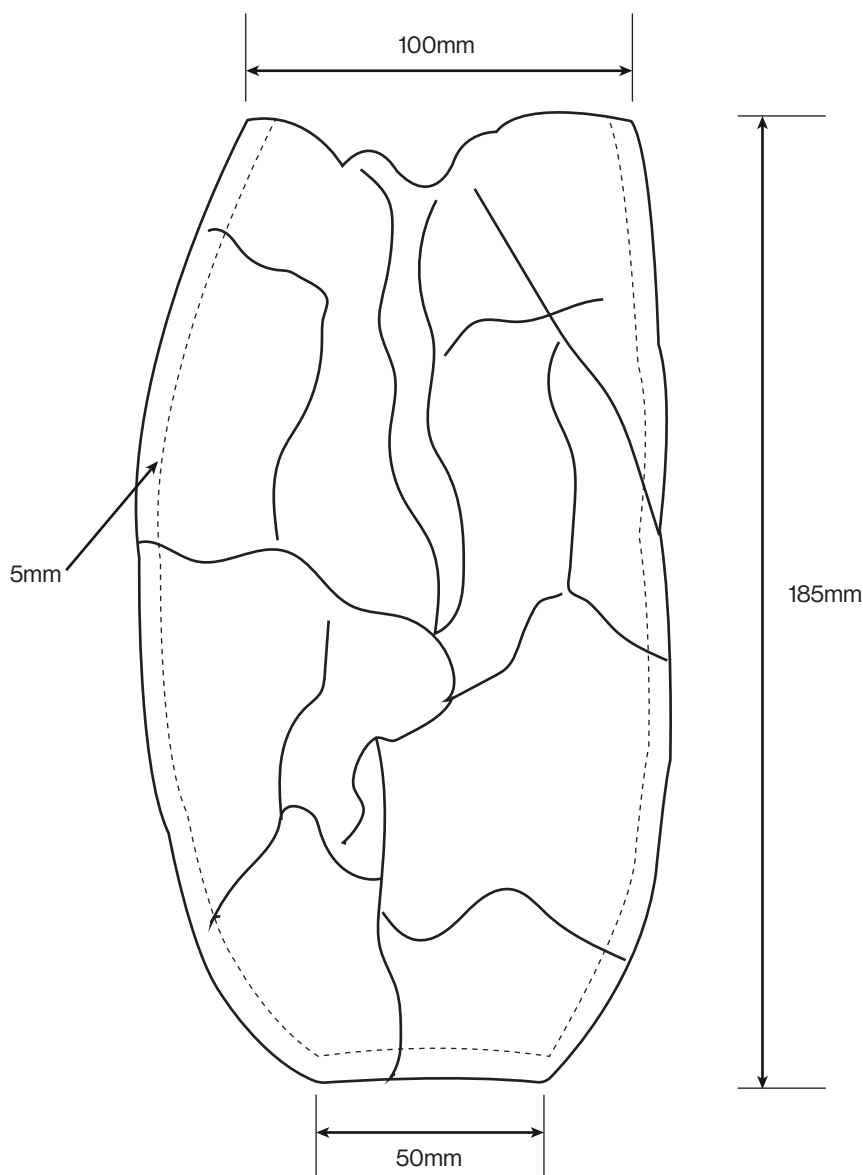
Plans & equipment

Materials

- Beech, approx 150 x 150 x 200mm long

Tools & equipment

- PPE as appropriate
- 6mm parting tool
- 10mm bowl gouge
- 13mm spindle gouge
- Hollowing tool
- Teardrop scraper
- 25mm spindle roughing gouge
- Callipers
- Drill bit
- Inertia sander
- Sandpaper
- Rotary carver
- Piercing/cutting bits
- Paints
- Airbrush and airbrush pump
- Satin lacquer



1 The selected piece of beech, which was turned in end-grain orientation. I often wrap freshly cut beech in clingfilm or pallet wrap as the moisture they hold in activates the spalting. I do try to remember to rotate the wrapped pieces 180° at least once a month to create an equal spalt all the way around the wood.

2 First and foremost, all PPE is checked to be in perfect working order. I ensure I have a clean visor and dust mask, the lathe is working correctly with all components clean and lubricated for ease and safety of use. After the blank was checked for defects that may have made it unsuitable, I mounted it between two 19mm centres. The lathe speed was set to low and gradually increased to a safe working speed. A 25mm spindle roughing gouge was used to true up the blank.

3 As I prefer to use a tenon on end-grain pieces, I needed to create one to the size of jaws I felt best suited to the size of the blank being turned. I always aim for maximum gripping power and in this case I felt safe with a 52mm tenon to secure the piece while turning. I used a 6mm parting tool to take light cuts to achieve the required 52mm tenon.

4 Before any turning commences, I always recommend sharpening of all tools that may be used in any project. This gives more time to enjoy the turning process with very little time required to touch up or sharpen an edge on an individual tool. I created steps on the piece with the 10mm bowl gouge by pushing into the wood in small increments, gradually getting deeper as I progressed towards the bottom of the vessel.

5 With the steps I have created on the piece, I work to gradually establish the shape envisaged for the base of the vessel using the 10mm bowl gouge.

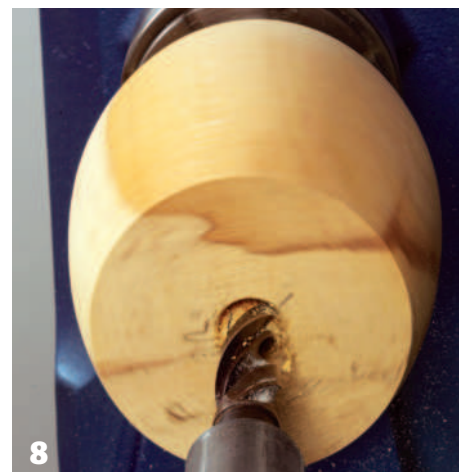
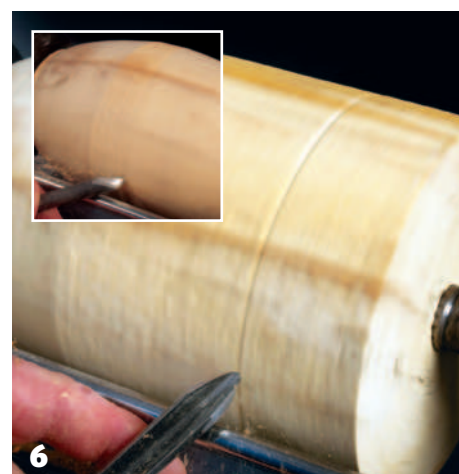
6 As the top of the vessel closes inwards slightly, I shaped the top in the same way as the bottom until I had a pleasing shape. I refined any areas that needed further attention with the long wing of the 10mm bowl gouge. The flute almost closed, I used the lower wing to glide along the piece. I purposely did not true up the rim as I wanted it to be uneven for the design I had in mind.

7 The piece still in the chuck was removed from the lathe to get a better visual and check if the foot was to be created from the tenon or if I had left enough wood in the exterior shape. This is important when it comes to gauging the correct wall thickness in the bottom.

8 When I was happy with the outside shape, I drilled a hole in the piece with my stepped milling machine drill bit. I usually use a piece of masking tape on the drill bit for my depth gauge, but in this case the finish point was exactly at the start of the quill, so it was a very easy reference to follow. I drilled down in 15-20mm increments, cleaning the bit each time with a soft brush.

9 Once I established the wall thickness I wanted for the piece, I proceeded to hollow the vessel, working from the centre outwards. As this is an enclosed form, the shavings fill up easily, so I regularly stopped the lathe and removed the large shavings by hand and the finer dust with my shop vac. I also checked the wall thickness with my callipers frequently.

10 The hollowing tool leaves a reasonable finish, but to clean up any irregularities on the internal curve, I used a teardrop scraper in a trailing action. Gently progressing in small areas at a time, I moved down along towards the bottom of the vessel.





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11 To sand the inside of the vessel, I used an inertia sander. As this works on the pressure applied to rotate the sandpaper, it was my best option to simulate power sanding. With dust extraction in place, the outside was sanded with a cordless drill, working through the grits from 120-240 and the inside was sanded with the same grits.

12 To finish the bottom of the piece I used a scrap of wood that was left from a previous project. This was to be my jam chuck to hold the piece for finishing. I like to drill a hole in the centre of the jam chuck so if the piece is stuck, I can push a rod with a soft end in or use pressurised air to remove it from the chuck. Once I marked out the diameter of the rim, I created an opening tapered to match the top of the vessel.

13 Using the tailstock for support with a 10mm drive centre, the piece was secured in the lathe. As this is a friction drive and also end grain, I had to ensure not to apply too much pressure, but enough to hold the piece securely. A 13mm spindle gouge was used to refine the shape and establish the size of the foot.

14 The finished turned piece. The irregular rim did not live up to the design I had initially envisaged.



15



16

15 To create the cracked reassembled vessel, I marked out the piece with a random design. I included two cracks and an undulating rim. I wanted to add a worn, uneven look to some areas.

16 To create the cracks on the vessel, I used a side cutting/piercing bit. As this bit was only 1mm thick, I thought it would be suitable for this process. I cut out the cracks at least half the thickness of the wall of the piece. It took two to three passes for each crack as going too deep at once simply breaks the bits.



17



18

17 To emphasise the cracks as if the pieces were all chipped on the edges, I swapped to a 2mm side cutting bit. I textured both sides of every crack. I also textured the inside of the larger cracks and further shaped the rim for the same affect to the piece.

18 For the texture I created, I marked out the vessel randomly with several horizontal lines. I could have marked these lines using the lathe for accuracy, but I wanted the lines to be of a more random design.

19 The texture I created from the rotary bit gave a very nice, crisp texture, but this was not in keeping with an archaeological vessel. So, with a rounded-over tip, I used an engraving tool to hammer the texture. This softened the crispness to create a more worn-looking surface.

20 Once the texture was finished, I lightly sanded the vessel with 320 grit to remove any fibres that might be on the surface. For the first coat of colour, I applied two coats of black spirit stain.

21 Next, I applied a deep-red acrylic paint. I initially thought I would apply the paint with a sponge but this did not go to plan, so I used a soft brush and gently applied several light coats.

22 As I wanted colours to blend, I applied a bright yellow to the red, which in some areas transformed the colour to green. This method ensured there was not one prominent colour but a mixed foundation for the following colours.

23 The first colours were applied with a brush, the next colours were applied with an airbrush. All colours other than the spirit stain used are acrylic. For the airbrush colours, I used a variety of earthy hues, ranging from a sandy brown to a rusty red. The final colour was a dark grey. I sprayed this mainly on the cracks and rim, allowing a little overspray to help further blend all the colours together. The main thing with this finish was to apply several light coats and build up a patina that was appropriate to the project.

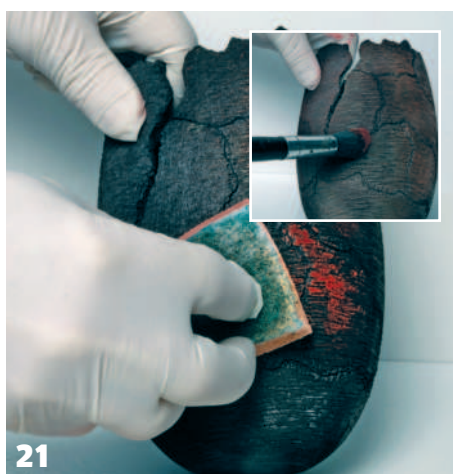
24 As I mentioned in the introduction, I felt something was missing from the piece, so removing a section added that missing visual ingredient. I was glad I did this at the end as it ensured all the colour schemes match up. Black spirit stain colours the freshly cut area and the airbrush adds the final coats of grey to the newly exposed areas. Several light coats of satin lacquer finish the piece. ●



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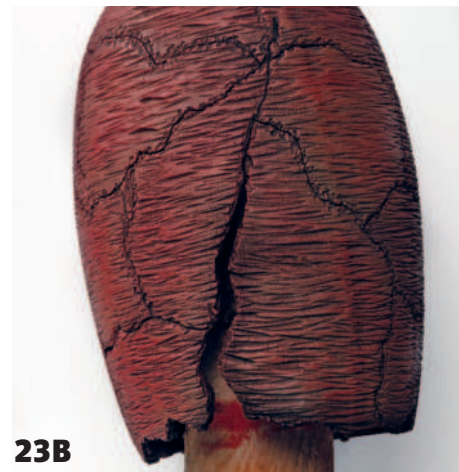
21



22



23A



23B

Top tips

- If you are ever unsure of the shape of the piece you are creating, remove the piece still in the chuck and examine the shape against a neutral background.
- Sharp tools are essential in woodturning. A blunt tool can cause dangers by having to exert too much force to achieve a cut.
- Think twice, cut once.



24A



24B

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The Victory Dilemma

John Holloway shares one of his Tales from the Headstock



A friend and close neighbour of mine is a very talented artist and pyrographer who has previously graced the pages of *Woodturning* magazine. I prefer to call him an arboreal pyromaniac. It might be more politically correct to call him a lignophile from the Latin, but where's the banter in that?

He knocked on my door recently clutching a small piece of wood. 'Would you like this?' He enquired. 'It's from HMS *Victory*.' Now, Bob has a wonderfully dry sense of witty humour, so alarm bells began to ring as he handed over what seemed like a very ordinary piece of wood. This sounded like a typical wind-up but I would have lost face if I'd said as much. To be honest, it didn't seem very old, ravaged or smelled of cannon fire; just a rectangular piece of offcut timber about 180mm long by 50mm square. How to respond? Hmm.

'And doubtless you have proof of provenance', I retorted. 'I do,' he grinned and produced the ultimate written proof. It turned out he was part of a project to restore the famous ship and volunteers were given small pieces which could not be reused. 'Thought you might like to turn something memorable from it,' was his parting shot.

I held history in my hand. A piece of oak from the early 19th century. Horatio Nelson's flagship famed for the Battle of Trafalgar no less, but it looked so ordinary, so unassuming, yet it was

over 200 years old. I felt the pressure to turn something epic. Bob had left me with a dilemma of gargantuan proportions, that was for sure.

I considered my options. Turn a box to keep it safe within, or a mount as a legacy for my children and grandchildren. That would involve turning but not of the relic itself. Or grasp the nettle, mount it on the lathe and hope inspiration might strike; but were my skills up to the challenge? I'm only of intermediate standard and I only had one shot at this.

I felt Nelson's eye (the good one) upon me as I imagined his intonation: 'England expects

that you won't mess this up.' Actually, I don't think he said that, but you get my drift. And then, to add to the pressure, I mentioned my good fortune to another villager who'd just got married. 'Amazing!' She exclaimed. 'My husband is a direct descendent of Admiral Keppel who also commanded HMS *Victory* at the Battle of Ushant. If ever you want to sell your piece, he'd love to buy it.' Oh Lordy. Now I had three options. Leave it alone, turn it or sell it.

It's still resting in my workshop while I prevaricate. If turning was your option, what would you make?



Bob Neill's solution to the dilemma

Secrets of turning pine

Janice Levi's top pointers to make an often disregarded wood take on a dramatic appearance

Although woodturners are often quick to seek out Norfolk Island pine because of its remarkable rings and knots, they are usually not inspired to turn common pine. If it is turned wet, it is very wet, and if it is turned dry, it is very punky.



So, pine is tossed aside in favour of maple, pecan, walnut, sycamore, ash. In this article, I hope that, by introducing a few simple techniques, pine will become as pleasurable to turn as any other wood. The end results are so dramatic, and the 'secrets' are so easily applied that any turner can accomplish the task.

Selecting the wood

Pine will begin to spalt very quickly (within a month) after cutting, resulting in some dramatic blue and black effects. On occasion,

the wood will even spalt a vibrant red. When cutting the logs, take advantage of the side limb placement to be used in the bowl pattern. The combination of limb placement and spalting is what makes the finished product so attractive. The bowls will be turned end grain with the pith in the centre, so preserve the entire width of the log. Once the logs are cut, apply end-grain sealer. I then use a sheet of waxed paper between the log sections and restack them until I'm ready to use them. These logs will retain a great deal of moisture for several months.

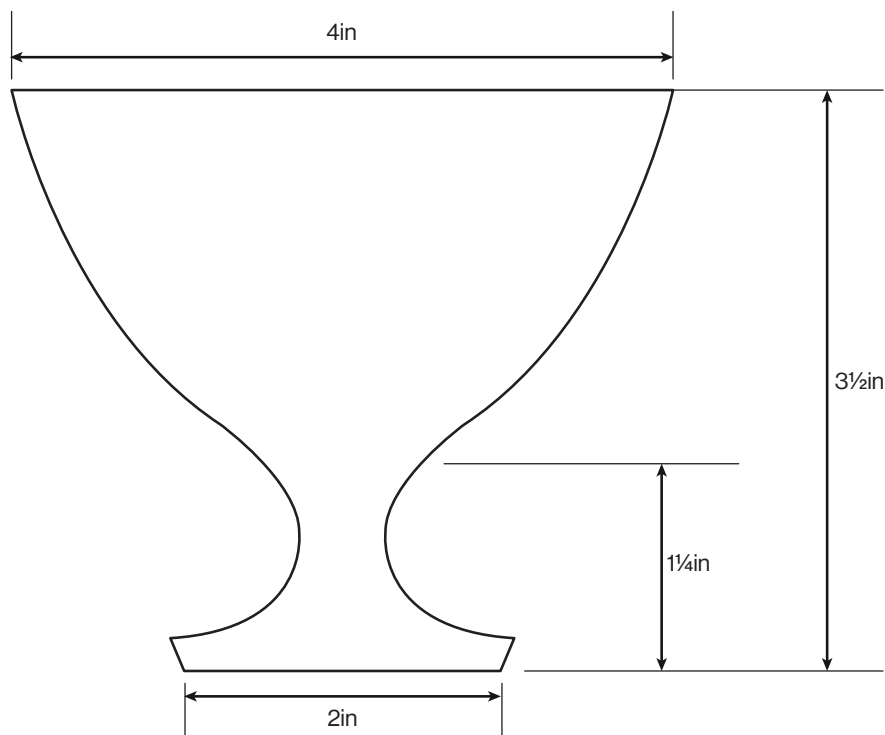
Plans & equipment

Materials

- Pine— yellow, loblolly, pinion, Japanese black, ponderosa, Norfolk Island, etc. In this article, I used a small yellow pine log, but any diameter of log will work
- Oil soak (prepare 1-2 pints of this mixture, depending on bowl size):
 - 1 part urethane or polyurethane
 - 1 part boiled linseed oil
 - 1 part mineral spirits
- Concentrated dishwashing liquid (not automatic dishwasher; not blue in colour)
- Spray bottle with water and a generous squirt of dishwashing liquid

Tools & equipment

- Safety gear—full face shield, dust mask
- Spindle roughing gouge
- Assorted bowl gouges
- Assorted spindle and detail gouges
- Skew
- Parting tool
- Bowl callipers
- Cloth-backed abrasives (work better than paper abrasives for sanding pine)



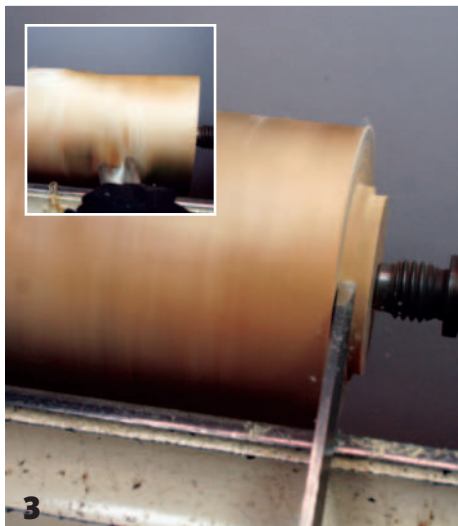
Turning steps

1 After the logs have been cut for four or five months, they will have developed spalting but will still be fairly wet. Unlike most bowls, pine is turned end grain to accentuate the growth rings. For the sake of safety, remove the bark. I use a big screwdriver and a mallet. If you turn the wood before four or five months, it will be very wet and the spalting will not be as dramatic. If you wait for about eight months to turn the wood, it will have begun to dry out. Pine has a peculiar habit of sending all its resin from the outside to the middle of the log, leaving nothing but pithy, punky, celluloid-type wood around the exterior with a heart that is dense and packed with a turpentine-smelling gummy residue. So, the first secret is: Turn pine within a four to eight-month window after cutting. If it's allowed to completely dry out, throw it away.

2 Let's get started with turning. Mount the blank between centres using a spur drive. Ideally, the pith will be in the centre of the log. If not, you have an artistic decision to make. The pith can be off-centre, which creates some interesting effects, or you can mount the blank pith to pith and simply cut away a large portion of the log.

3 Use a spindle roughing gouge to turn the cylinder and then use a parting tool to turn a tenon on one end.

4 Remount the blank using your scroll chuck and bring up the tailstock for as long as possible. Re-tighten the chuck often as the pine fibres collapse somewhat during the turning process. Even though you will be turning the bowl end grain, use your bowl gouges and follow the same process that you would use for turning a cross-grain bowl.



5 Because the growth rings are so dramatic in pine and because you will be applying a finish that will make the bowl translucent, there are a few design options to consider. To allow the light to penetrate the bowl from below, turn the bowl so that it is lifted up from the surface as much as possible. This may be accomplished by turning an elongated foot on the bowl, or you may choose to perch the bowl atop a delicate stem of contrasting wood. This bowl will also be turned very thin in order to create the translucent effect, so the simpler the line, the better. Save all those beads, grooves, dips and dives for another turning.

6 Occasionally spray the wood with the water/dishwashing liquid mixture to keep it wet during the turning process.

7 Don't spend a great deal of time sanding yet. The wood is very wet, but a little sanding with Abranet abrasive on the exterior will help remove any tool marks. Keep the wood wet during sanding by using the water/dishwashing liquid in a spray bottle. Sanding with 120 and 220 grit at this time will be sufficient. Sanding with finer grits will close the cells and prevent complete penetration of the oil mixture later. I like to use Abranet because any abrasive will be immediately gummed-up by the wet pine, but a cloth-backed product like Abranet can be cleaned with mineral spirits to be used another day.

8 Pine does have a couple of undesirable characteristics. It cracks and checks easily, and it chips out easily. As you move toward turning the inside, you'll have to do a couple of things to minimise cracking and chipping. That brings us to secret No.2. Use an acid brush or other small paintbrush and generously apply the special oil mixture to the top outer edge of the turning. Wipe away the excess with a paper towel. Now apply thin cyanoacrylate (CA) glue to the outer edge. The oil will keep the CA glue from staining the wood.

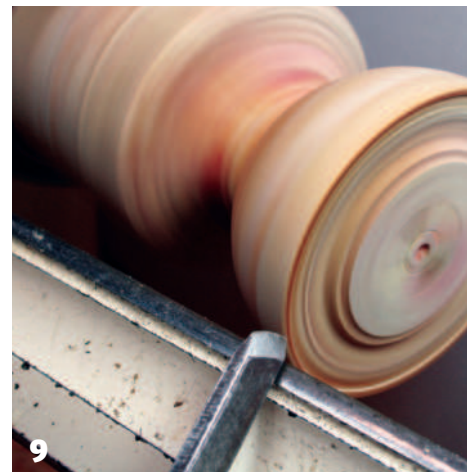
9 Use a skew to define the wall thickness of the bowl and to cut the profile of the edge. The skew will cut through the CA-treated wood and give you a sharp, clean edge. The wall thickness needs to be fairly thin to achieve the translucent effect. A thickness of $\frac{1}{16}$ – $\frac{1}{8}$ in is desirable for creating a translucent effect at the end of the process. Use the point of the skew to make a little tick mark defining the wall thickness. It is now time to begin hollowing the interior of the bowl.

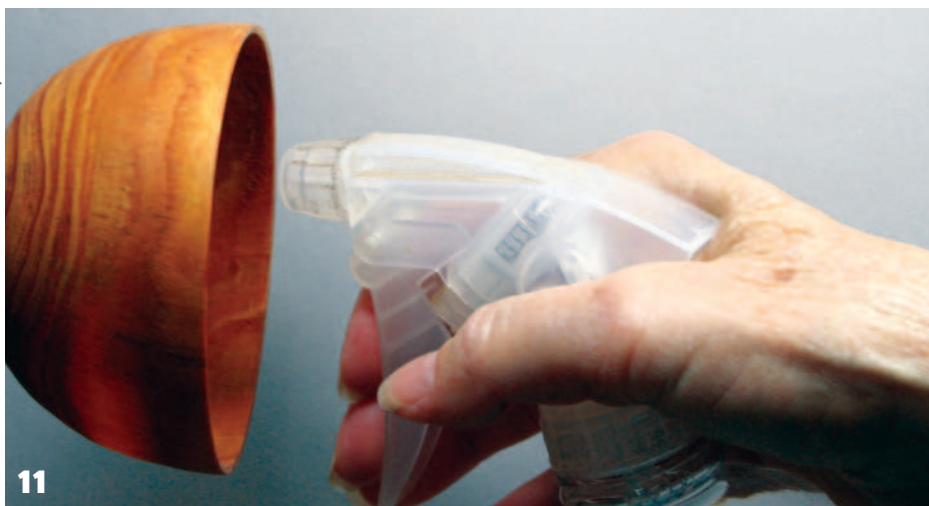
10 To prevent the tool from skating backward and ruining the nice, clean skew-cut edge, I use a freshly sharpened parting tool or bedan, and plunge the tool straight into the bowl along the skew mark to create a little recess for the bowl gouge to engage the wood safely. Once you are safely past the edge, switch to a bowl gouge and begin removing wood as you would with turning a cross-grain bowl.



Top tip

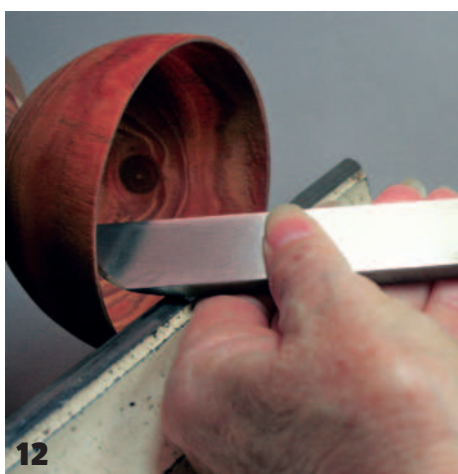
For this article, I'm turning an elongated foot on the bowl and I'm choosing a simple, unadorned style. At the Step 5 stage, begin turning by truing the top edge of the blank with a spindle gouge. Using a bowl or spindle gouge, begin shaping the exterior of the bowl. Because the foot is going to eventually be fairly thin, don't turn the lower exterior to the finished diameter yet. Save some wood for stability when hollowing the interior.





11

11 Because pine has a tendency to crack and check the instant it begins to dry out, secret No.3 is: Do not let the turning dry out. Stop the lathe often and liberally spray the outside and inside with the water/dishwashing liquid. Check the wall thickness with your bowl callipers often. It's important to maintain a consistent thickness to minimise the chance of cracking.



12

12 I also like to use a round-nosed scraper after every inch or so of progress to smooth out any tool marks. Tilt the scraper to a 45° angle when using it along the sides. In the bottom of the bowl, it's okay to lay the scraper flat on the toolrest if you have a negative rake scraper. If not, tilt the scraper slightly downward to scrape the bottom of the bowl. Do a final spraying on the outside of the bowl. If there are tool marks, use 120-220 grit cloth-backed abrasive to remove the marks. With sanding completed, spray the inside one more time.



13

13 With the inside turned, return to the outside and use your bowl gouge or spindle gouge to complete the lower exterior. Carefully part off the turning and lightly sand the bottom. It is important to proceed slowly with your parting tool to avoid tear-out.

Finishing process

14 You probably don't want to invest in a multi-gallon vat of homemade oil soak for your first piece. Instead, mix a pint or two and cut off a small paint brush and stick it right into the jar. Before the turning can dry out from the water spritzing, begin immediately to generously coat the inside and outside of the turning with the oil mixture.



14



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15 Keep applying oil until you're tired or the soaking-in process slows way down. There probably will not be any excess to wipe away on this first day. Set the bowl aside and let it dry overnight. (Note: After turning several pine pieces, I did opt for a lidded bucket of oil finish. I would leave the turning in the bucket for about 30 minutes. It's important to use a weight to keep the piece completely submerged. Then I used kitchen tongs to retrieve it, let it drip on a rack for about 30 minutes, wiped away excess with paper towels, and set it aside to dry overnight.)

16 Secret No.4 is going to take quite a while. The entire process for creating the translucent quality can take 30-40 days for large pieces and 20-30 days for small ones. The thinner the wall thickness, the shorter the time. The second day, generously apply the oil mixture inside and outside, let it drip for 15-30 minutes, wipe away the excess, and set aside overnight. Repeat this for about five days, then on the fifth day, after applying the oil, wet-sand the surface with 220 grit, using your fingers to support the thin wood. The reason you wait for about five days before sanding is to allow enough oil to penetrate the wood so that friction from sanding will not cause the pine to check or crack. I learned the hard way that if I sand up to 400 or 600 grit as soon as the bowl is turned, the wood cells close up and the oil does not properly penetrate. The wood will not become translucent.



16

17 The next day, after applying oil, wet-sand with 320 grit abrasive, wipe away excess oil, dry overnight. The reason for wiping away the excess oil is that, over time, the oil, if left on the surface, will begin to gel and create a gummy residue that is very difficult to remove. By wiping away the excess, this problem is eliminated. That's secret No.5.

After several days, you will have reached the grit of your choice (I usually stop at about 400) and for the remainder of time, the process is: apply oil, drip, wipe away excess, dry overnight. I'll admit that, on occasion, I let the turnings dry for two or three days with no ill effect. After about two weeks, you will begin to see that translucent, almost tortoise shell look beginning to emerge. Amazingly, the once-fragile pine becomes quite substantial as the oil treatment gives the wood an added strength.

18 Before proceeding with the oil treatment, there may be a knot or two threatening to fall out. If you want to keep knots in place, dab them and the surrounding area with the oil finish, wipe away the excess then apply thin CA glue to the knot. Don't apply accelerator as it will tend to create unsightly crystals. Rather, sand the area with 120 or 220 abrasives until the CA glue has disappeared.

19 Occasionally, there may be a patch of wood that simply will not stop absorbing oil while the rest of the turning looks like it's ready to stop the process. If that's the case, a little bit of secret No.6 may be necessary. Wipe oil over the area then dab a bit onto a folded heavy paper towel. Then add a squirt of thin CA glue to the paper towel. Wipe this over the punky area. This treatment may have to be repeated one or two more times. A light sanding will also be necessary. After this, the punkyness should disappear and the piece is ready for final oil treatments. Then it's time to dry the piece thoroughly for several days.

20 The bowl may look fantastic just as it is, or you may choose to run it through the Tripoli/White Diamond/wax buffing system. I have tried other finishes (wipe-on polyurethane, shellac, lacquer) over the oil treatment, but the finishes looked like plastic. So, now I usually choose to just buff the piece when it is completely dry.

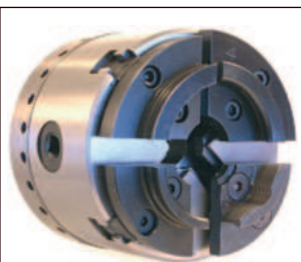
21-22 And there it is, your finished pine turning. The process is lengthy, but the results are absolutely stunning. ●



Some stunning samples of turning with pine



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Lexington, KY



Sewing tidy

Andy Coates makes a simple, handy canister suitable for carrying in a handbag

I am certain I have mentioned it previously, but I have the attention span of a butterfly; my mind flits from one thing to another, settling for short periods on just one thing before something else catches its attention and off I go again. The consequence of this in woodturning terms is that I end up making a wide variety of things. And I like it this way. Last issue I made a canister for chopsticks and my mind will no doubt hover around the idea of canisters for a while before something else grabs my interest.



Canisters are useful and utilitarian, so they are good objects to make as gifts or for sale at craft events... now that they are back. They are fairly simple to make, slightly less simple to make well, so they are a perfect development project for the novice.

Accuracy is fundamental to success and if the objects are kept very simple in terms of shape and design then form is paramount and any errors will be obvious and ruin the object. But as they can require little in terms of materials they are an ideal project for progressing tool techniques and fitting components together.

So, this month I will make another canister, a sewing tidy. These have been around for a long time; probably for as long as sewing and lathes have been around. I have a very simple 19th-century needle holder, in boxwood, in my collection and I have always

thought it would be far more useful if it also carried thread, so my version will carry some thread for emergency repairs. This is also not my idea, just my version. I have made it slightly larger than I would have, simply for clarity, but it is still small enough to be carried in a handbag or backpack.

I chose a piece of mahogany for this because I wanted the canister to be durable and strong, and, almost as importantly, not prone to splintering, which would be a nightmare for cotton thread storage. You can use any hardwood you like, and you could even scale down, or up, the project as your requirements dictate. There is also a very similar object, though considerably larger, that is intended as a fisherman's kit, so do not feel constrained to make this specifically for sewing materials if another idea suggests itself.

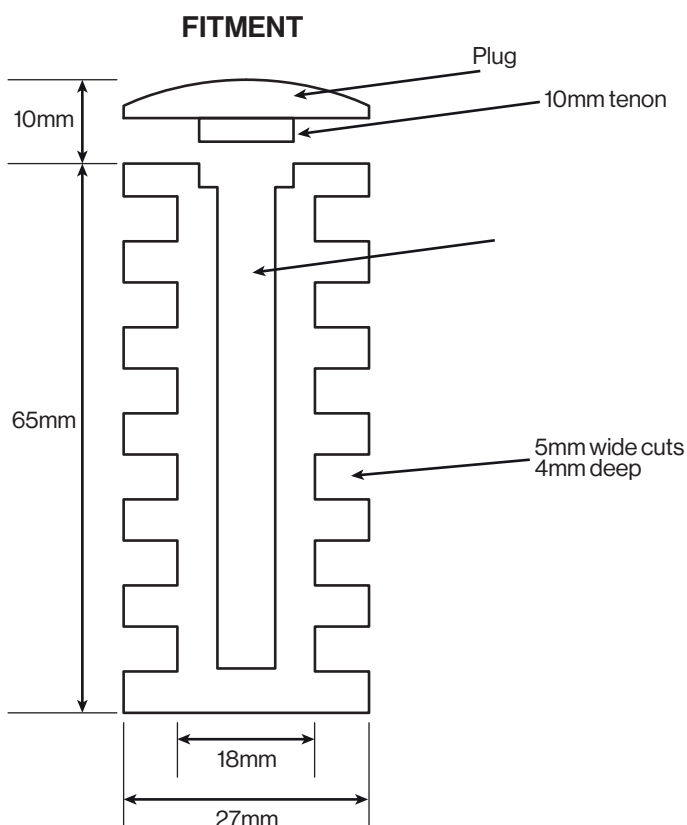
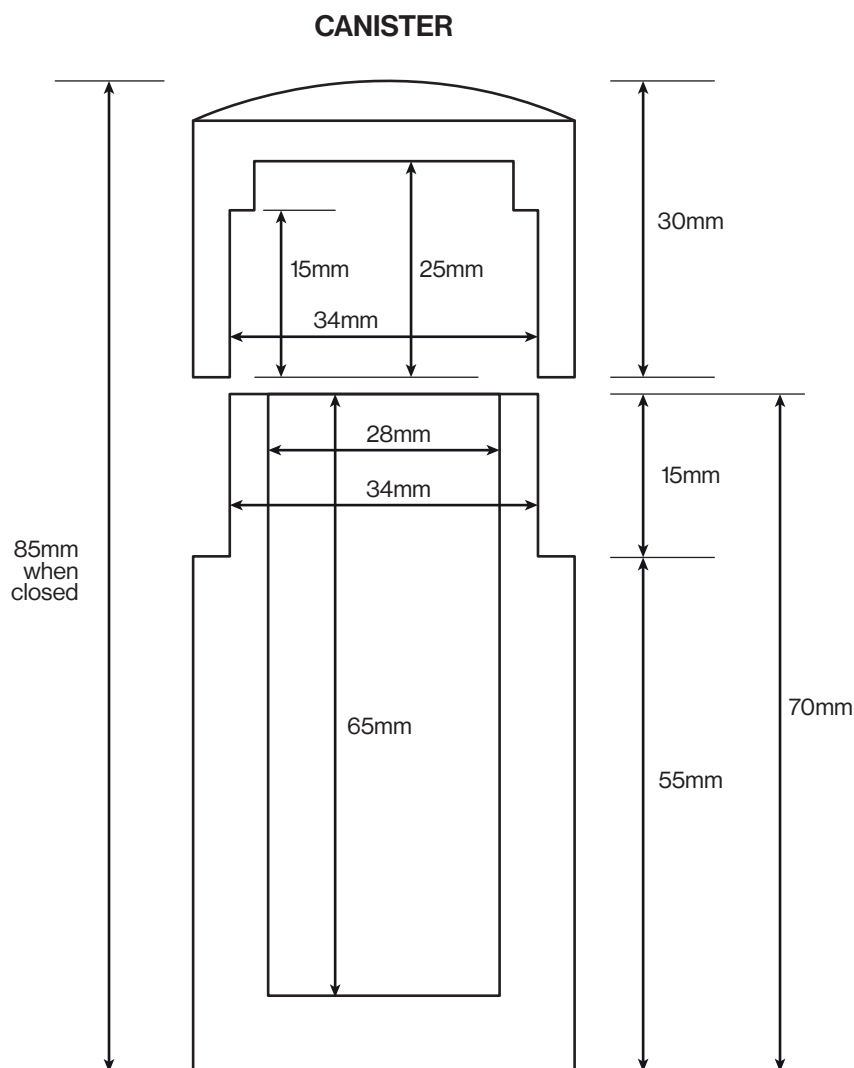
Plans & equipment

Materials

- Mahogany, two blanks 45 x 45 x 110mm

Tools & equipment

- PPE as appropriate
- 25mm spindle roughing gouge
- 25mm oval skew chisel
- 6mm parting & beading tool
- 4mm parting tool
- 2mm parting tool
- 10mm spindle gouge
- Small round detail tool
- 28mm Forstner bit
- Jacobs chuck
- Abrasives 240-400 grit
- Food-safe oil



The canister

1 When turning an object between centres that will be parted into two and later re-joined, accuracy is imperative for a good fit and grain alignment, so take care at this stage and accurately mark out the centres on both blanks. Use a steel rule or centre gauge, and a sharp pencil, or better yet a marking knife, and an awl to mark the centre where the scribe lines cross. Mount the blank between drive centres using the centre marks as your guide.

2 Using a 25mm spindle roughing gouge, rough the blank down to a cylinder 43mm in diameter. Always cut off the end, not on to the end, starting close to the end and working backwards incrementally. When you get to the headstock end, adjust your hold on the tool to work off that end. Aim for as close to a perfect cylinder as possible. With such small blanks it is perfectly safe to turn at the highest speed possible, which will improve the finish you can achieve.

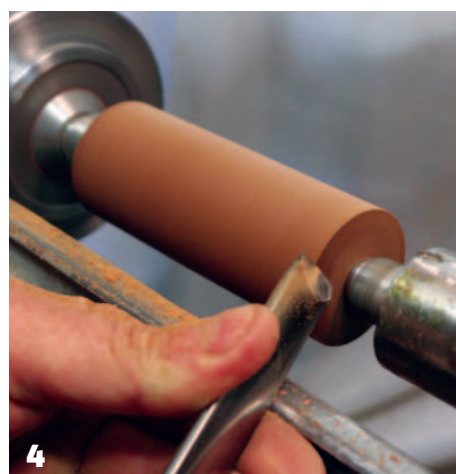
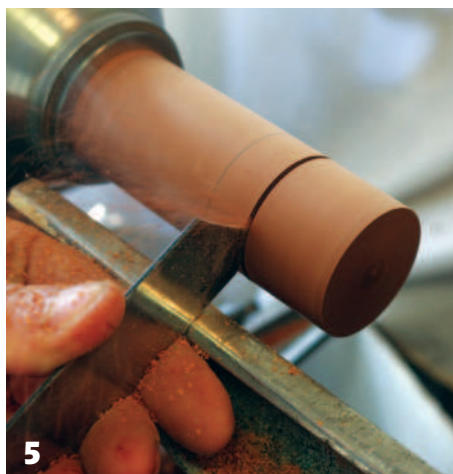
3 Using a 25mm skew chisel, clean the surface by taking a light pass along the cylinder. Note that the shavings rise from the lower third of the chisel's edge and that the long point (top) of the chisel is not touching the wood. The skew is a tool well worth persevering with if you struggle initially. When you have finished you should have a perfect, even cylinder with a super-fine finish.

4 Now use the skew on its edge, long point down, to take a cut on the end of the blank towards the revolving centre. The tool is slightly canted to the right to take the bevel off the wood, and only the point cuts. You should end up with a perfectly flat and clean surface. This is very important because the next mounting stage relies on a flat surface. Remove the blank and mount the second blank and repeat... but this time do not worry about setting the cylinder diameter at this point, just rough to a cylinder and clean the end face.

5 The chuck jaws are now changed for O'Donnell jaws and the 43mm blank is mounted. With a pencil, mark 30mm and 45mm back from the end of the blank. Using a 2mm parting tool, part off the end at the 30mm mark, make the cut slowly to reduce the amount of heat produced. Put the parted off piece, the lid, to one side.

6 Using a 6mm parting tool, turn the remaining 15mm marked section down 4mm to produce a tenon 34mm in diameter. Ensure that the tenon is perfectly parallel to the lathe bed and the face to the left at 90° to it. Abrade the tenon lightly to remove all tool marks, ensuring that you do not taper the tenon.

7 Fit a Jacobs chuck holding a 28mm Forstner bit in the tailstock. Bore out the blank to a depth of 65mm. This includes the long, central spur of the bit. The spur will leave a conical hole in the base of the bore, but providing we do not cut into this when parting off, it does not present a problem.

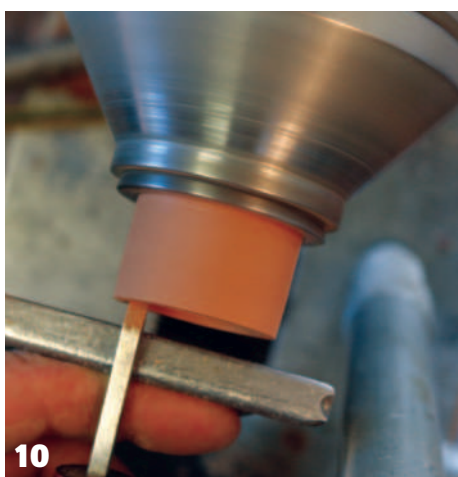




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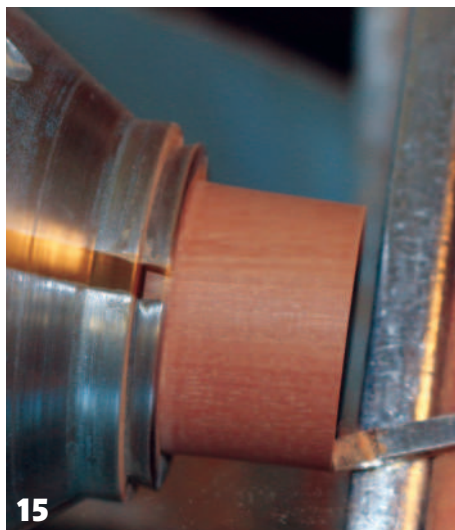
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8 When boring with a Jacobs chuck and drill bit (of any type) the quill should first be withdrawn into the tailstock, the Jacobs chuck fitted into the morse taper and the drill bit fitted securely. The tailstock should then be brought up so the drill bit almost touches the wood, then the tailstock is locked down firmly. Boring can now commence with the certainty that the chuck cannot be fully ejected from the quill. The Jacobs chuck can be held in the hand to resist any initial tendency to rotate as the cutter bites.

9 Once the base has been bored, remove it and mount the top section. Mark the diameter of the tenon formed on the base section, this should be 34mm, on the face of the top. You can use Vernier callipers, dividers, or simply mark 17mm from centre with a rule and pencil; whichever you are most comfortable with works, but if using callipers or dividers remember that only one leg can touch the wood at the toolrest side of the rotating blank.

10 I mentioned this previously, but it warrants repetition: if you bring the tool up to the mark and cut with the tool parallel to the lathe bed, you run the risk of cutting the recess too wide, which is unrecoverable.

11 Address the tool, here a 5mm parting tool, to the 34mm mark at a slight angle and make the cuts to a depth of 15mm. This will result in a tapered recess, 34mm wide at the opening and somewhat less at the base. Now bring the base section up to check the fit.

12 First, check for fit with the lathe switched off. If you have cut directly on the mark, the tenon should just start to enter the recess but will jam almost immediately. This is exactly what you want. If it doesn't enter the recess take a further very light, angled cut.

13 Check for fit again. If it enters slightly remove it and turn the lathe on and off again as it speeds up. Push the base gently into the recess with the lathe slowing down and immediately pull it back out. If it binds you will still be able to remove it. Now look at the recess – you will note a burnished area where the fit became too tight. This is your guide to a perfect fit. Leaving a narrow lip inside, as shown in the diagram, turn the lid out to 25mm depth overall depth.

14 Take a further cut with the 4mm parting tool. Begin the cut after the burnished line. Take a light cut then check the fit and repeat the step as required until you have a perfect fit. It should be a close but not too tight, fit. The lid should not fall off when the canister is held upside down.

15 The last job is to slightly chamfer the edge of the recess inwards. Using the 4mm tool, take extremely light scraping cuts, working from the inner edge outwards, from right to left, until the last cut removes material through the whole cut. Now only the very outer edge will locate against the base and form a clean join.

The inner fitment

16 Put the box to one side, mount the second cylinder in the O'Donnell jaws and set a pair of callipers to 27mm. Using a 6mm parting tool, take the cylinder down to this diameter at both ends of the blanks. If you have vibration you can bring the tailstock up for support using a revolving centre.

17 Using the 25mm spindle roughing gouge, reduce the cylinder to match the two sections turned to 27mm. Take light cuts, taking the opportunity to practise cutting cleanly and true. Remember to cut off the end, not on to the end.

18 Running the lathe at the highest speed (when it is safe to do so) results in a much cleaner cut because more wood passes the cutting edge for each measure of distance the tool travels. There is also less resistance to the cut, which reduces chatter in the tool. Continue removing waste until you have a perfect cylinder, 27mm diameter along the full length.

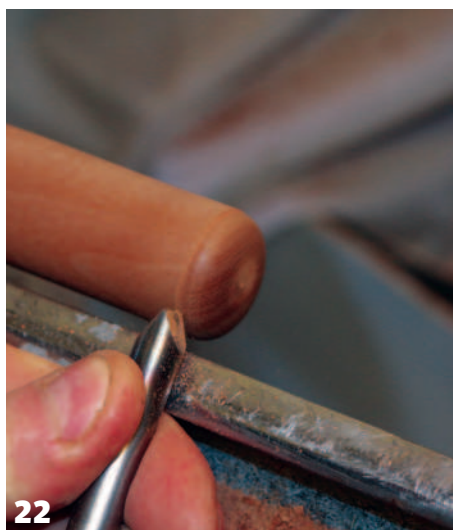
19 Mark the cylinder with pencil lines 5mm and 10mm from the end face of the blank. Between the two marks, use the small parting tool to turn a tenon 5mm wide down to a 20mm diameter. Cut slowly to produce a clean surface on the tenon.

20 Using a 10mm spindle gouge, round over the end of the cylinder from the 5mm mark, removing the marks left by the drive centre at the roughing down stage. Produce a gentle domed top. Once complete, part this end section off from the left of the 20mm tenon. This is a plug for a bore you are yet to produce.

21 Using the same step as between Step 9-13, cut a recess to take the plug. The recess should be 20mm diameter and 5mm deep. It must be a snug fit when completed. The base of the plug can be finished on a belt sander or by hand, rubbing it on a sheet of abrasive on a flat surface.

22 Fit the plug into the recess and, using the long point of a skew or a detail tool, cut a shallow V precisely on the join line. This will be scorched later and the cut serves as a fingernail slot for removing the plug.

23 Mark the blank at 65mm away from the end (not including the plug). Shade alternate spaces with pencil, starting one space away from the end.





24 Set a pair of callipers to 18mm and use the small parting tool to turn down the shaded areas to 18mm diameter. Take care not to exceed this depth. If vibration is an issue, the tailstock and revolving centre can be brought up and gentle supporting pressure applied to the end of the cylinder.

25 Once the run is completed, abrade the whole workpiece with 240-400 grit. Gently round over the edges of the fins to produce a silky smooth surface. This is important to the finished article. Neither wax nor oil should be applied to the inside of the cuts, but the exterior surfaces can be finished. I prefer to only use a cellulose sealer here.

26 The Jacobs chuck is fitted into the tailstock and a 10mm twist drill fitted in it. Mark off 55mm on the drill bit with a strip of tape and bore out the cylinder to 55mm depth. The procedure is the same as for boring with a Forstner bit; slow and gentle and withdrawing frequently to remove shavings. Once the bore is complete, the cylinder is parted off at the 65mm mark. The base can be finished on a belt sander or by hand as before.

27 Re-mount to base and fit the lid. Making very gentle cuts with a 10mm spindle gouge, remove the waste from the lid. The 30mm mark should still be visible, but if not the lid needs to end at 30mm depth at the peak of the dome.

28 Now the canister can be finished. Decorative V-cuts are made and scorched for contrast, and the canister is sealed and polished. It can now be parted off at 85mm from the end (dome included). The base can be finished as previously.

Conclusions

29 All that remains to be done is to load a selection of different coloured cottons on the internal spools and load the central box with a selection of needles. A perfect gift that can be carried in a handbag for those moments when a button pops just before an important meeting, or the tent needs a quick repair to keep the rain out. And any of the other uses I am certain you can imagine for yourselves. Safe turning. ●

On the button

Mark F Palma gets fancy with a custom fastener



1



2



3

1 Glue wood to waste block in face orientation 2 Chuck securely and use tailstock support 3 Turn to diameter and mark button thickness

Prior to the creation of 20th-century plastic, wood buttons were common on clothing. When my wife was sewing a new coat and having trouble finding the right button online, it seemed like a perfect time to explore making something more interesting than bits of plastic to adorn her handiwork. Buttons let you use small pieces of special wood scraps with very little waste. In this case, a piece of koa I purchased while in Hawaii seemed to be the right choice.

Preparing the blank

Choose a close-grain hardwood. Buttons should be cut from face-grain orientation so that the strength of the grain holds the button together in use. Buttons cut from end-grain orientation wood will split in half. To maximise the yield of your wood, glue the scrap to a block of sacrificial wood with yellow wood glue and good clamping pressure. After allowing it to dry overnight you will have a firm glue bond that stands up to turning.

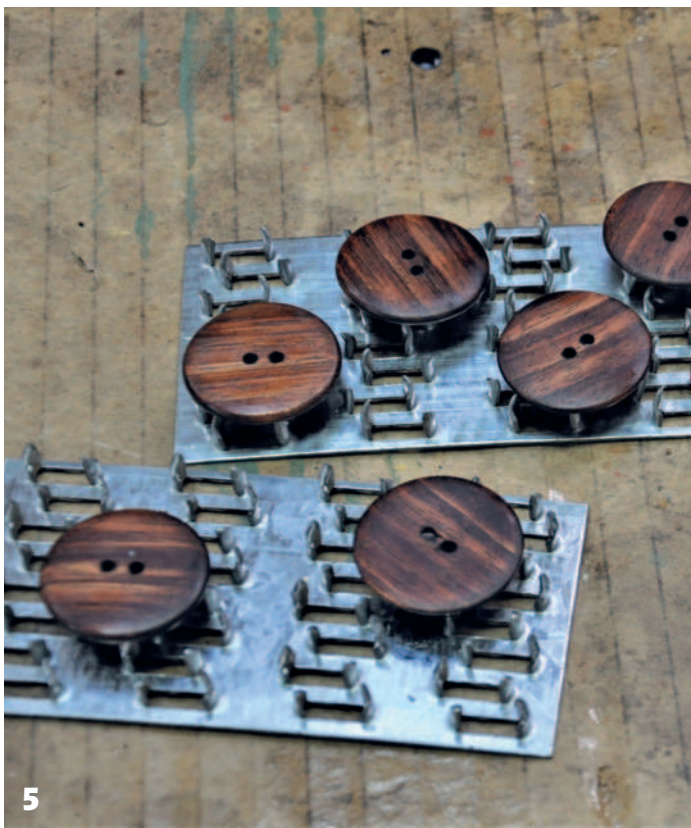
With some exotic woods you may need to wipe surface oils off the scraps with lacquer thinner before applying glue. Although double-stick tape and CA glue are options, yellow glue usually provides a stronger and safer bond.

Sizing buttons and design considerations

Probably the biggest mistake you can make in turning buttons is not getting them the right diameter and thickness. In a perfect world, confirm with the end user that the size is correct. This is particularly the case if the garment already has the button holes sewn and cut. If you can get one or two sample buttons it is helpful to use as a template and later on for hole spacing. Sneak up on the outside diameter and use a sharp tool to get as clean a cut as possible. Take sanding into account when sizing the blank to final diameter.

Take a facing cut across the blank and make it perfect as this will be the front of the button. Depending on the design of button you are striving for, you may or may not have a raised outside rim on the button face. A sharp parting tool allows you to create the rim.

A pencil is a great tool to lay out the thickness of the button. Using a sharp, thin-blade parting tool, part halfway down the back side to create a disc. Now sand through your final grit on the face, and radius the rim with your abrasives. Finally, part the button off the blank and face the blank to start the next button.



4 Use a button as a drill guide **5** Support on framing plates to finish **6** Buttons on coat close up

Drilling the holes

Use a piece of two-sided tape to tape the sample button to the button you just turned. Choose a drill bit that just fits into the sample's holes and use the sample button as your drill guide. Drilling through a piece of scrap wood slowly will prevent blow out on the back side. Hand sand the button back against 180 and 220 grit so that it is smooth on the fabric it will be married to. A small drop of thin CA in the holes will reinforce the wood fibres, just wipe off the excess.

Finishing the buttons

Recognise that wood buttons will not stand up to the rigours of a washing machine, so plan on using them on hand wash garments. Friction finishes do not stand up well to frequent use so consider a more robust finish. The koa buttons were sanded through 1000 grit and received two coats of an oil and wax finish. Mending plates used for joining rafter components make great inexpensive finishing standoffs for small parts like buttons. The end result seems to speak for itself.



Diary of a professional woodturner – part 6

Richard Findley tells us about some of the work going through the workshop this month



COURTESY OF THE LITTLE GLOBE CO

I've said it before, but the thing I enjoy most about my work is the variety. People often ask me 'don't you get bored making batches of things?', and yes, occasionally a little boredom can creep in on a long production run, but even a big job for me will only last for a week or two, then I'm on to something new. I make such a wide range of different products that the challenge is nearly always a fresh one. This month has seen a typically varied selection of work in the workshop, from a couple of interesting sets to some larger batch production work. I also treated myself to a new spindle gouge and had some exciting news!

Moulding rings

Most jobs come in via email these days, but sometimes people appear randomly at my workshop door, brandishing a broken piece of turning. This is something I've been discouraging during the global pandemic, but there's plenty of space outside, so it can be done safely.

I had just such a knock on the door from a chap named Ben. In his hand was a small piece of curved, softwood moulding and he explained that he was a joiner working on a house renovation and the owner had sent all of his internal doors away to be stripped by dipping. I always shudder when I hear this because dipping is an incredibly harsh way of removing old paint. It's effective in that it gets rid of the old paint, but it dries out the wood and, in this case, the process had somehow removed all of the

applied mouldings on the Edwardian doors. One of his long list of jobs at the property was to replace all the mouldings and restore the doors to their former glory. The small piece of curved moulding in his hand was apparently the only piece left from all of the doors. He was equipped to make the straight lengths of moulding, but in the four corners of the panels were curved sections that would need turning. We agreed that tulip would be a better option than the original softwood as it works and takes a paint finish better than pine.

I've done a few curved mouldings in the past, but this was the first of this kind I'd been asked to make. The actual turning was easy enough, but as always, I needed to look for the most efficient way of making the rings as there were 66 required! After giving it some thought, I decided that if I used 65mm-thick timber, I could cut seven rings from each block, meaning I would only need to prepare and mount 10 blocks of wood, rather than 66 individual pieces. Each block was held on a screw chuck and I turned the outer diameter before marking out the width and thickness of each ring with dividers, which is great for speed and accuracy. I was fortunate that the bead on each ring was a perfect fit for my 6mm bead forming tool, so cutting the beads was a breeze. I could then turn the inside of the ring and sand before parting off and moving on to the next one. The customer would cut the rings into three pieces and mitre them into place. Overall, I feel like I got the easier part of this job.



1 The finished stacks of turned rings **2** A ring with the original section of moulding, the sketch shows the style of moulding **3** The set of three table legs **4** The oak pilaster columns **5** *Classic Forms* is an essential reference

Table legs

Some jobs need a large number turning, others are just for a single set. I don't mind this at all, it adds to the variety and table legs are one of my favourite things to turn. I'm not sure why exactly, but they always have been. I think it's because I got into turning to make furniture, but got hooked on turning and never really got to the furniture. I had an email from a designer who wanted a set of legs for a project she was working on. I had made some legs for her previously and she'd been very pleased with them so she was back for more. It's always good to have returning customers, it means I must have done something right.

When a customer supplies a drawing, it isn't my place to judge the design – beauty is in the eye of the beholder after all. Some designs are clearly classically inspired, others less so. These legs were slightly unconventional in their design. Made from tulip, the lower section was chunkier than the top at 80mm square, compared to the 62mm of the top, so after running through my options, I made them in two pieces and joined them with a turned tenon, making them as strong and solid as if the were made in one piece, but allowing the dimension change. I believe a shelf was to be positioned and supported by the flat part at the join, so this perhaps explains the design a little. There were only three as the back of the table was to be fixed to a wall and these just support the front. The designer promised me pictures of the finished table, so I look forward to seeing them in place. I rarely get pictures of my work in place so it's a treat when I do, especially if the pictures are of decent quality.

Oak columns

Mostly, my customers will supply a drawing of what they want or a sample that I am to copy. Very occasionally, I will just be asked to turn a set of legs or, in this case, some columns. These were pilasters for a

kitchen to support the worktop, but the customer didn't have a design in mind. In these cases, I will show them a design book called *Classic Forms*, by Stuart Dyas, which has a huge range of excellent quality drawings of all sorts of turnings, from table legs to spindles, columns, finials, candlesticks, fountains and light pulls. This book has been a constant companion in my workshop for years, which you can tell from the state of the cover. The best thing about presenting this book to a customer, apart from the fact it saves me having to show my terrible sketching abilities, is that the designs are well proportioned and, as the name of the book suggests, classic or traditional in shape. This makes most of the designs a joy to turn. Sure enough, after a brief glance at the page of columns, the customer chose one and I was able to turn his blanks to this design.

My weakness is design, simply because I don't have to do it on most jobs. Usually, I work to a drawing or a sample and I have little or no say on the design. Having a reference book like *Classic Forms* is a real benefit to me. Often, the temptation is to have rather too much going on in a turning, but I've found that just because you can turn lots of shapes and combinations, doesn't mean you should. These turned columns are a perfect example of restraint and simplicity. A bead-cove combination at the base, a necklace detail and a single bead the top. I love a necklace detail, so named because of its position on the spindle, it breaks up the plainness of the straight section without overdoing it.

This was also a rarity in that the customer supplied the timber. I always offer it as an option, but my customers come from all over the country and so it becomes less viable to send timber for me to turn, only to send it back again. Some of my high-end customers do this, as they often have very specific timber requirements, but most ask me to supply the timber. This customer was local, so supplied his own laminated oak.



6 My three spindle gouges, showing how much more I use the 10mm **7** The new gouge compared to the old **8** Sharpening the new gouge **9** My new signature beading and parting tool **10** The crown guard on my saw, newly adjusted to take full advantage of the blade diameter

New spindle gouge

If you've been reading my articles for a while, you'll know that I use a fairly simple range of tools. One of my main tools is a 10mm spindle gouge. I have three sizes of spindle gouge, 6mm, 10mm and 12mm, all of which are sharpened with the same 35° fingernail grind, which means that they all work in much the same way, the only difference being their size. The 6mm is mostly used for small items such as drawer pulls and finials, the 12mm for larger work, such as pedestals, and the 10mm is very much my go-to tool. The three gouges are the same age and all started out about the same length, so you can see how much more I use the 10mm from picture 6. I believe I got them around Christmas 2018, so it lasted me for nearly three years. Of course, when you are used to a tool being this size, swapping it for a new one feels quite strange and it took a while to get used to the feel of the new longer gouge. Some of you might look at that picture and say that there's some life left in it yet. I tend not to throw away old tools, they just go in my drawer for retired tools, where they stand a chance of being reused for another task or repurposed for a job that might need a special tool custom grinding, but as a spindle gouge it was just getting too short and had gone from a reliable old friend to being a bit annoying as the handle would catch on the toolrest and sharpening was becoming more difficult too, as it fouled the grinding platform. The new tool had no such problems, and a few minutes of reshaping into my preferred fingernail profile and it was ready to go.

More tool excitement

While I'm on the subject of new tools, I had some exciting news this month, with my first signature tool becoming available. People had been suggesting that I should have my own signature tool or range for a while, but I had always pooh-poohed the idea as I don't use any specialist tools, just traditional, off-the-shelf turning tools. Earlier in the year, I had been talking to my friends at Crown Tools and I mentioned

the idea of a signature tool. To my surprise, rather than laugh at the suggestion, they said they'd love to make it and asked what ideas I had.

The tool I am perhaps most associated with is the beading and parting tool. If you've been reading my articles or following me on Instagram for any time, you'll know that barely a day goes by without me using it, and if I'm spindle turning it is my go-to choice of skew, being a traditional hybrid of a skew chisel and a parting tool. We discussed the grind that I use and I mentioned that often the long edges are very square on the standard tool and it would be good to have them rounded a bit more than usual. A prototype was sent over and I've been using it for several months to fully test it out. The rounded edges slide along the toolrest with ease and it feels great in the hand. I have loved using it and now, after a few delays, I have taken delivery of the first finished tool, complete with my signature on the handle. It's a small thing but I am incredibly proud of it and am selling it directly through my website.

Autograph

Having my signature on a tool is an odd feeling as I'm not often asked to sign things, but it does happen occasionally. My actual signature – the one I use for important documents etc – is pretty much an illegible squiggle, so on the rare occasion that I am asked to sign something, I tend to just write my name with a bit of a flourish. I filled several sheets of paper when practising for the one I submitted for my tool.

Back in 2018, I was demonstrating at the Utah Symposium. I was with my friend Benoit Averly, a very talented artistic turner and sculptor from France, and we were asked, along with all of the demonstrators, to sign a couple of T-shirts branded with the symposium logo that would be auctioned off at the Saturday night banquet. I was handed a thick, black marker pen and asked to sign. I did my best, but writing on fabric isn't the easiest at the best of times, let alone with a marker pen. I managed it but it did look a little like a five-year-old had written my name on the T-shirts.



COURTESY OF THE LITTLE GLOBE CO

11 Using the sphere jig to turn the outside of the hemispheres **12** Hollowing the inside with a negative rake scraper, the work held in my special custom chuck **13** Some of this batch of globe boxes **14** A finished desk box and globe, ebonised and lined with parchment

Benoit, on the other hand, picked up the marker and signed the most beautiful, flowing autograph as if using a fine-tipped calligraphy pen on the finest writing paper, making mine look even worse! Thankfully, being asked for my autograph is a rarity, but be warned if you ever do ask for it, it will probably look like a child did it.

D'oh! moment

You might remember that I wrote about my new circular saw bench a few months ago. I've been getting on very well with it but noticed one slight niggle. The advertised depth of cut capacity of the saw is 105mm, which is deeper than my old saw, so was one feature I had been looking forward to taking advantage of. However, the crown guard is mounted on the riving knife and prevented cuts above about 75mm. My dad had modified the old saw from having a riving knife mounted crown guard to having an arm that allowed the guard to be raised and I was coming to the conclusion that I would have to do similar to my new saw. I had been mentally drawing up plans for how I'd make some sort of wall-mounted arm when I spotted the same saw in the background of a picture on Instagram. I looked closer and noticed that the guard was fitted much higher than mine and would allow the maximum advertised cut. The next time I changed the blade I looked closer and realised that the riving knife has a wide range of adjustment to it. The previous owner had fitted it in this low position as it obviously suited the work that they did. With the loosening of a nut, I was able to improve the usability of the saw and solve my only issue with the machine. I was so pleased and at the same time felt like such an idiot for not realising this sooner. It goes to show that you really should read the manual before operating the machinery, even if you think you are familiar with the type of machine.

Globe boxes

I've been making globe boxes for Loraine at The Little Globe Co for more

than five years. Loraine is a cartographer and ceramicist and makes the most wonderful little porcelain globes; hand-painted scale models of the Earth. These are presented in either a traditional pocket box or a desk box. Pocket globes have been around for hundreds of years, the boxes once being made out of dried fish skin. These days the boxes are of turned oak. Some of Loraine's globes, and so by association, my boxes, are in permanent collections in museums including the National Maritime Museum in Greenwich.

Every few months I will get a list of items that she needs and I set aside a week to work through it. I use prime quality, quarter-sawn oak for these boxes for stability as they are turned to even 6mm hemispheres. Loraine lines them with a celestial chart, finishes them, adds a tiny hinge and clasp and they safely house the delicate globes.

It took a little trial and error to master the technique of making the boxes as they need to be millimetre perfect. I turn the outsides first using a Paul Howard sphere jig. Generally, I turn spheres freehand, but after several attempts, I can confirm that the sphere jig is essential in making these to the level of accuracy required. Of course, the problem with turning the outside first is that holding them to hollow the inside needs a creative solution. I came up with a jig, perhaps you could call it a chuck, loosely based on something I'd previously seen in a book. The chuck is hollowed to hold the hemisphere and has a clear polycarbonate ring that screws into some threaded inserts fitted to the rim of the jig. It took a few attempts to perfect, but I now have it down to tee and make them quite efficiently, regularly testing the internal shape against an MDF template.

The desk boxes are much more like a box that a woodturner would recognise. The insides still need turning accurately to the templates so that they can be lined with the chart and safely house the globe without it rattling around. The lids are turned freehand into a dome while held in place by a tight friction fit, which is eased once they are sanded. ●

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Kurt's clinic

Kurt Hertzog answers readers' questions



PHOTOGRAPHY BY KURT HERTZOG

1 On pressure vessels, I tend towards more conservative blow off valves and a high quality overpressure valve **2** My rework of the bargain paint pressure pot was total replacement of all components with better quality devices **3** My stable of pressure pots includes a re-plumbed bargain paint pressure pot and a larger capacity commercial pressure pot

I'm just learning the ropes about casting and want to get your opinions on pressure pots. What features should I be looking for? Whose do you recommend and why?

Let me answer your second question first. I avoid recommending specific brands in my articles or column. With sufficient information from me and others, you can make your own informed choice. I'll try to add to other information you may have. Also, it's unfair to other brands in the marketplace to mention just one and not all. Let me share my thoughts.

With many years as a scuba diver, along with years of industrial gases use, I'm not afraid of metal containers under pressure, but I'm certainly respectful. Be mindful that your pressure pot, even pressurised during use to 50-80psi, has plenty of stored energy. Poor quality, cobbled-together systems, rough handling, over pressuring, and other mishandling of any pressurised container can be dangerous.

There are specific pots designed for casting that have all the bells and whistles you'll need. I just added one to my stable of tools in addition to my paint pot I adapted for casting many years ago. My selection and purchase of a built specifically for casting pressure pot was based on

my familiarity with the company, the completeness of the features, and it being on sale at my local Woodcraft.

Features I want in any pressure pot are: quality construction, a good sealing system, a proper value overpressure blow off valve, a decent-sized, legible pressure gauge, industry standard quick connections (Milton or Milton type) and decent ball valve flow controls and shut-off. With these and, obviously, sufficient capacity, you'll have a very functional pressure pot. Pluses are a non-stick liner and roll-around casters.

Have I bought the imported, cheapie painter's pressure pot to use? Sure, but I did a plumbing rework to change the overpressure valve to a quality valve of my pressure choice. I pick a value well below the recommended limit for the pot, but still workable for my needed pressure. The gauge, piping, quick connects, regulator, and ball valves were far better quality. Did I save money? Probably not, but at the time it provided a functional and safe pot for pressure casting. BTW... I still have it and on occasion use it when I don't need the capacity of my commercial pot. If you decide to adapt the commercial painter's pressure pot, you can add these items to get to the same point. Be certain to do it properly for safety.

I am turning some walnut and I can't seem to get rid of sanding lines. When I do the same thing in oak, it turns out fine. I start with 120, then 220, 320 and finally 600 grit. Help please!

Let me give you my opinions on sanding in general and then some specifics. First and foremost, sandpaper is a cutting tool. Don't treat it or use it as a crutch to cover up poor turning, but rather as the tool that it is. Its purpose is to finely cut and fair your other cuts together. It is prepping the surface for accepting a finish. Also, like your other cutting tools, there is a price difference between chicken salad and chicken droppings. Quality sandpaper, used properly, will be one of the most useful and powerful tools in your kit. I'm pretty sure the problem you are experiencing is your jump from 320 to 600. You might want to insert some sanding with 400 in between.

Depending on what you are sanding – different species of woods, various plastics (extruded or cast), bone or antler, or metals – you may need a more complete range of grits. There is a reason the manufacturers offer 100, 120, 150, 180, 220, 240, 280, 320, 360, 400, 500, 600, and finer beyond 600, along with coarser than 100. It isn't often you need all of these intermediate hops, but there are times they are extremely helpful.

My full kit of sandpaper contains all these grits except the 500, although I only keep a few sheets of 120, 180, 240, 280, and 360 for the special-needs sanding. Usually when I need finer abrasives beyond 400, I start with my Micromesh products up to the desired endpoint. These work on wood but are most beneficial when dealing with plastics.

I recommend that all sanding be done at a low surface feet per minute, i.e. slow down the lathe. Heat is the enemy of wood! By going too fast, your sanding is not only generating excess heat but hopping over the surface as you sand. I cringe when I see someone wearing a glove to protect their hand from the excessive heat of sanding too fast. Too high an rpm is counterproductive for quality sanding.

A fine woodworker never uses a belt sander to finish-sand high-end furniture. Running slowly, working through the grits, cleaning between grits, and sanding axially as needed will yield the best results. Sanding axially, benefiting some turnings, is simply turning the lathe off and rotating the spindle slowly as you sand lengthwise. On certain turnings, I do this with each grit after sanding under power radially before I move to the next.

Regardless of your sanding direction. I suggest that you clean the surface with a quick wipe of a paper towel between each of the grits. This helps ensure that any shedded abrasive particles don't remain behind to be carried around by the next finer grit. I find wiping a paper towel is far superior to blowing off with compressed air. It's as quick and far more effective, in my opinion. Don't hurry to move on to the next grit until you are ready. For example, you can never effectively remove scratches left by 220 with 400 grit later on. While it really hurts all of us immediate gratification turners, adopt the mantra of Bruce Hoover of the Sanding Glove: 'Learn to love sanding.' If it is any consolation, my bugaboo species to sand well are cherry and blackwood. I always seem to find scratches that I need to step backwards to resolve. ●



4 You need not have a box of each grit of sandpaper, but you should have some of each of the values. You won't always use each step but have it when needed **5** For finer sanding beyond 400, I use Micromesh products and liquid 'polish' as appropriate. You can also buy finer sandpaper grits well into the thousand in the automotive arena **6** When power sanding, set your lathe speed and your power sander speed to maintain a reasonable sanding speed. No fingers involved to tell you of overheating

Wizardry in Wood

The Worshipful Company of Turners reports back on how WIW 2021 went



The competition set-up





Mark Sanger exhibit

More than 1000 people visited the landmark exhibition Wizardry in Wood in October. It's been held every four years since 2004 when the Worshipful Company of Turners launched the show to mark 400 years since it received its Royal Charter.

Carpenters' Hall in the City of London was the venue for this extravaganza of all things turning. The Lord Mayor opened proceedings accompanied by a fanfare, commissioned in his honour, and played by musicians from the Guildhall School of Music & Drama on the Turners' Consort of Instruments.

Exhibitions ranged from turning musical instruments to turning in pre-history; from education and training for turners to competitions for all levels of skill; from demonstrations of plain, pole lathe and ornamental turning to exhibitions of work by 14 of the UK's leading turners. The Association of Woodturners of Great Britain also brought its travelling exhibition of pieces, and there was a retrospective of the work of Master Turner Ray Key.

New for Wizardry were daily curated talks – from the art of rose engine turning in the history of bank note production (sold out from a hopeful audience wanting tips!) to the history of turning bells and a lecture-recital on the 18th-century Master of the Turners Company, Thomas Stanesby and his part in how London turners dominated instrument making for 200 years. And a raffle of beautiful turned pieces raised over £6000 for the Turners' Charity.

The Register of Professional Turners and other professional associations were well represented and showed the Art and Mysteries of the Turners craft.

The Worshipful Company of Turners is already gearing up for the next Wizardry in Wood, which will be announced on the website. Watch this space.

Winning pieces from the competitions



Masters Ornamental, Arthur Kingdon



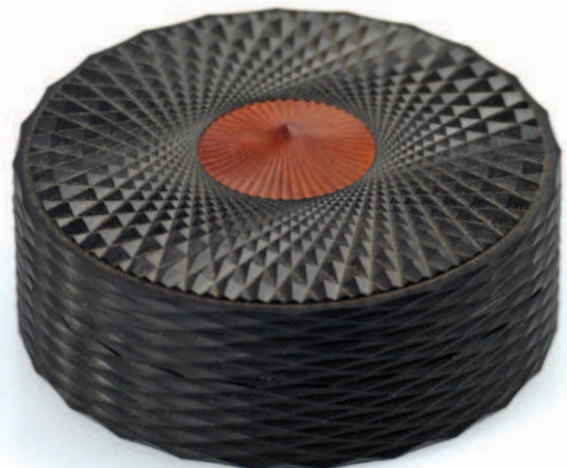
Felix Levy, Andrew Mason



Masters Open, Stuart King



Masters Plain, Owen Schroder



Lady Gertrude, Bob Wade



Bert Marsh Certificate, Helen Bailey



Bert Marsh Company, Christopher Scott



APTGW, Matt Whittaker



AWGB Senior, Ruby Cler



AWGB Ray Key, Owen Schroder



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Bon-bon dish

Rick Rich creates his own version of a three-piece pedestal dish

I wasn't really sure if I had ever had a Bon-bon when I first saw a diagram for Bon-bon dishes in *The Art of Wood Turning* by William Klenke, but a check in the dictionary showed otherwise. We probably all have had a few of the foil-wrapped chocolatey confections, or a few too many at times, as I have. The three-piece dish looked challenging to turn, and it was, but also proved to be an enjoyable way to spend an evening at the lathe.



'It's so old fashioned,' my daughter gasped. She was quite correct as the book was published in 1937. I found it in a downtown store specialising in old books. The store had numerous old woodworking books and I spent a pleasant hour or so perusing the shelves. Recognising the author from a PDF book I have titled *Art and Education in Wood-Turning*, I was excited to see the book on the shelf and bought it without even looking through it. I think it's much more enjoyable reading an actual book than looking at a screen with an ebook.

I would have liked to have copied the Bon-bon dish directly, and perhaps included photographs of the original text and drawings, but as the copyright status of the book could not be satisfactorily ascertained I decided to simply use the example

in the book as inspiration for my own version; and this is what follows.

I looked at spindle, bowl, pedestal, candlestick and base designs from many categories of sources. I incorporated different elements into what I thought was an attractive combination and still kept the 'old fashioned' look that was the source of my inspiration and my daughter's aversion.

Meanwhile, I highly recommend typing the book title into your favourite search engine, or seeing your bookseller and buying a copy of Klenke's book if one is available. If you want to go on the cheap, get Klenke's earlier work, *Art and Education in Wood Turning* as a PDF download through Google Books. Of course, having both books is my goal.

Here is how to turn my custom designed three-piece Bon-Bon Dish in White Oak.

Plans & equipment

Materials

- Bowl blank 6 $\frac{3}{4}$ in round by 1 $\frac{1}{2}$ in thick – white oak
- Base blank 3 $\frac{5}{8}$ in round by 1 $\frac{1}{8}$ in thick – white oak
- Spindle blank 5in long, 3 $\frac{5}{8}$ in square – white oak

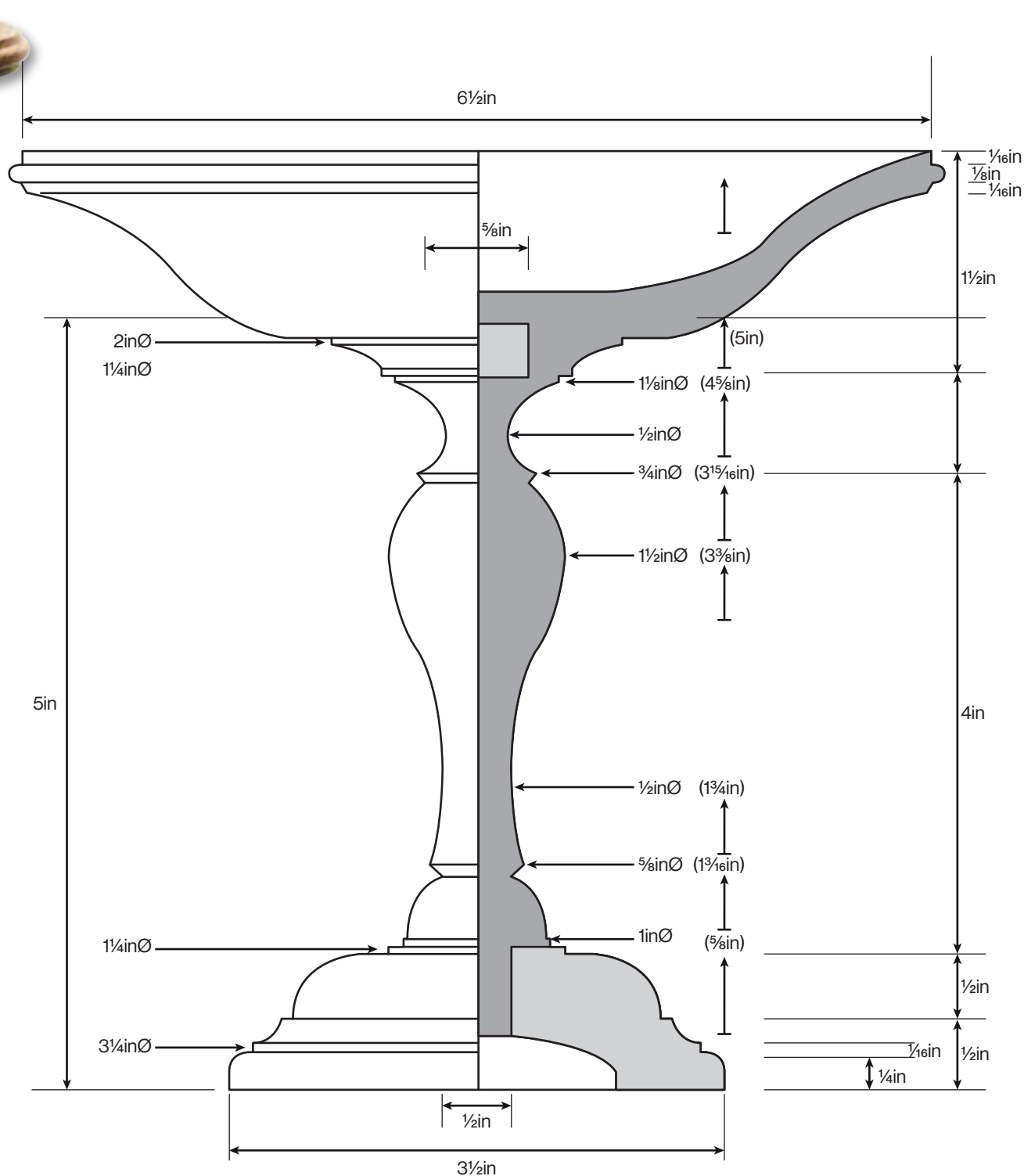
Tools & equipment

- PPE, including full face mask
- 4-jaw chuck with standard jaws and centre screw
- Drive and revolving centres
- 1 $\frac{1}{2}$ in & 5 $\frac{1}{8}$ in Forstner drill bits and drill chuck with MT2
- 3 $\frac{1}{8}$ in drill bit and cordless drill

(use bit corresponding with your chuck screw centre size)

- Ruler and pencil
- Pencil compass
- 3 $\frac{1}{4}$ in skew
- 3 $\frac{3}{8}$ in bowl gouge
- 3 $\frac{3}{8}$ in spindle gouge
- 1 $\frac{1}{8}$ in parting tool

Scale drawing. The bracketed dimensions along the right of the spindle denote the distance from the bottom end of the spindle to the diameter measurement it is next to.



1 First you will need to mill the blanks to an eighth oversize so there will be less danger of making them too small. The bowl blank is milled to 6 $\frac{3}{4}$ in round x 1 $\frac{1}{2}$ in thick. The base blank needs to be 3 $\frac{3}{8}$ in round by just over 1in thick and the spindle blank is 5in long by 1 $\frac{1}{8}$ in square. I have a long slab of 2in thick white oak, and it is only 6 $\frac{3}{4}$ in wide. This factored into my diagram measurements, resulting in the bowl size given.

2 Install the $\frac{3}{8}$ drill bit and drill no more than $\frac{3}{4}$ in into the centre of the bowl and base blanks. This hole is drilled into what will be the top of the bowl and base and will be used to mount on to the centre screw on the chuck.

3 Mount the base blank on to the chuck using the centre screw. True the sides and the face.

4 Turn a shallow bowl into the base bottom, then use the skew as a scraper to create an internal mounting recess so the blank can be reversed and mounted on the chuck jaws. Use the tip of the skew to create some design for the bottom to help hide the mounting recess. Sand and finish.

5 Reverse the base blank and mount it on to the chuck. The base is 1in tall so turn away any excess and turn the top flat so you have a 1in x 3 $\frac{1}{2}$ in round. On the side mark $\frac{1}{4}$ in and $\frac{1}{2}$ in from the bottom (headstock side). On the face, mark a 1 $\frac{1}{4}$ in circle; the top area where the spindle will seat onto. With the bowl gouge, slightly dish the top circled area so the spindle base will later seat neatly. Just outside of the marked circle, use the bowl gouge to turn a half bead down to the $\frac{1}{2}$ in mark on the side. Keep removing wood until the half bead starts at the marked circle and ends with a dimension close to 2 $\frac{5}{8}$ in round. Turn a half cove to the $\frac{1}{4}$ in mark on the side. Use the skew chisel on its side to make small flats on the top, between and bottom of the bead and cove. Mount the drill chuck in the tailstock quill and the $\frac{1}{2}$ in Forstner bit into the drill chuck. At slow speed, advance the bit into the wood. Listen carefully and you should hear the bit cut through to the other side. Stop the lathe and withdraw the bit, or withdraw while holding the drill chuck securely. Sand, finish and remove from the chuck. The base is complete.

6 Mount the bowl blank on to the chuck screw. Advance the tailstock if there is a lot of waste wood to remove. True the side and turn away excess wood so that you have a blank 1 $\frac{1}{2}$ in thick x 6 $\frac{1}{2}$ in round.

7 Use the bowl gouge to rough out the bowl bottom shape. Re-mount the drill chuck in the tailstock and use a $\frac{3}{8}$ in Forstner bit to drill only $\frac{3}{8}$ deep. Don't worry about sanding and finishing, but do make sure it's not too rough and will only need some final finesse later.

8 Mount the bowl blank on to the chuck by grabbing the tenon with the jaws. Before using your bowl gouge to excavate the bowl interior, turn the edge detail, which is a $\frac{1}{8}$ bead between two flats about a sixteenth inch each. This can be easily done with a sharp skew on its side.





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9 Sharpen your bowl gouge and make the final inside bowl cuts. Make sure the bowl isn't much deeper than $\frac{7}{16}$ in. That will give a theoretical $\frac{1}{4}$ in of material between the inside of the drilled mortise and your final cut. Remember that Forstner bits usually have a centre spur that extends roughly $\frac{1}{8}$ in, at least mine do. Sand and finish the bowl interior and edge.

10 For this next step, use a jam chuck to secure the bowl between the chuck and revolving centre as shown. As long as careful light cuts are made, the bowl interior should be free from being marred. With the bowl so captured, turn away the tenon, sand and finish.

11 Now the really fun part – spindle turning. Mount the blank between centres. Rough down to a cylinder and then smooth it neatly with the skew, because it's good practice.

12 Because the spindle is roughly 5in long, hold the 5in mark of your ruler steady on the tailstock end and make the following marks from the left end of the ruler:

- Five eighths
- One and three sixteenths
- One and three quarters
- Three and three eighths
- Three and fifteen sixteenths
- Four and five eighths

As mentioned earlier, this isn't precision machining, but sixteenths add up so do try to measure carefully. And in case you were wondering, the reason for holding the 5in mark of the ruler at the tailstock end is so that any extra spindle length will be at the bottom tenon going through the base.

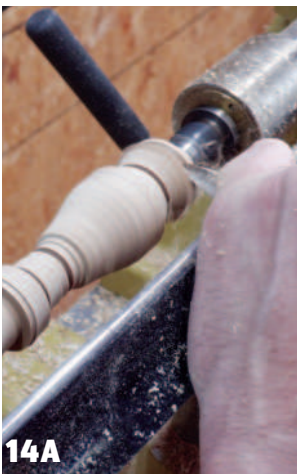


12



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13 Set your outside callipers to the dimensions listed for the spindle on the diagram at the measured marks just made. Use the callipers with the parting tool for the dimensions of each mark on the spindle.



14A



14B



15

14 With your skew and spindle gouge, turn the details of the spindle. Once the details are complete, turn the tenons to fit exactly into the drilled holes of the base and bowl. Make sure the shoulders around the tenons are dished in some so that the outside edges will be in full contact for a proper fit. Sand and finish the spindle.

15 Dry-fit the pieces to ensure they will be able to glue up properly. Then use a cotton bud to spread some wood glue into the mortise of the base and seat the spindle completely. Apply some glue to the bowl mortise and seat it carefully, completely and square on to the spindle.

16 Apply some finishing oil to your Bon-bon dish and it should look something like this. My wife agreed the piece was 'old fashioned, but quite pleasing to the eye'. High praise from an admirer of IKEA furniture.

17 As a reference to the original inspiration turned to the dimensions drawn by Klenke, both are pictured here. Klenke's version is in red oak on the left. •



16



17

A bright future for UK manufacturing

Record Power's new woodturning tools and increase in UK manufacturing



As most woodworkers and woodturners will know, Record Power is a world-renowned UK brand, with its historic roots planted firmly in Sheffield. In recent years it has been developing and expanding its UK-based manufacturing capacity, beginning with the acquisition of the CamVac brand of dust extraction machines back in 2014. Since taking on CamVac, it has improved and streamlined the manufacturing processes and ramped up production capacity, allowing it to sell these machines worldwide in many thousands.

Recent significant investment in 2020 allowed further expansion of the production department – which is now the largest in the company – in order to provide the ability to competitively manufacture a much wider range of products with greater control of quality and cost. Its range of modern CNC machinery, semi-automatic

finishing technology, grinding stations, plasma cutting machinery and much more gives the flexibility and capacity to produce a wide range of products to exact specifications.

All this is, of course, meaningless without the right people, and Record Power is proud to employ some exceptionally talented engineers, designers and operators to turn its ambitious plans into reality.

In addition, it now features the prestigious Made in Sheffield mark across its range of turning tools and CamVac dust extractors and is looking forward to applying it to a growing number of products in the future.

Turning tools are the latest new product to be made in its own factory in the UK. Although the company had many years of experience making turning tools in Meadow Street, Sheffield, as part of its old group of companies prior to 2003,

this range of tools has taken several years of development to reach the market.

For what is such a simple-looking tool, there is a lot to consider. The company began by reviewing the strengths and weaknesses of its original Sheffield-made range and identified areas that could be improved. It then benchmarked these against other UK manufacturers and tested the strengths and weaknesses of their offerings.

This led the first sets of prototypes which, were tested in a number of different countries by local professional woodturners, keen woodturning enthusiasts and experienced specialist woodturning retailers.

After many months of testing different handle shapes, sizes and tool profiles, Record Power finally found the designs that met its objectives. It wanted full size, professionally specified tools that were still safe and simple to use, even for



PHOTOGRAPHS COURTESY OF RECORD POWER

first-time turners. These tools feature generously sized beech handles, which feel good in the hand and offer plenty of fine control as well as strong support for heavy cuts. The fluted tools have been refined to give the best clearance for smooth, easy cuts and all profiles have been chosen as the safest general-purpose grind for any level of user, with maximum ease of resharpening. However good the quality or potential of any turning tool – it will only operate at its best when properly sharpened and this is the area that many users find the most difficult to master. So, the tools have fully professional specifications and sizes – including the same steel and heat treatment as

most of their UK competition – but the profiles are simple to use and sharp straight out of the wallet. There are online videos to help show how to do this as simply and as cost effectively as possible – freehand with a basic grinder.

A priority was to provide the best quality, performance and value possible, within the normal price range of the UK-made market, yet ensure the tools were as safe to use and easy to resharpen as possible, and the company believes it has met that brief.

Its increase in UK manufacturing is part of a long-term initiative to increase production of exclusive British-made Record Power products. In addition

to turning tools, Record Power have recently launched a range of high-quality UK-made lathe headstock and tailstock accessories. This range comprises four-prong, six-prong and multi-tooth drive centres as well as a traditional revolving centre and ring centre. An interchangeable tailstock revolving centre kit will also be launched in 2022.

These ranges are currently exported to over 30 countries, allowing Record Power to significantly expand across the globe while also creating local jobs and making a positive contribution to the UK's manufacturing industry.

www.recordpower.co.uk

For more information about Made in Sheffield & Made in Britain visit: madeinsheffield.org & madeinbritain.org



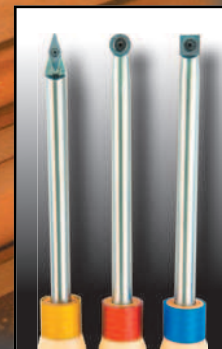
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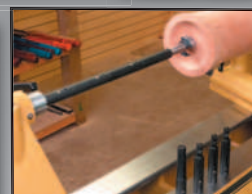
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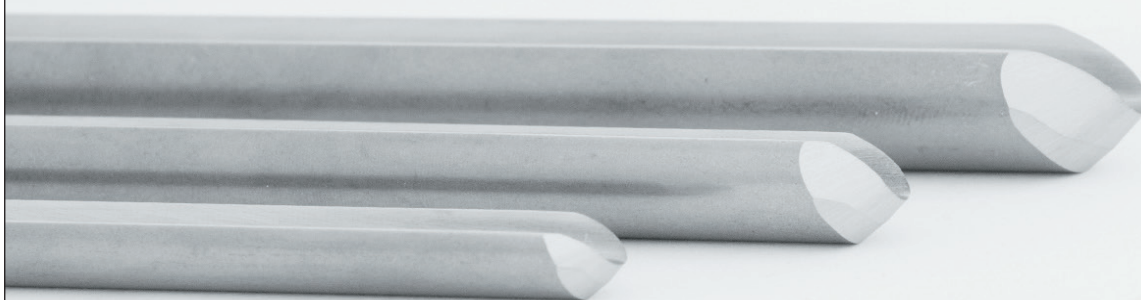
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Striped spindles

James Duxbury takes two pieces of contrasting wood and creates an appealing bud vase

Some years ago, I was presented with a need for a creative solution while making a cradle for one of my kaleidoscopes. The cradle consisted of two U-shaped flat ends with a creatively turned spindle in the centre holding them in place. Usually the two cradle ends were made of the main wood and the spindle turned out of the trim wood. However, this time I did not have enough trim wood to do the job. All I had was a piece about half the thickness required and had no idea where to obtain more trim wood – a design opportunity in the making.



The only solution that came to mind was to glue a strip of main wood to the trim and turn the spindle. This would work fine, however a spindle with one dark side and one light side was just too

plain and not the quality of work that makes the piece stand out. It had to be more creative and interesting – how about some slanted stripes to create an interesting and unique design?

I have to admit it took some thought to perfect the process, although it is not that difficult to do. This has now become a signature effect that is often requested in other of my turned pieces.

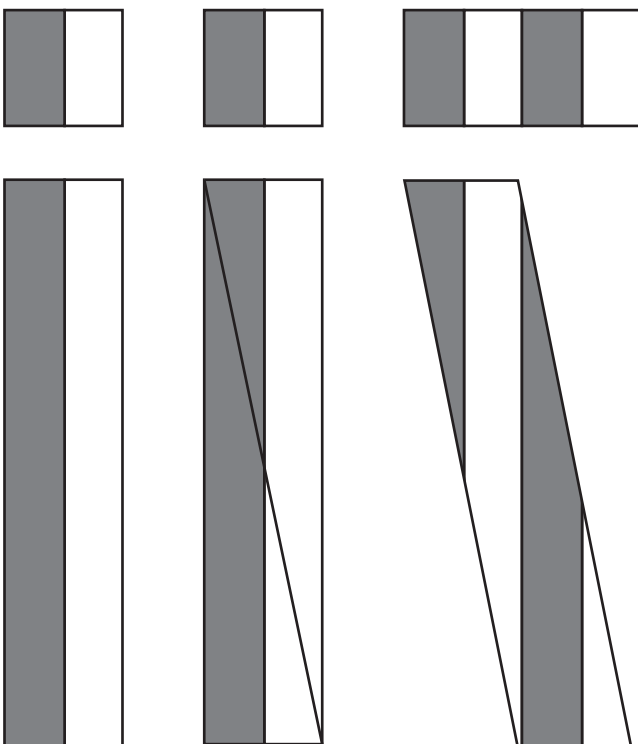
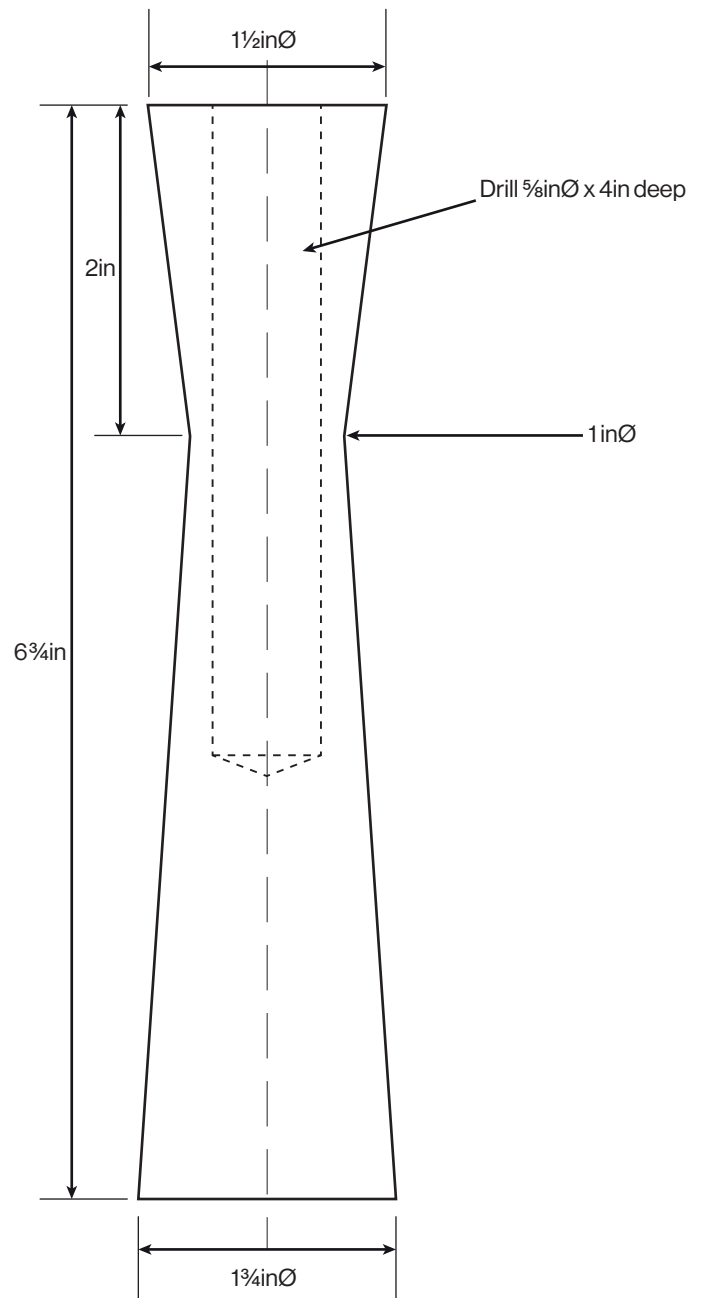
Plans & equipment

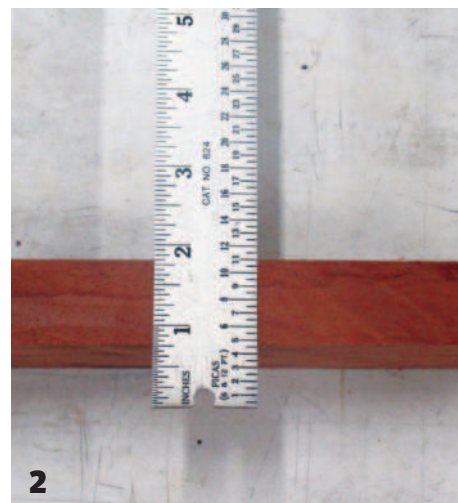
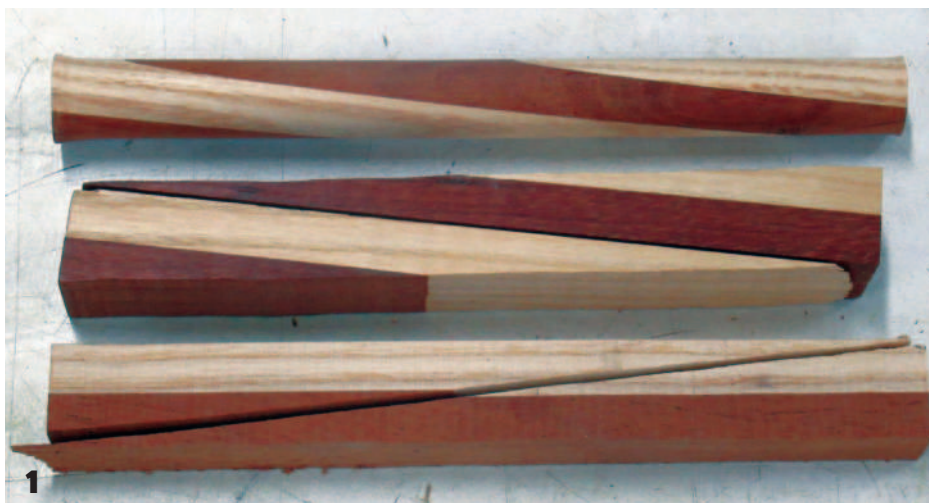
Materials

- 2 pieces of contrasting hardwood:
 - 1 piece of dark hardwood
 $7\frac{1}{2} \times 1\frac{1}{16} \times 1\frac{3}{16}\text{in}$
 - 1 piece of light hardwood
 $7\frac{1}{2} \times \frac{3}{4} \times 11\frac{13}{16}\text{in}$

Tools & equipment

- PPE as appropriate
- Sandpaper
- Yellow wood glue
- $\frac{5}{16}\text{in}$ (16mm) glass vial
- Lacquer finish
- Steel ruler
- Prick punch
- Callipers
- $\frac{1}{8}\text{in}$ (3mm) wide parting tool
- $\frac{5}{16}\text{in}$ (16mm) drill bit
- 1in (25mm) spindle roughing gouge
- $\frac{3}{8}\text{in}$ (10mm) spindle gouge





1 First the two contrasting strips are glued together (bottom). When the glue has cured, draw a diagonal line from one corner to the opposite corner and carefully cut this on the bandsaw. This makes two wedge-shaped triangles. Take the bottom triangle and place it on the other side of the top triangle leaving the bandsaw cuts on the outer edges (centre). Glue these two pieces together. When the glue has cured, square the ends, and turn the slanted striped spindle (top).

Making a bud vase

2 The blank will consist of two pieces of contrasting wood about $\frac{3}{4}$ in (19mm) longer than the required blank length. Usually these strips are equal in width, but do not have to be. However, the two pieces of wood sandwiched together have to equal the total depth necessary to create a square blank for turning. The depth in this case is $1\frac{3}{16}$ in (46mm). The dark blank is about $1\frac{1}{16}$ in (27mm) wide. If I hold the final dimension on the outer side of the blank I can read the exact width of the piece required, in this case $\frac{3}{4}$ in (19mm).

3 Cut the strip, surface all four sides as a glue surface and glue the two pieces together.

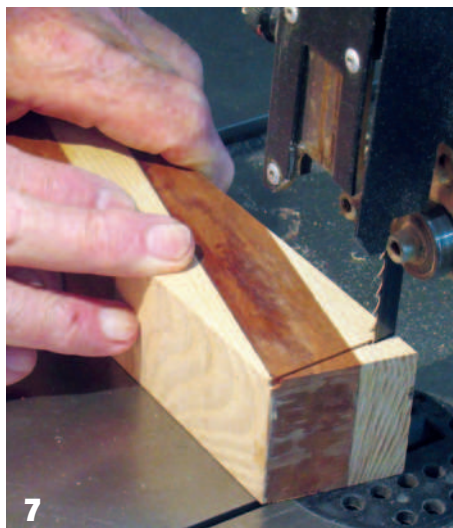
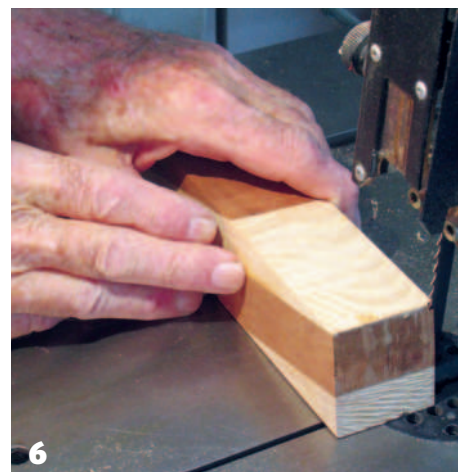
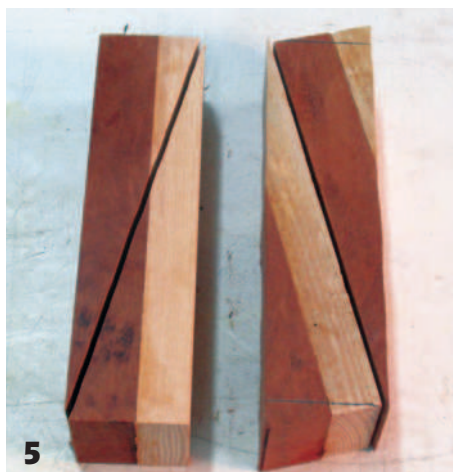
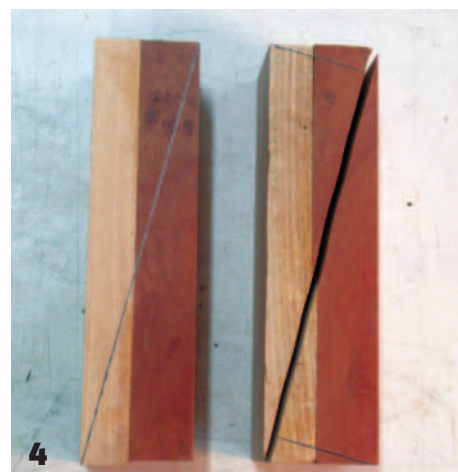
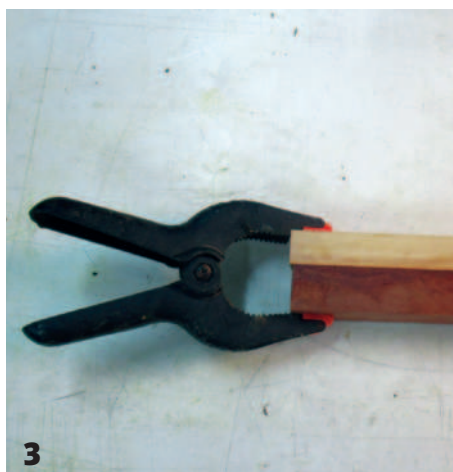
4 When the glue has cured, mark a diagonal line from the bottom corner to the top corner on the opposite end. Carefully cut to create two wedge-shaped pieces using the bandsaw or by hand.

5 Now take the wedge on the left and glue it to the other side of the right wedge, leaving the bandsaw cuts on the outside. It is important to clamp the glued wedge shapes securely as they have a tendency to creep and slide around.

6 Square off both the ends. This can be done by hand or on a bandsaw. Place the long side down on the saw table and right at the top corner cut in just deep enough to make a cut line.

7 Roll the blank towards you and saw the small wedge off on this 90° cut line. Using the same method, cut the other end square and the blank is ready for the lathe.

8 Mount the blank between centres and with a 1in (25mm) spindle roughing gouge turn to a cylinder.





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9 When the cylinder is turned round mount it in a chuck and begin by shaping the top of the vase. A $\frac{3}{8}$ in (10mm) spindle gouge works well for this.

10 A bud vase for dry flowers can simply be a drilled hole, however this vase will have a $\frac{5}{8}$ in (16mm) diameter glass vial in it to contain water for live flowers. The drill bit diameter has to be sized for a loose fit on the vial. By holding the vial against the drill bit the depth of cut can be marked on the bit with a small piece of masking tape.

11 Turn the lathe speed down to about 500rpm. Hold your hand on the drill chuck and drill the hole.



11



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12 Test the vial inside the hole. The vial has to fit fairly loosely. Wood can change with the environment and will easily break the glass if it is too tight.

13 When the vial fits properly sand the top surface of the vase and remove it from the chuck. The blank is then turned around and mounted using a jam chuck. It just so happens I have exactly what is needed for this project. This is a piece of hardwood with a No.2 morse taper on one end and a $\frac{5}{8}$ in (16mm) diameter spindle about an 1in (25mm) long on the other end. I have a variety of these jam chucks and whenever I make a special one I keep it for use later. A piece of waste wood held in a chuck with a similar $\frac{5}{8}$ in diameter spindle about 1in long on the end would also work.



13



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14 Place the blank on the jam chuck, bring up the tailstock and put a line where the minimal diameter of the vase will be – usually about $\frac{1}{3}$ of the way down from the top. Set your callipers to 1in (25mm) and with a $\frac{1}{8}$ in (3mm) wide parting tool cut down to that diameter. Then with a 1in spindle gouge shape the vase to its final configuration.

15 To enhance the design of the vase, contrasting burn lines work well. With a $\frac{1}{4}$ in (6mm) round point tool cut a small groove about $\frac{1}{4}$ in (6mm) from the top and one $\frac{1}{4}$ in (6mm) from the bottom. Then burn the lines in these grooves. Note: This burn wire consists of two wooden handles with about 12in (305mm) of wire. Guitar players often replace their strings and the wider lower note ones really work well for this operation.



15



16

16 Sand from 80 grit through 400. Then, with the lathe off, sand with the grain from 320 to 400 grit. Reposition the toolrest and with a $\frac{3}{8}$ in spindle gouge finish off the outer part of the bottom leaving only a small nib in the middle. Sand smooth.

17 Remove the vase from the lathe and trim off the small nib left on the bottom. I use a vibrator saw but a small handsaw or chisel will work fine also. The remains of the nib can be sanded off by hand or a 2in (51mm) sanding pad in the drill press makes the job much faster. Finish as desired. In this case multiple coats of lacquer were used.

18 When completed you can quickly compare the striped vase with similar previously turned plain vases. The small amount of extra effort really makes the finished piece unique.

19 These striped blanks can easily be duplicated so that multiple matching sets can be made.

20 By turning one of the matching vases around 180 degrees opposites can be obtained also.

21 The small vase detailed is just an example of a simple way to enhance almost any spindle. This table has four slanted striped legs that exactly match making it stand out – especially to other turners. Be prepared though. When viewed from the ends the slanted stripes in the legs give the illusion that the legs are not square to the table top. This table has had a framing square on it many times and the legs are perfect.



Top tips



- A good way to enlarge a drilled hole is with a flap sander and a drill motor. The sander is made from a 5/16in (8mm) steel shaft about 10in (25cm) long with a 2in (5cm) long slot cut in the end of it. Take a piece of sandpaper about 2 1/2in (6cm) wide x 5in (13cm) long, fold it in half and insert it into the slot. Then with the lathe OFF, turn the drill motor on and run sander into the hole. Sand away.
- This article deals with two strips of contrasting wood laminated together. Three strips, if they are all contrasting wood will work well. Four narrow strips, two light and two dark, laminated alternately, making a blank of four strips can add interest also. Let your imagination wander. •



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BE INSPIRED, BE CREATIVE

The Critical Mass Collection

Arturo Soto, of Memories of Green, shares his celestial-inspired collection with us



‘All massive stars progress through the stages of their lives by converting hydrogen into helium, followed by oxygen and silicon... the end result is the production of iron, and it is the process that spells the end for the star, transforming its collapsed core into a Neutron Star or a Black Hole, depending on the final mass of the core.’

The Collection

The Critical Mass Collection is inspired by the massive density of a Neutron Star, a star close to collapse and forming a Black Hole. The chalices' signature characteristic is their solid and heavy nature, designed with repurposed birch wood from England. The process transforms the material to create beautiful mathematical singularities that deceive the observer in space and shape.

Its inconspicuous density is a reminder of the incredible amount of waste we generate. By compressing singular layers of material together to create dense matter, the material is then exposed through a high speed and force to create perfect space-time calculations into our world.

Memories of Green uses the poetic representation of these stellar objects and their massive density as an inspiration to create the entire Critical Mass collection. The optical distortion and apparent lightness of the objects trick the eye and explore the correlation between an object's weight and the amount of waste it generates.

The hole in the centre represents the invisible space-time curvature that a Neutron Star can generate and adds it as an element of aesthetics; this can hold a minimal amount of well-placed dried nature to create a composition of simplicity reflected by the minimalism of the object surrounded by a vast space.

Inspiration

This collection delves deeper into the abyss of knowledge of chalices and their correlation with adoration, ritualism and the aesthetics of general relativity and quantum mechanics.

The inspiration comes from placing an imaginary Neutron Star in close proximity to a solid object and how its massive density bends the entire solidity of the object into a liquid state.

This theoretical phenomena and the inconspicuous weight of the things converge into a state of negentropy where the Critical Mass Collection gives order to a chaotic system of wood waste and discarded materials.

The sculptures are a poetic representation of how much waste we generate and what can be done with it. This is how the Critical Mass Collection came to be...

Vision

For our studio, the vision of design is always a warning about the Earth's resources in a beautiful, poetic way. The Event Horizon collection will always be defined by a poetic science fiction world, like a beautiful sculpture, an omen to our future.

The aesthetics of the vase are best represented by the rules of Japanese composition, Ichirin Zashi – the art of placing a single stem of dry nature on a vase.

The Critical Mass Collection uses woodturning, a process of high speed and chiselling, to reflect the poetry of physical forces, time and space. A poetic expression of massive invisible forces transform this solid object into a seamless liquid-state anomaly.



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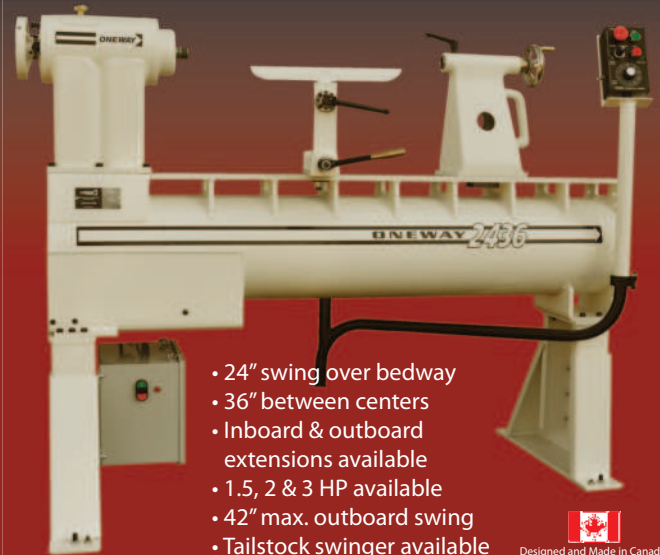
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Fob watch stand

Ian Woodford makes a watch stand as a gift for a friend

A close friend had recently been given a silver fob watch and I offered to make a stand to display it. An online search revealed two or three basic designs, so I chose one that appealed and set about putting pen to paper to design one that would complement his watch.



This stand is made from bubinga with boxwood accents and has eight components. The turning is quite easy but accuracy is necessary for all the pieces to fit neatly together to achieve the desired effect.

I had a bubinga bowl blank (150 x 50mm) from which I could make the base and the top arch and a spindle grain length (200 x 25mm square) for the pillars. The boxwood accents came from a length (100 x 25mm square).

Plans & equipment

Materials

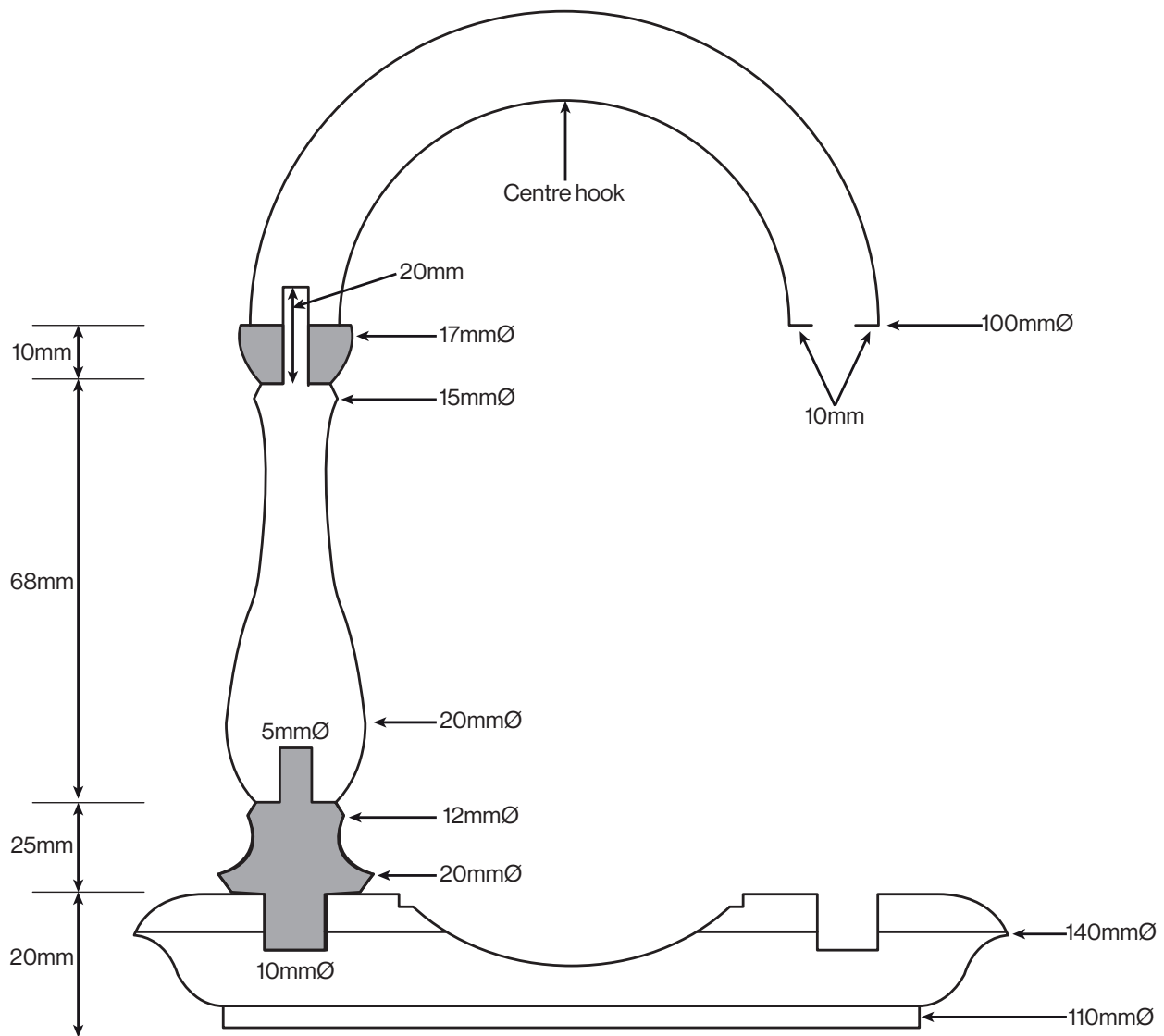
- Bubinga bowl blank, 150 x 50mm
- Bubinga spindle blank, 200 x 25mm square
- Boxwood spindle blank, 200 x 25mm square

Tools & equipment

- PPE as appropriate
- Dust filtration head helmet

- Spindle roughing gouge
- Spindle fingernail gouge
- Bowl gouge
- Thin parting tool
- Beading/parting tool
- Small skew
- Chuck
- Tabletop benchsaw
- Tailstock drill chuck
- Callipers
- Steel rule

- 4, 5, 10mm drill bits
- Sanding grits, 120 through 600
- Sanding sealer
- Carnauba wax
- Strong wood glue



1 The bowl blank is mounted between centres and a spigot to suit your chuck jaws formed with a beading tool. Mount in your chuck, trim to round and clean up the face with a bowl gouge. I decided the top arch was to have a square section, so with a pencil I marked a circle to outline the diameter as per the diagram measurements. Cut down to this line with the gouge and to the top width. The photo also shows the inner diameter cut, with the top and side dimension cut to the same size.

2 The ring is now parted off using a thin parting tool. I keep my other hand over the ring to stop it flying away when cut through.

3 Mount a scrap piece of wood and turn a dowel that can hold the ring on a jam chuck. Mount the ring halfway on to the jam chuck and sand the top, side and half of the exposed underside. Reverse the ring and sand the other side and the rest of the underside. Sand from 120 grit to 400/600 grit. Coat all surfaces with sanding sealer.

4 You now have to cut this ring accurately in half. You can use a handsaw but I chose to use my small tablesaw as this will ensure a 90° cut. Take the outside diameter and set the tablesaw appropriately with the stop rail so that the ring can be cut in half. Remember, it's the ring that needs cutting in half, not your fingers.

5 Holes have now to be drilled into the exposed cut ends, so find the centre point of these ends and mark with a centre point punch. At this stage it is important that the distance between these points is measured and noted as this will allow you to mark the drill points on the base where the pillars will be inserted. Hold the ring securely to drill a hole into each end section. I chose to hold the ring in my chuck jaws with the indexing system set on hold. Drill a 4mm hole about 5-6mm deep using a hand drill.

6 It's now time to start turning the pillars. Mount a piece of bubinga 20mm in diameter by 110mm long between centres and turn to round with your roughing gouge. With a tailstock-mounted drill chuck, drill a 5mm hole about 15mm deep into the bottom end. Shape the pillar to the diagram dimensions and reduce the top end to a 4mm diameter spigot about 20mm long. Sand, seal and part off.

7 Turn a piece of boxwood between centres to round with your roughing gouge and then mount one end in the chuck. Follow the diagram dimensions and turn the section that is between the base and the pillar. The end that will sit in the base needs to have a spigot 10mm in diameter while the other end needs to have a 5mm diameter spigot. Sand and seal.

8 It helps if, during this process, you mount the turned pillar into place just to make any final fit adjustments. The photo shows this in progress.





9



10



11



12



13

9 The top section in boxwood is now turned and drilled to fit the top of the pillar. Sand and seal. The whole process is repeated for the sections of the other pillar.

10 Now for the base. Mount the base blank, round off the edge and true the face with your bowl gouge. I've made a recess to suit my jaws and with the point of a skew made some decorative lines around this recess. Follow the diagram and when the base design is complete, sand and seal. Some of the sections can be done with the spindle gouge to help make it crisp.

11 Sand and seal the underside of the base and then reverse on to the chuck to shape the top.

12 Reverse the base and make sure the surface is nice and flat. With the previously determined measurement from the points on the arch, you can mark where the holes need drilling to mount the pillars. You can just make out these points in the photo at 10 and 4 o'clock positions. I prefer to keep the grain running from left to right. Drill the 10mm holes using your pillar drill and then return the blank to the lathe and finish the top.

13 Again check that the top is flat by using a steel ruler. This is important so that the pillars will sit perfectly at 90°. Sand and seal. All components are now buffed on a buffing wheel with carnauba wax



14



14 All turning is now complete and the components shown in the photo. Before gluing together it is necessary to find the centre point on the underside of the arch where a screw hook will be inserted. To do this I place the arch on some grid paper and mark as in the diagram. I use a good strong glue for the assembly, but don't apply too much as this could squash out when sections are placed together and mark the finished surface. I tend to use a toothpick to apply the glue correctly. Allow to dry and admire your work.

15 & 16 The final photos show the watch stand glued together and with the watch in place. ●



15



16

Community news

What have you been turning? Please email your images to WTEditorial@thegmcgroup.com

Mirror-making tips

Congratulations to Richard Findley for a great job as Guest Editor: **The article on mirrors was especially interesting since I have made several of them. A few comments:**

- I either mount the blank on a glue block using turner's tape, or I grip it between the face of a chuck or glue block and the tailstock to rough out the circular shape and put a tenon on what will be the back of the mirror. Then, I grip the tenon in chuck jaws to create the recess on the front.
- It's important to leave a gap between the glass and the surrounding frame to allow for wood movement. I agree with author Jason Breach – 1mm all around is about right. For the same reason, the adhesive used to mount the glass to the finished wood frame must remain flexible – I usually use either a silicone calk-type adhesive, or a small bit of double-sided turner's tape.
- I prefer to have the front surface of the glass slightly below the surrounding frame – typically just enough so that if the mirror is face down, the glass won't actually be in contact with the table.
- Some mirrors have bevelled edges, while others do not. Non-bevelled mirrors need a slightly deeper recess. The raw edge of the glass is sharp, so to protect the user's fingers, I embed the glass far enough that the surrounding frame shades the sharp edge from careless fingers. Doesn't take much – perhaps 1 mm.
- Many of the mirrors I have made have been unhandled. There sometimes is a problem that the finished mirror is too thin to be easily picked up by the edges. I have found that putting a slight dome on the back of the mirror helps – one can press down on one side to rock the mirror on that dome to elevate the opposite edge enough to be easily grasped. The mounting tenon on the back can easily be reshaped to become that dome.
- Traditionally, these are thought of as 'makeup mirrors', which implies an unfortunate gender

bias. But folks who wear contact lenses need to have a small mirror to insert and remove their lenses while travelling – and a small (50mm dia) mirror is perfect.

Here's a picture of a couple of the mirrors I have made. Note that one shows that there is no moral offence involved in mounting the mirror off-centre within the frame!

Thanks for the great issue. Louie Powell, Saratoga Springs, NY USA



Prize-winning presents

I am a self-taught woodturner and like to challenge myself. Tony Wilson is president of our club and when I entered the Xmas competition I won

with distinction, as he said... I had put two entries in, these were Xmas presents I had made for my family. *Neil Hopps*



Getting rid of any back issues?

A few months ago, a longstanding member of our club was disposing of a host of back issues of *Woodturning* magazine and I managed to obtain most of them before they hit the skip.

Having been a subscriber since the beginning of 2012 and having been fortunate enough to secure several other issues to fill the gaps, I now find that I have a virtually complete collection from 1990 to date.

There are, however, a few missing and I wondered if any of your

readers might be able to help me complete the collection.

I am short of only four: No.1 (the genuine article, not the 2015 reissue) and No.2, both from 1990, No.5 from 1991 and No.119 from January 2003.

I am, of course happy to pay a sensible charge, including P&P.

If anyone feels able and kind enough to help please email

Wteditorial@thegmcgroup.com.

Thank you, Robert Merrifield

Tricky timber troubles

Hello from Provence! I have been locked in my shed for about a year now. Finding wood is tricky but the local DIY store has been open, mostly. I can buy oak, beech and teak 18mm board – ideal for shelving but it can also be used for woodturning if you have enough machinery and glue. Here are photos of my

versions of four of items from recent issues of *Woodturning* – my thanks to each of the designers. I am particularly proud of the apothecary vase – I made the segment rings, then put them in the ammonia, then glued them together, then did the turning. Good fun.

Leon Walker





Dust control for woodturners

Frederick C Hill tackles the issue of how to keep air in the workshop as clean as possible

Dust is everywhere, you simply can't avoid it! Except for clinically cleaned areas, you are going to encounter dust consisting of a wide variety of items including biologicals (wood, fibres, viruses, bacteria, mould spores, etc.) and non-biologicals (asbestos, cement, rock dust, etc.) in every environment. Dust can be any particle that is small enough to float in the air.

Just how big are dust particles? Big ones range from 2.5 to 10 microns (a micron is one millionth of a metre) whereas small ones are less than 2.5 microns. HEPA filters are rated to take out 99.97% of dust particles that are 0.3 microns and larger, other filters aren't as good as this. Note that even a HEPA filter doesn't take out particles that are smaller than 0.3 microns (the smallest particles are normally about 0.01 microns but some, such as carbon black, can be as small as 0.001 microns).

Fortunately, the human body has evolved ways in which to deal with most of the dust we normally encounter. Dust enters our nose with the air we breathe. We have a long nose with nasal hairs that create air turbulence so that most of the incoming air touches the moist cells of the posterior portion of the nose and much of the dust is captured by that moisture. That which doesn't get captured in the nose is often picked up by the moist membranes that line the back of the nasal passage and the tubes associated with the lung. There are fine, hair-like projections (cilia) on the cells lining these tubes that beat upward and push the dust up the tubes and eventually into the throat where we can get rid of it by swallowing it or spitting it out. Even in the air-exchanging sacs (alveoli) at the very end of the tubes there are safeguards as we have specialised cells down there that literally eat the dust and, when full, it's propelled up the tubes by the cilia to the throat where we get rid of it. Thus, nearly all of the dust that we inhale in normal life gets handled by our system and is removed before it can get down into the alveoli and cause damage.

Several problems can occur with this system that prevent it from handling the dust we encounter:

- One, if we compromise this system it won't work properly. This occurs if we smoke or work in environments with toxic air-borne particles. Smoke is toxic to the cilia and cells lining these tubes and eventually destroys the cilia and changes the cells so that they no longer propel the mucus up the tubes. We still produce a lot of mucus but it remains down in the system until we cough it up. This problem can eventually be big as all of the toxic materials we inhale are trapped in the lungs and can't be removed. Wood dust is especially problematic in that it frequently contains toxins (that the tree uses to kill off invading critters – insects, fungi, bacteria, viruses) and these attack our vulnerable internal lung and can start us down the path to major lung problems (emphysema, lung cancer, etc.).
- A second problem is that the really fine dust particles (5 microns and smaller) frequently find their way down into the lungs more readily than do the big ones because they are so lightweight and, if our system is compromised, they lodge there and become local irritants that can cause major lung irritations.
- A third issue is that we woodworkers produce massive amounts of dust. Even when we feel we aren't in a dust-producing mode, we are moving things in our shops that have lots of dust that becomes airborne.
- A fourth one that I frequently point out is that some of us have chosen the wrong parents and grandparents! What I mean is that we have

inherited some very bad genetics that make us more vulnerable to problems associated with dust. Some of us are much more prone to respiratory ailments (well over a dozen lung ailments are hereditary, all of which can cause major problems when compounded with inhaled dust). There is not much you can do about this except take major precautions to avoid dust.

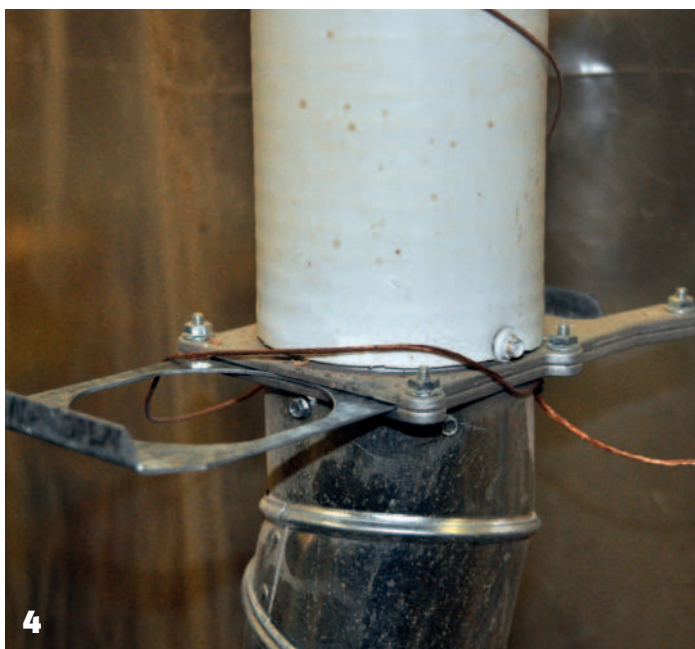
Thus, we need to be very engaged in preventing dust from entering our system. In order to do this we need to do as much as we can to prevent it from entering the air and to prevent it from entering our lungs. Since dust and wood chips go hand-in-hand, we need to address both issues in our shops. I have been a woodturner for over four decades and during that time have come up with a number of solutions for handling dust in the shop and elsewhere.

Remember, a system that is excellent at dust handling does no good if it isn't used. Whatever you settle on for dust control, be sure it is something you will use, not just something that looks good in a catalogue. Something you use 100% of the time that removes 80% of the dust is far better than something you use 50% of the time but that removes 100% of the dust (if/when) used.

At the point source (lathe) is probably the most difficult place to try to collect dust but, by far, the most important. Normally, dust collection devices are either in the way or difficult to position. After much thought and experimentation with this, I came up with a perfect solution for me, and possibly you also. I created a dust control duct system that is easy to position and very effective and, as an added bonus, not in the way.

Overview of dust collecting system

My solution (see photo 1 opposite) was to use single-wall galvanized steel gas stove chimney pipe flexible elbows to connect from the blast gate to where I want the vacuum. I use several of these, enough to get the vacuum from the blast gate to the spot on the lathe where I need vacuum. They are screwed together with short sheet metal screws. The reason I do this is so I can get into any section of the pipe in order to remove items that get sucked up into the vacuum. By using the elbows instead of straight pipe I can bend the pipe to whatever position I need to get the vacuum close to my work. Since my lathe has a sliding headstock, I have extenders that I use in order to get the end of the extraction tube as close to the dust source as possible. The extenders are aluminium dryer vent flexible elbows. I don't use the aluminium for the main part since it doesn't hold up when I twist and turn it much. I simply slip the aluminium extenders on and hold them in place with a friction fit. Because they are so lightweight, I can put as many as I need on the system and they easily stay in place. They bend easily and allow me to focus the vacuum spot on. Note that in the photo you see the metal pipe attached to a triple-wall (sewer and drain) pipe. There is a blast gate at this juncture that allows me to open or close the air flow.



Chicken wire guard

Back to the point of the screws in the galvanized gas chimney. I finally realised that I was sucking up way too many small items because of the efficiency of my system and having to take the pipe apart too many times. I now have one of my aluminium extenders with a chicken-wire screen to keep small items out of the system when I'm working with small items that I part off with the lathe (**see photo 2**).

Overhead piping for vacuum system

Let's get away from the lathe end and see how my vacuum system works (**see photo 3**). Overhead, I use triple wall HDPE 4in (ID) pipe for the main ductwork. This is available at good lumber yards here in the US. I attached it with metal band straps to the ceiling. My ceiling is sheet metal and is grounded, so probably provides grounding for the ductwork. You can use the myriad fittings for this pipe that are available at any good lumber yard or hardware store. I copied this design from a local lumber yard. I noticed it they didn't have any electrical grounding wire wrapped on its system and enquired about that. I was told that the triple wall HDPE doesn't have static electric issues. I wrapped a short copper wire on downtubes and have diligently checked to see if there is a static charge on the rest of the pipe (dust attached to the outside, etc.), but I don't see any evidence of that. If you want to be ultra-cautious, wrap braided copper wire around the entire pipe and ground it somewhere. Also, constantly check the pipe to be sure

that you aren't getting large amounts of dust sticking to the pipe as this may mean that you have a static charge issue that needs to be addressed.

Blast gate

I have the HDPE pipe routed from my vacuum system (**see photo 4**), which is in another room to each of the shop tools that need it. The downtubes from this vacuum system are the same HDPE pipe and are stopped with a blast gate. I use the self-cleaning blast gates sold by Lee Valley Tools as they don't fill up with dust and stick. Also, it is convenient with them to label the tab on each side as to which direction is open and which closed (I need no-brainer stuff in my shop in order to be efficient). For many of my machines I use a 4in PVC dust collection hose to connect to the dust port. I can open and close the appropriate blast gates quickly to control which machine gets the vacuum. With the lathe, this became a problem because I needed to place the vacuum tube at different positions often while turning a single piece, so I came up with the 4in galvanized steel stove chimney and aluminium extensions to fit the bill.

Vacuum switch

Since my system is used on several machines, I have several remote electronic switches (**see photo 5**) that I've attached with rare-earth magnets to every machine so I can turn the vacuum on and off remotely at each machine.



Vacuum system with Wynn HEPA filter

Many shop vacuums, while well meaning, are simply dust distributors. They have inadequate filters so allow much of the smaller dust to simply be blown through the filter and out into the air. If you don't have a well-maintained HEPA filter on your shop vac you need to add one. There are lots of ways to do this, such as purchasing a cyclone system or a separate dust separator. I modified my dust collector by putting HEPA filters and Thien baffles on it. I replaced the upper bag on my system with a Wynn HEPA filter (**see photo 6**). Also, the bottom bag was replaced with an impermeable plastic bag. This forces all the air out through the top pleated Wynn filter and the Thien baffle I installed allows the large stuff to go down into the bag along with the dust. This system is the poor-man's cyclone vacuum. The Thien baffle is a ¼in (6mm) plywood disc that you make and install between the upper and lower bags on your large shop dust collector. It is a very simple solution that effectively separates the chips from the dust. The chips drop into the lower bag and the dust is trapped in the pleated Wynn filter.

Sanding dust capture

This system has served me very well (**see photo 7**). It allows me to collect nearly all the dust generated by my turning operation. One of the other benefits of this system is that I'm able to do most of my power sanding right at the lathe. I cut a piece of plywood to about a foot square (300mm) and attached a piece of low-pile carpet on top. I made the carpet oversize so enough hangs over that the pieces I'm sanding don't

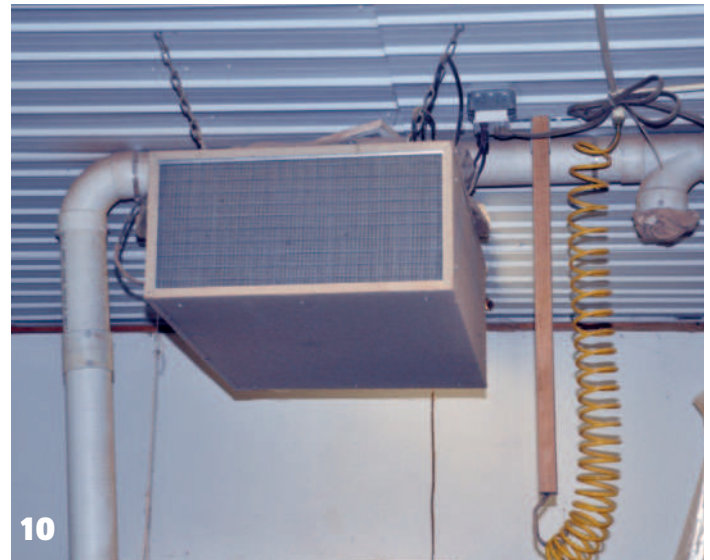
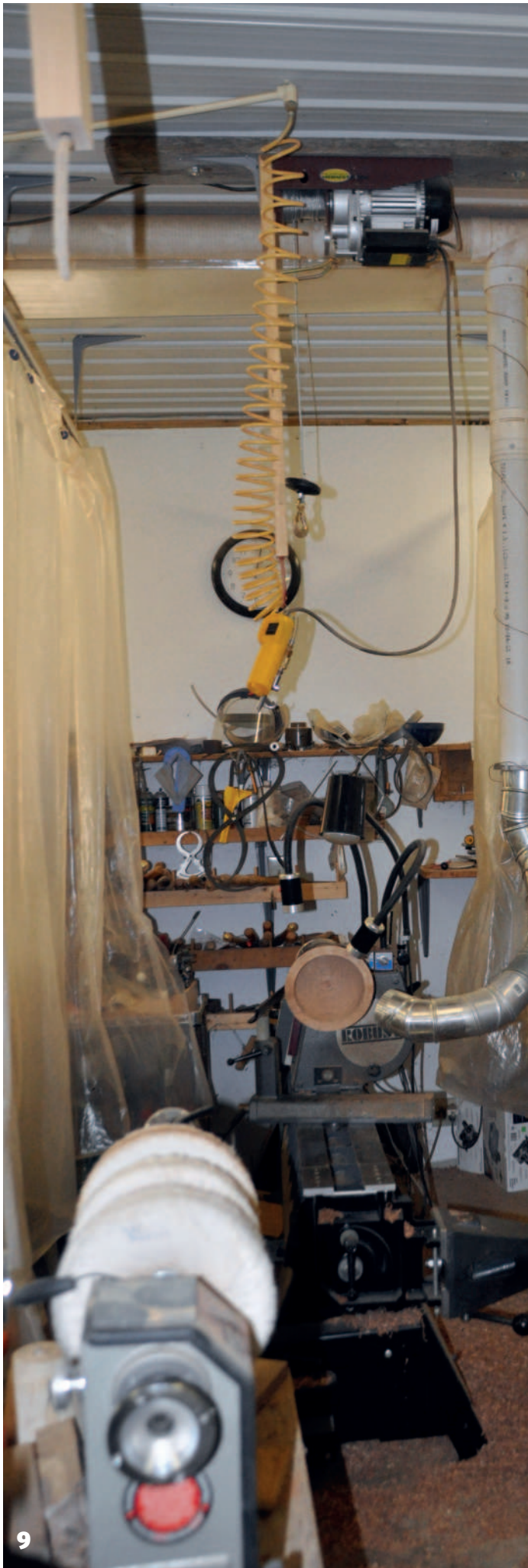
touch the metal of the lathe and dent them. I glued a scrap of wood that just fits the lathe ways gap to the bottom of the board to stabilise it. Whenever I'm doing most of my sanding I turn on the vacuum and go at it right at the lathe.

Face mask

I've long had problems with fit of all of the various face masks that are available. I had one of the positive air flow types for at least 10 years and only took it out of the box a couple of times to use it. It was so uncomfortable for me to wear that I didn't use it. I sold it. If you aren't going to use a unit there is no reason to have it. There are dozens of masks available but I've not found one that fits my face properly, so I was breathing in lots of unfiltered air. If the face mask doesn't conform to the shape of your face or if you have a beard (even a day's stubble will do), you aren't going to get a tight seal and you will be breathing in unfiltered air.

For the past several years I've used the Resp-o-Rator snorkel (**see photo 8**) instead of a mask. One end of the Resp-o-Rator fits into the mouth and you breathe through that end. There are two plastic tubes that pass around the sides of your head and each ends in a large HEPA filter. One of the big advantages of this system is that you can hold the end in your mouth when you need it and easily drop it when you want to talk or are done with the dust. It also works equally well with all face shapes and beards.

Whatever system you use, it must be something that you are comfortable using and will use all of the time. If you buy the best system and don't use it all of the time because it is uncomfortable, etc. you lose.



Cleaning up

(See photo 9). You are all aware of the dreaded clean-up after working on a project. It's amazing how far those curly chips fly that you cut off of a piece when it is spinning on the lathe. And, since they can be a major source of dust in the shop, you need to get them cleaned up ASAP after each job. I solved this problem several years ago by getting the track system for privacy curtains that you see when you go into a hospital bedroom. Do a quick internet search for 'hospital privacy curtain track' and you will find several vendors. I found mine on eBay. I chose to use heavy, clear plastic sheets with plastic eyelets (Lee Valley has these) for the hooks that are provided with the track. Cut your sheet to the appropriate length to keep chips in check. I've found that going to about 18in (450mm) from the floor and the track being about 3ft (90cm) away from the lathe in a U-shape, contains most of the chips. When I'm not using the lathe I generally bunch up the sheet and surround it with a ball bungee that I've attached to the edge to keep it out of the way.

Overhead dust collector

Years ago, I purchased one of the ceiling-mounted ambient air cleaners (see photo 10). I rarely use it because I'm able to get most of the dust right at the lathe. If you have a particularly dusty situation at the lathe, one of these might come into good use. However, you may want to save your money on this one. I've seen shops where the owner made their own system using a large fan and an air filter. Or, maybe better than that, simply draw the air out of your shop using a window fan and replace it with fresh air from another window.

HEALTH & SAFETY

There is no way you are going to escape breathing in dust (you are doing it now while you are reading this as you sit in your home office), but your breathing system should easily handle it if you use some common sense. If you have severe allergies to dust, perhaps you need to consider another hobby that doesn't produce as much dust. Your job in your shop should be to reduce dust as much as possible while still being able to have a great time. Enjoy woodturning but take adequate precautions to reduce inhalation of dust.

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Bolt-action pen in deer antler

Kip Christensen & Rex Burningham make the ultimate turner's pen



Among turners, the Bolt-Action Pen is perhaps the most popular novelty pen ever made. The single-tube design makes the pen relatively easy to make, and the large-diameter barrel displays the pen blank material to its fullest.

Did you know?

Unique design features of the Bolt-Action Pen

- 30-caliber casing and bullet tip
- 30-caliber rifle clip
- Realistic bolt-action handle smoothly advances and retracts the refill
- Replica rose-gold bullet primer cap
- Takes an ordinary Parker-type refill, widely available in a range of different colored inks

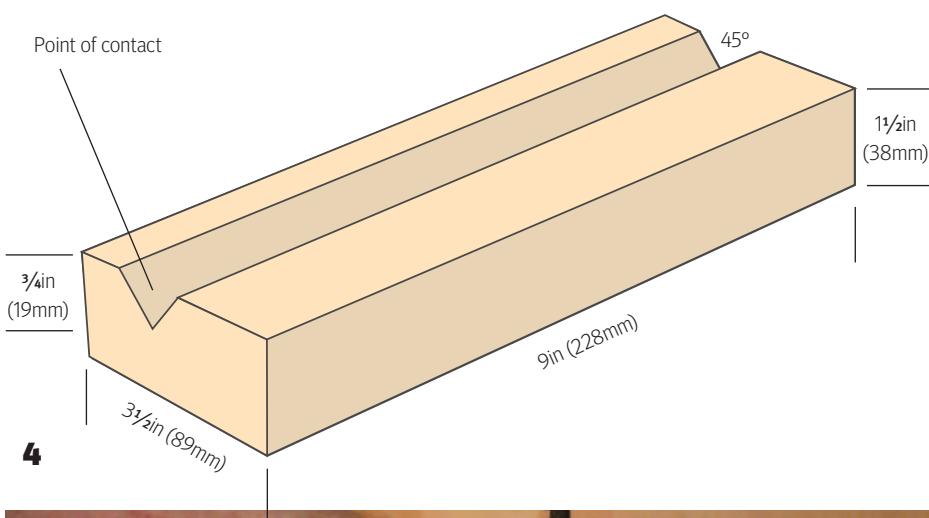
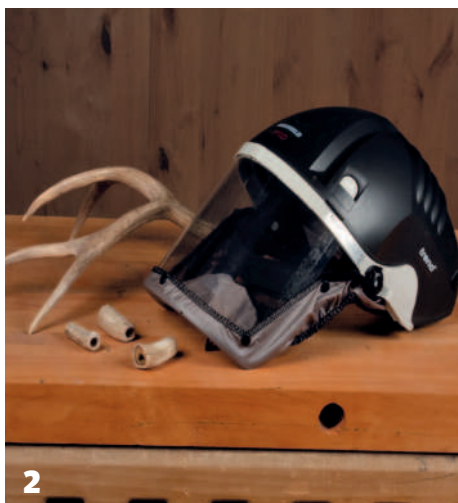
Why use antler?

Deer antler is often used in pen turning and is a natural choice for the Bolt-Action Pen.

Antler is a natural bone that is produced every year and is shed by deer in late winter or early spring. It has been used for centuries for all sorts of things such as buttons, jewelry, knives, medicine, and health supplements. It is even edible. When antler is turned, the colors tend to be white around the outside, shading to brownish, gray, and black in the center (1). The center of the antler is quite porous and soft; this presents some challenges for the turner that will be addressed as we come to them.

The best part of the antler to use for pen turning is the tine, or tip. The tines are denser and easier to work with than the main beam, which is usually very porous and can be rather soft. Whatever part of the antler you decide to work with, you will need thin and thick CA adhesive for gluing, filling, hardening, and finishing the pen.





Working with antler

Antler and safety

When turning antler, airborne dust must be addressed before you begin. Breathing antler dust is definitely not good for your lungs and could lead to chronic lung problems. Wear a high-quality dust mask that will filter very small particles. A respirator is better yet **(2)**. Also, be warned that when antler is cut and drilled, it can give off some unpleasant odors. It might remind you of your last visit to the dentist!

Cutting antler

Cutting round objects on a bandsaw is dangerous, but use of a simple V-block will make crosscutting natural antler much safer. To make a V-block, cut a 45° V-groove about 3/4 in (19mm) wide in a 1 1/2 x 3 1/2 x 9 in (38 x 89 x 228mm) piece of scrap wood **(3, 4)**. The V-groove will give the antler two points of contact and help prevent the blank from rolling while you are cutting it. When selecting what part of the antler to cut, look out for the straighter sections, as this will make cutting and drilling the holes for your pen tubes easier. Using the tube length plus 3/4 in (6mm) as a guide, mark the length for cutting **(5)**. Rotate the antler tine so that you can find where it makes the best contact with the V-groove and is most stable. This will make it safer to cut. Try to cut the ends as square to the length as possible **(6)**.

Preparation for drilling

To prepare the blank for drilling, use a belt sander or disk sander to sand a small flat on two sides of the antler **(7)**. Gripping the antler with pliers will keep your fingers out of danger. Sand the sides that have the most irregularities. This will help the antler fit more securely into your drilling jig.

Drilling and trimming

Drilling antler can be challenging because of the natural curves, the hard outside, and the porous, soft insides of the antler.

Here are some tips to help you overcome these issues.

- Use a good drilling jig that will provide four points of contact.
- Clamp the drilling jig to the drill press table.
- Use sharp drill bits when drilling. Brad-point bits work well for drilling antler.
- Start drilling from the more solid end of the antler. This will help guide the bit through the softer end.
- Rough-turn the antler on the lathe to remove most of the irregularities before drilling.
- Flood the porous areas with thin CA adhesive to help stabilize them. Make sure you allow ample time for the CA to cure before drilling.

Mount the drill bit recommended in the pen kit instructions into the drill press and check to see if the bit is square with the table. Mount the antler blank in the drilling jig, being sure to clamp it so you are drilling through the thickest parts of the blank. When drilling curved blanks, you may have to start drilling close to an edge on the top in order not to break through the side as you approach the bottom. While drilling, remember to retract the drill in and out several times to clear out the chips. Drill through the blank, clearing the chips often (8).

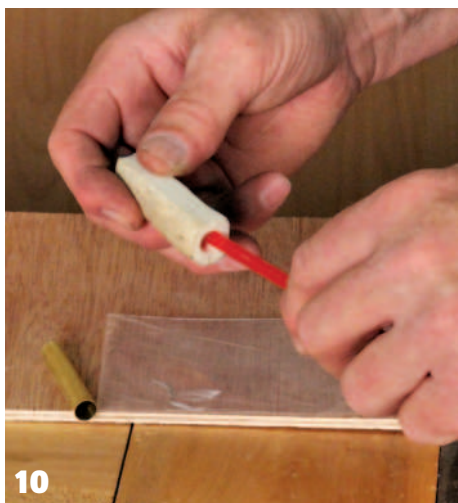
Preparing the hole before gluing

Flood the inside of the drilled hole with thin CA adhesive to harden the soft, porous areas of the antler (9). After the CA has cured, test the hole by trying to slide the brass pen tube into it. If the tube will not slide through, ream out the hole with the same bit you used to drill the original hole.



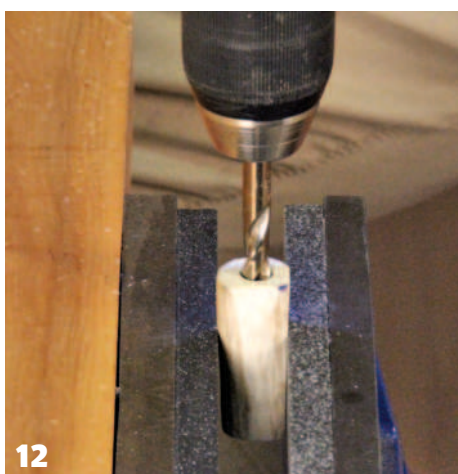
Top tip

Leave plenty of time for the glue to dry and harden, and if the antler still seems porous, repeat the process.



Gluing the tube

Gluing the tube into the pen blank requires a generous application of thick CA adhesive inside the hole. Use a plastic straw to apply and spread the glue in the hole (10). The more porous the blank is, the more you will need to line the drilled hole with glue. Sand the brass tube and spread it liberally with glue before inserting it into the hole. Rotate the tube using an in-and-out motion to help draw the glue into the hole (11). Pull the tube completely out and repeat the gluing process on the other end, this time pushing the tube flush with the end of the blank. Spray the end of the blank with a shot of CA accelerator and set it aside to cure.



Trimming the antler blank

Before trimming the ends, you will need to ream the inside of the tube to clear out any cured glue that may have accumulated inside. Select a drill bit that is slightly smaller than the inside diameter of the tube. Mount the drill bit in a handheld drill and, with the blank secured in a vise, ream the dried glue from inside the tube (12).

With all the tube sizes available in various pen kits, you may not always be able to find a trimmer shaft that will exactly match the diameter of the tube you are using. This little trick will allow you to shim a smaller trimmer shaft to work in a larger tube. Simply wrap tape around the smaller shaft until you have a good fit inside the tube (13). Lubricate the tape with a bit of paste wax to help it slide in and out of the tube smoothly.

Place the blank in a bench vise or back in the drilling jig, with the hole facing up. Mount the trimmer in a handheld variable-speed drill, and while slowly rotating it, insert the shaft of the trimmer into the tube. Feed the shaft into the tube until the cutter head contacts the antler (14), then continue to cut slowly until a small brass curl is produced. Be careful not to trim too much off as this may interfere with the function of the pen. Repeat this process on the other end of the pen blank.



Mounting the blanks

Since the Bolt-Action Pen is a single-barrel design, there is room on the mandrel for two pen blanks.

Here we have mounted two blanks on the mandrel with a step bushing on each end of each blank (15). We have done this in order to show you how to use both traditional and carbide tools, and to demonstrate how to dye one of the blanks.

◀ This standard mandrel and hollow revolving center does not have a locking nut. The blanks are locked in place by tightening the revolving center (16). This type of system is fast, accurate, and very easy to use. Before mounting the bushing on the mandrel, rub a little coat of paste wax on the outside of the bushings. Later on you will be flooding the blank with CA adhesive to fill the porous parts of the blank. During this process glue may get on the bushings and stick them to the ends of the tubes. The wax helps you break them apart if they become stuck together, as you will see later.

Turning the Bolt-Action Pen

Roughing out with the gouge

Since antler is a hard, abrasive material, it is imperative that you keep your tools sharp. With a $\frac{3}{8}$ in (10mm) spindle gouge, start cutting off the corners at the ends of the blanks with short plunging cuts (17). Turn the blank to a rough cylinder that is about $\frac{1}{8}$ in (3mm) larger than the final diameter. Work your way to the end of the blank, then repeat this process on the second blank.

Now that both blanks are roughly cylindrical and the toolrest has been moved closer to the blanks, shape them with the gouge to just slightly larger than the finished shape. Take your time and do not cut too deep.

Stop the lathe and inspect the blank to see if the porous areas are cutting cleanly (18). If not, you may need to harden these areas with CA adhesive. With the lathe turned off, flood the surface with thin adhesive and cure it with a spray of accelerator. This process may need to be repeated from time to time as you turn the blank to the finished shape.

Final shaping with the skew

The final shape will be turned using a scraping cut, in this case with a skew chisel laid flat on the toolrest. Start cutting at the outer end and work toward the middle, leaving the blanks thicker in the middle. At each end of the blank, the antler should be slightly larger in diameter than the bushing (19). The pen barrel should have a slight convex curve, and the center diameter of the blank should certainly never be smaller than the bushing. This will help keep the finished shape from appearing too narrow in the middle.

Continue the final shaping process by flipping the tool and working from the opposite bushing toward the center. The cutting angle of the tool should be the reverse of the previous stage (20). Repeat this process on both ends until you have the desired final shape. Notice how you can use hand pressure to neutralize the pressure of the cutting action and dampen vibration in the middle section of the mandrel.

Turn the lathe off and feel with your fingers to check the diameter of the blank where it meets the bushing (21). The antler should be slightly larger than the diameter of the bushing.





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Final shaping using carbide tools

For the second pen blank we will demonstrate a different process for turning and finishing antler. The sharpness and durability of carbide-tipped tools are well suited to cutting this material. The 4in (100mm) radius square cutter of the pen scraper works well for making the plunging roughing cut, as well as the final shaping of the blank (22). The tool is held level (parallel to the floor) and the toolrest is set so that the cutter is contacting the blank at its centerline (23). You will need to lower the toolrest to match the cutter to the centerline of the lathe. Pull the toolrest back a bit in order to balance the tool better.

Just as when turning with traditional tools, match the blank to the bushings and work from each end toward the middle. As before, you should be able to feel a very small ridge or step where the blank meets the bushing. Now that the ends are sized, blend the middle into the ends (24). Gently slide the tool back and forth. Take your time and make sure you turn away any high spots. The final diameter should be about $\frac{1}{4}$ in (0.5mm) larger than the final shape of the completed pen. This will allow a little room for filling the porous areas with CA glue. Turn off the lathe and check the quality of the turned surface one last time. Make sure that the surface is cut very cleanly and that all ridges and low spots are gone (25).

Dyeing antler

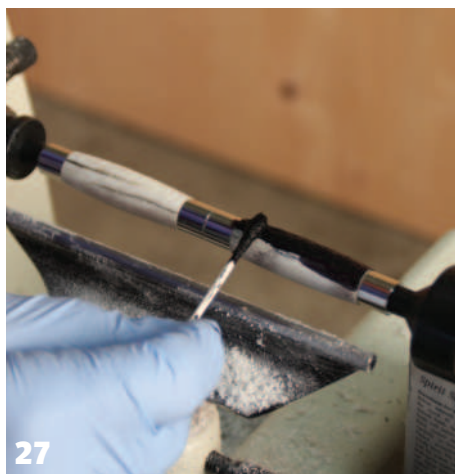
Dyeing something as beautiful as antler or wood may seem a little like a waste, but if done in the right way it can help to enhance the beauty of the material.

Here we will dye the antler black, using a fast-drying alcohol-based dye that is UV-resistant. Working with dye can be a bit tricky, and you may not get the results you want at the first try. It is always a good idea to do some testing on a practice piece before you leap into dyeing a pen. Apply the dye before sanding and filling the antler with CA glue; this will allow the soft areas to soak up the dye. The hard areas will absorb very little of the dye. This will bring out the contrast between the hard and soft sections of the antler.

Be sure to wear gloves to protect your hands; you might also like to place a rag over the lathe in case of spills. A cotton swab (cotton bud) makes a good dye applicator (26). Paint the antler blank with the dye, applying additional coats if required as the porous areas soak up the dye. Get a good wet coat of dye on the antler and let it soak in for a few minutes (27). Alcohol-based dye will dry quickly on its own, but if you want to speed up the process, you can set the alcohol on fire (28). Do this only after closing the dye bottle and moving all flammable items to a safe location! The alcohol should burn off in about three to four seconds. If it continues to burn, blow it out and let it dry on its own. This may happen if the blank is very porous and has soaked up a lot of dye. Be sure to take all proper safety precautions when using an open flame and flammable substances in the workshop. After the dye has dried, take a dry rag and wipe off the excess from the surface of the blank (29). This will help prevent the sandpaper from clogging with dye too quickly.



26



27



28



29

Sand the blank with 120 grit to further remove superfluous dye. Continue to sand until you have removed all the excess dye from the surface of the antler. The more you sand the dyed antler blank, the lighter in color it will become (30, 31).

Sealing with cyanoacrylate

Preparing the surface

Make sure that the surfaces of both blanks are sanded with 120-grit paper so that all ridges and low spots are gone (32).

The porous, soft areas of both blanks are now ready to be filled with CA adhesive.

This will do three things for the antler:

1. Harden the soft and porous areas
2. Fill the holes, voids, and cracks
3. Provide a very hard and durable surface finish.

The process that follows can be used on other materials, such as very soft woods, rotted/punky wood, and open-grained woods like oak. Filling and finishing with CA glue is a bit tricky and time-consuming, but is well worth it.

Applying the adhesive

Flood the antler's surface with thin CA adhesive (33). Rotate the lathe by hand, or at less than 100 rpm, to keep excess glue from dripping off the blank. Capillary action will cause the thin CA to soak deeply into the antler.

While the lathe is still rotating very slowly, wipe off the excess glue. The plastic bag that the pen parts came in works well for this (34). Do not use a rag or a paper towel, as this may remove too much glue.

While the thin CA is still wet and the lathe still rotating, flood the surface again, this time using thick CA adhesive (35). The still-wet coat of thin CA will help draw the thicker glue into the cracks and voids. With the lathe still slowly rotating, work the CA glue back and forth to spread it over the surface of the blank. This will give the thick CA a chance to fill the larger gaps. Then cure the glue with a light misting of accelerator while the lathe is still slowly rotating (36).

The filled surface now needs to be lightly turned to remove excess glue. Using a skew with a scraping cut or the square carbide tool, lightly cut away the excess glue (37). If you find that you are starting to cut into the antler, you are being too aggressive, so ease off slightly.

Feel the surface of the antler and check where it transitions to the bushing. The antler should feel the same as the diameter of the bushing, or fractionally larger. If you still find rough spots on the antler's surface you will need to repeat the CA filling process. On very porous antlers, such as elk, you may need to fill the pores two or three times.





Sanding the antler

Using conventional abrasive paper

The thin layer of CA left on the pen barrels acts as the finish for the antler. Start the sanding process at 180 grit and work up to 400 or 600 using ordinary abrasive paper (38). Remember not to be too aggressive when sanding the thin layer of adhesive; you should only be removing the small scratches in the CA finish. After sanding with the final grit, take the time to give the surface one last inspection before moving on. With the lathe stopped, use the final grit of abrasive to sand horizontally along the surface (39). This should remove any circular scratches in the finish.

Sanding with abrasive pads

Abralon® abrasive pads are ideal for sanding plastic and CA adhesive finishes. Abralon has a flexible fabric weave that allows sanding dust to pass freely through it. The pads hold up very well, and are very long-lasting. They can be cleaned by blowing with compressed air.

Start sanding with 400 grit and work your way up to 4,000 grit. As you progress through the grits you will see the antler taking on more and more of a shine (40).

Polishing and waxing

Antler takes a good polish without any further finish. With the added layer of CA adhesive, you now have one of the toughest finishes you can get on a turned pen. But, if desired, you can add more gloss by applying a light coat of French polish. Use a small rag and, with the lathe turned off, wipe the finish up and down both blanks. Then turn the lathe on and rub back and forth several times with the wet part of the rag to build the finish and to even it out.

Buff the finish with a dry part of the rag, using moderate pressure. The friction and heat created by the pressure will help the finish dry quickly (41). With the lathe now running, rub on a light coat of paste wax to complete the finishing process (42).

Assembling the Bolt-Action Pen

Removing the bushings

Sometimes when filling and finishing with CA glue, the bushings become glued into the tubes. To separate them, grip the end of the bushing with pliers, and pull on the pen barrel with your hand (43). If they are still stuck, then use a sideways motion to break the bushing loose. This should not be a problem provided you waxed the bushing before placing it on the mandrel.

Assembly

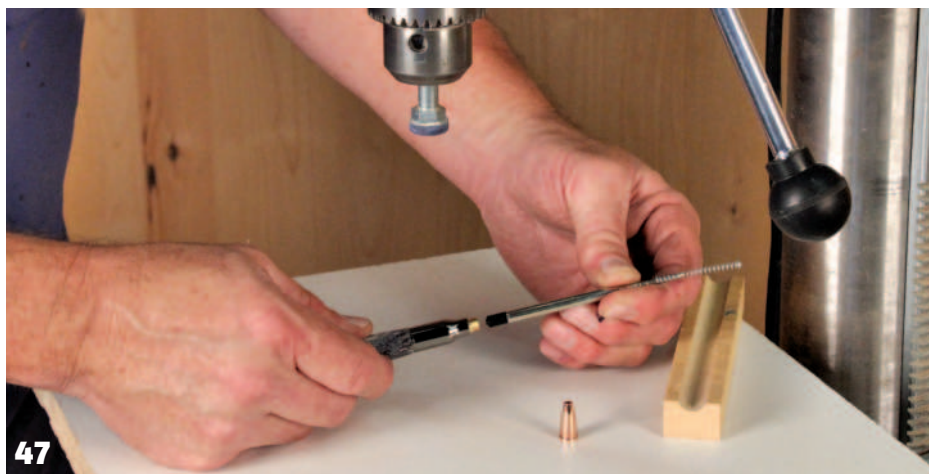
You can use a drill press to assemble your pen by placing a ½in diameter by 2in long (12 x 50mm) bolt in the drill chuck. To protect the pen parts during assembly, attach a small piece of hard wood or plastic to the head of the bolt using double-sided tape or epoxy resin.

The CA fill may have left the ends of the pen barrel feeling rough. If so, before assembling, lightly sand the ends of the barrel at 90° to the tube and soften the corners at 45° (44).

To begin the assembly, place the pen barrel on the table of the drill press and insert the pen tip into the tube. Without turning the drill press on, use it to press the writing tip firmly into the tube (45). If the pen tip starts to go in crooked, stop and realign the parts before pressing them in.

Next, press the bolt-action mechanism into the other end of the tube. Make sure the clip is located where you want it before pressing it in (46).

Unthread the tip from the lower end of the pen and insert the refill into the body. Slide the spring over the writing end of the refill, and screw the tip back on (47). This completes the Bolt-Action Pen, made from deer antler (48). •



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Editorial
Karen Scott, Andy Coates, Jane Roe
T: 01273 477374
E: karens@thegmcgroup.com
Designer Oliver Prentice
Illustrator Oliver Prentice
Advertising
Guy Bullock
E: gmcadvertising@thegmcgroup.com
Publisher Jonathan Grogan

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Subscriptions
E: pubs@thegmcgroup.com
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(ISSN 0958-9457)
is published 13 times a year by
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Happy New Year

Pete Moncrieff-Jury on how tools have evolved over the years

Well, that's another year gone and we are all that little bit older, if not wiser. When I was a youngster of about 35, the year 2022 seemed like something in science fiction, so far away not even worth thinking about. I fully expected that, by the time this year arrived, we would be living lives very different and yet, looking back, nothing much seems to have changed – in fact some things seem to have gone backward. True, we have seen the invention of CNC lathes, computerised machinery and equipment, modern steels that are stronger and sharpen better than the old carbon steel, but basically for us woodturners things haven't changed that much. Most 'modern' inventions seem to be adaptations of older things rather than new, innovative ideas. I suspect a lot of readers have had new toys/tools to play with, but wonder how many will still be using them this time in 2022. So often we can get mesmerised by the latest new-fangled piece of equipment and go for it only to find it doesn't actually make us any better at our craft.

One piece of equipment that has become popular of late, for example, is the laser cutter. I have never used one but have seen what can be achieved with them and it is impressive. I went as far as looking them up online regarding cost etc., but to be honest, if I got one just how much would I use it and, more to the point, where on earth would I put it and use it?

Most of the time I use the same equipment and the same type of tools that I have used for decades, I am comfortable with them, know how they work and perhaps I am getting a bit too old to change. I hope not, but maybe I need to face up to that. I do have a few things I have 'acquired' over the years that don't get much use, such as the beading tools and the collet chuck shown.

So, what fashionable tools did you hope for in your stocking? Were you enticed by the amazing new special metal tools that abound, or one of the incredible jigs now available? And, more to the point, will you still be using them this time next year? I will try most things once but for a lot of them that is the first and last time and I return to the familiar tools and equipment. Some things evolve and are here to stay – bowl gouges were invented and designed around the time I first learned to turn and are now a standard piece of equipment – others soon disappear. Personally, I would list such tools as the beading tool, captive ring tool, box tool and some other ones as flash in the pans, others may see them as essential.

I hope for everyone to have something that they can use and play with in this coming year, but most of all I hope that 2022 will be a year when we can all move forward, learn new skills and, most of all, enjoy our crafts, whether it is with new-fangled equipment or things we have had for years. The beauty of woodturning is not in possession

of amazing equipment, it is in making something from scratch that we can be proud of. Creativity is essential for a person's wellbeing I believe, and whether you have a simple set of gouges or an amazing all-singing, all-dancing computerised system, the finished product is what makes you a craftsperson. Enjoy making shavings, dust and hopefully things of beauty throughout 2022.



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