WOODTURNING FUNDAMENTALS

American Association of Woodturners
May 2022 • Vol 11 No 2

- TURN A BOWL WITH AN INLAID RING
- EMBELLISH YOUR WORK WITH IRIDESCENT PAINTS
- BEST PRACTICES FOR CENTER DRIVING WORK
- TURN A SHAVING RAZOR KIT AND STAND MIRROR
- CHUCKING WITH ADHESIVES LIKE A PRO

AAW | AMERICAN ASSOCIATION OF WOODTURNERS
WE ARE TEACHING THE WORLD TO TURN

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American Association of Woodturners

DAVID SPRINGETT

ANDI WOLFE

LINDA FERBER

JOHN LUCAS

MAY 2022 VOL. 11 NO. 2

A NOTE ABOUT SAFETY

An accident at the lathe can happen with blinding speed, while respiratory and other problems can build over years.

Take appropriate precautions when you turn. Safety guidelines are published online at tiny.cc/turnsafe. Following them will help you continue to enjoy woodturning.

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WE ARE TEACHING THE WORLD TO TURN

The AAW strives to cultivate an organization built on mentorship, encouragement, tolerance, and mutual respect, thereby engendering a welcoming environment for all. For more, tiny.cc/AAWDiversity.

Cover: *Rick Rich shapes mounting pins for his shaving mirror project. For details, see the article starting on page 12. Rick Rich, photo.*

Welcome

Early in my turning journey, I completed a five-day workshop lead by two luminaries of the woodturning world. At our first gathering, the lead instructor asked us to introduce ourselves and explain what we hoped to get out of the experience. The themes that emerged were valid, if a bit predictable—learn a new hobby, find a post-retirement focus, or expand our woodworking skills into a new arena. The oldest member of the class was probably in his eighth decade, and when his turn came, he said "I just want to make some things to give to my grandchildren so they will remember me after I die."

I have been thinking a lot about legacy as this issue has come together. In the few months that it took to compile the May issue, two of its contributors passed away. Through one of the most challenging times for any family, one of the articles awaits permission to publish and will be held for a subsequent issue. David Springett, who authored books on turning as well as several articles in *American Woodturner*, passed away in April as we put the final touches on his Pro Tips contribution in this issue (page 35).

Though arguably not as tangible as a physical turning, an article published on the topic of a project, a technique, or collection of time-earned tips is certainly part of a legacy, and one that reaches a wider audience. This is both an individual's legacy, as well as an organizational legacy (or call it a collection, if you'd rather) created by the AAW. Search through the online repository of back issues of *American Woodturner* and *Woodturning FUNdamentals* and you can't help but be impressed by the depth of the library—the knowledge, skills, and insights that members have shared generously over the span of decades.

Two frequent contributors to *Woodturning FUNdamentals* return this issue with their creativity and inventiveness on full display. Linda Ferber offers a take on turned and embellished pens so distinctive from the usual kit-based pen project that it probably deserves its own category (page 19). John Lucas expands the application of iridescent (or "interference") paints beyond Gary Lowe's cloud platter technique (page 31).

Starting on page 28, Mark Palma shares some thoughts and tips on center driving. Palma's insight will set a beginning turner on the path to safe and productive practices and will probably teach a few old dogs some new tricks as well.

Rick Rich kicks off a new column for this journal. We have asked Rick to investigate a series of kit projects and provide insights based on his experiences. To start off the series, Rick turns a shaving razor based on a commonly available kit (page 6). As a bonus, he realized a stand mirror would be a handy addition and that sent him into one of the early 20th century training manuals for turners. He takes us along for that build as well (page 13).

Dave Schell expands our timber horizons again with American holly (page 39). Though not always easy to procure, holly is a joy to turn and its white, almost grain-free appearance offers up some unique creative possibilities among American hardwoods.

Bill Wells walks us through an interesting embellishment technique in his ring bowl article (page 24). I love projects that leave viewers thinking How did he do that? and adding an apparently seamless inlaid ring to your work will elicit that thought.

Herewith is part of the legacy of seven creative and generous souls. Enjoy!

—Don McIvor, Editor

AAW'S 36TH ANNUAL INTERNATIONAL SYMPOSIUM

Chattanooga, Tennessee • June 23-26, 2022

Photo: Andi Wolfe

Symposium Venue

Chattanooga Convention Center
One Carter Plaza
Chattanooga, TN 37402

Hotels

Visit woodturner.org for updated information and preferred group rates for all official AAW Symposium hotels.

DETAILS AND REGISTRATION

For the latest information and to register for the event, visit our Chattanooga Symposium webpage, tiny.cc/AAW2022!

DEMONSTRATORS AND PANELISTS

Donna Zils Banfield
Stuart Batty
John Beaver
Dennis Belcher
Trent Bosch
Kip Christensen
Jason Clark
Rebecca DeGroot
Barbara Dill
Mark Dreyer
Cindy Drozda
David Ellsworth
Melissa Engler
Linda Ferber
Roberto Ferrer
Greg Gallegos
Keith Gotschall
Carol Vander Dussen Hall
Mark Hall
Scott Hampton
Ashley Harwood
John Jordan
Michael Kehs
Janice Levi
Eric Lofstrom
Sammy Long
Rudolph Lopez
Mike Mahoney
Wayne Miller
Mark Palma
Dennis Paullus
Eli Polite
Paul Russell
Merryll Saylan
Betty Scarpino
Peggy Schmid
Doug Schneiter
Jason Swanson
Kimberly Winkle
Hans Weissflog
Alan Zenreich

Demonstrators and panelists are subject to change. See woodturner.org for updates.

POP SHOWCASE ARTISTS

Each year, the Professional Outreach Program (POP) showcases artists with great promise or experienced artists whose work and contributions to the field have been under-recognized. The POP Artist Showcase includes exhibition pieces, demonstrations by each artist, and a presentation of work moderated by David Ellsworth. This year, the POP Showcase Artists are Melissa Engler and Eli Polite.

Melissa Engler

- Non-Traditional Spoon Carving
- Embellishment – Discovering Your Patterns

Eli Polite

- Herringbone Construction
- Spindles & Finials

AAW'S 36TH ANNUAL INTERNATIONAL SYMPOSIUM

TRADESHOW

Shop at the largest woodturning tradeshow experience in the world – featuring state-of-the-art lathes, tools, accessories, finishing supplies, and wood. Take in a range of ongoing live demonstrations and take new tools home! Bring an empty suitcase or even an empty truck!

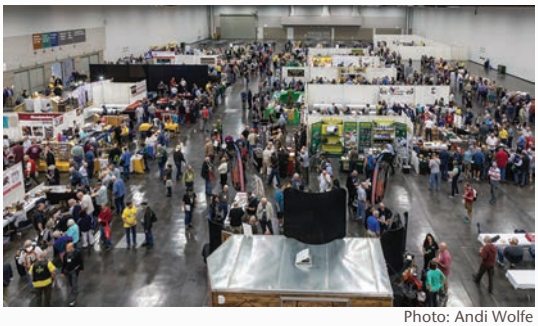

Photo: Andi Wolfe

Advanced Lathe Tools, LLC
Airbrushing Wood
Alumilite Corporation
Arrowmont School of Arts and Crafts
Ashley Harwood
Axminister Woodturning
Barbara Dill
Beaver Badger
Big Monk Lumber Company, LLC
Carter and Son Toolworks
Carter Products
Central Indiana Woodworkers
Chefwarekits
Chroma Craft
Cindy Drozda Woodturning Tools and Instruction
Curt Theobald Studios
D-Way Tools / Boxmaster Tools
Designs By Gjovaag
Easy Inlay
Easy Wood Tools
FedEx
First Wave 3D Corp
Hannes Tool LLC.
Hunter Tool Systems
John Jordan Woodturning
JPW Industries Powermatic/Jet
Klingspor's Woodworking Shop
Lami-Lube, LLC
Larry Ridge, master carver of carousel horses
Lyle Jamieson Woodturning LLC
MDI Woodcarvers Supply
Peke Safety
Premier Gauges
Real Milk Paint Co.
RIKON Power Tools
Robert Sorby Ltd
Robust Tools
Rockler Woodworking & Hardware
Rotary Chisel
Spiracraft
Stainless Bottle Stoppers
Starbond (CPH International)
Stockroom Supply
Teknatool USA
The Walnut Log LLC
Thompson Lathe Tools
Tom's Tools
Trent Bosch Studios Inc.
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Woodcraft of Chattanooga
Woodturning Tool Store
Woodturners Wonders
Woodturning with Tim Yoder
Woodcraft of Chattanooga
Woodturners Wonders
Woodturning Tool Store
Woodturning with Tim Yoder

Exhibitors as of May 11, 2022.
See woodturner.org for updates.

TRADESHOW PREVIEW RECEPTION AND SPECIAL EXHIBITION OPENING

THURSDAY, JUNE 23, 6:00-8:00 P.M.

Come back together for the opening night Tradeshow Preview and Exhibition Opening. Mingle during the reception with light appetizers and cash bar and take advantage of early shopping in the Tradeshow.

PANEL DISCUSSIONS

Photography for Woodturners: John Beaver, Rudolph Lopez

Remote Demonstrations: Rebecca DeGroot, Alan Zenreich, Cindy Drozda

Finding Your Voice: Kimberly Winkle, Donna Zils Banfield, Roberto Ferrer, Rebecca DeGroot

Selling your Work Online: Keith Gotschall, Carol Vander Dussen Hall, Mark Hall, Greg Gallegos

It All Adds Up – Making a Living as a Woodturner: Mike Mahoney, Cindy Drozda, Ashley Harwood

Who Says? Asking for, Accepting, and Evaluating a Critique of Your Work: Betty Scarpino, Kimberly Winkle, Melissa Engler

Ask Us Anything: David Ellsworth, John Jordan, Merryll Saylan, John Beaver

CALL FOR SYMPOSIUM VOLUNTEERS

Symposium volunteers say they have the most fun at the Symposium. Meet other turners and help make the Symposium run smoothly by volunteering a shift or two during the event. Spouses and companions are welcome to volunteer, too! Sign up online at woodturner.org.

AAW'S 36TH ANNUAL INTERNATIONAL SYMPOSIUM

WHAT'S ON TAP?

Don't miss Opening Night, June 23! Plan your travel accordingly!

- 4:30-5:30 p.m. – New Member/ First-Time Symposium Attendee Orientation
- 5:30-6:00 p.m. – Opening Remarks
- 6:00-8:00 p.m. – Tradeshow Preview Reception and Special Exhibition Opening
- 7:00-8:00 p.m. – Special Interest Sessions

Photo: Andi Wolfe

NEW MEMBER/FIRST-TIME SYMPOSIUM ORIENTATION

NEW

Learn Tips and Tricks to successfully navigate your first AAW Symposium. Connect with other woodturners and learn how to use the Symposium event app and Handout Book to take advantage of all the Symposium has to offer!

SPECIAL INTEREST SESSIONS

Start the Symposium by gathering with woodturners who share your interests:

- **Gizmos & Gadgets –** Love finding solutions to problems you didn't even know you had? Back by popular demand, learn about gadgets, gizmos, and other woodturning solutions created by your peers.
- **Principally Pens** – Meet other penturners and learn their methods.
- **Segmented Woodturners** – Interested in segmenting? Meet others who are, too, and learn how to stay connected as you try it out.
- **Women in Turning (WIT)** – Help grow and support women who turn through WIT programs and networking.
- **Rethinking Demonstrations and Meetings** – Come back together to continue the conversation about this evolving topic.

EXHIBITIONS


Photo: Andi Wolfe

2022 AAW Member Exhibition: *Bridging the Gap: The Craft and Art of Turning*
This year's theme draws from Chattanooga's many bridges as well as the continuum of work being created by our members, from primarily functional to completely sculptural and all points in between.

2022 POP Exhibition and Auction: *The Space Between*
The POP's annual exhibition and auction features small-scale work by an international roster of emerging and established artists. All work will be auctioned live during the Symposium. Can't make it in person? Bid online! To sign up to be notified via email when the online preview is available, visit tinyurl.com/notifymeAAW2022. Proceeds support POP programs, including discussion panels, Instant Gallery awards, grants, and the Artist Showcase.

INSTANT GALLERY

Don't miss the "oohs and aahs" from the Instant Gallery, the largest display of turned-wood objects under one roof.

- Attendees may bring up to three pieces to display (items can be for sale).
- Awards given in Youth, Collegian, and Adult categories. Awarded pieces will be featured in *American Woodturner.*

YOUTH WOODTURNING EXPERIENCE


Photo: Andi Wolfe

AAW invites the next generation of woodturners to learn from some of our best instructors. Youth ages 10-18 attending the Symposium with a registered adult are welcome to sign up for hands-on turning classes free of charge. Expert instructors include Sally Ault, Kailee Bosch, Nick Cook, Katie Stofel, and Andi Sullivan. Visit tiny.cc/YouthTurning to register your youth participant.

KIT corner

RAZOR KIT

BY RICK RICH

Have you ever looked through the pages of turning kits featured in all the suppliers' catalogs and thought, *I wonder if I should spend the money to try some of these?* Whether it is a fancy (and spendy) pen kit with 22k gold plating, an unusual kit project you hadn't considered before, or an inexpensive pizza slicer, this series of articles will seek to answer some questions for you. I will be ordering, turning, and assembling various kits of different prices, complexity, and types. I will write about the process, mistakes, fixes, and any tips I learn that will help you have a fun experience making a useful tool, utensil, or gift.

The kits seem to be designed to make almost instant gifts, which can be a great benefit just before the holidays with several people still on your list! After all, who wouldn't want a handmade set of serving and food preparation utensils? Almost anything, including the generic factory-made kitchen utensils, can be bought in a store or online, but something made by your hand will be special. I am still amazed when I see co-workers proudly using a pen I made for them years ago, and they never forget to tell me it's their favorite one.

All the kits I have bought in the past have been pens. I'm sure that I will get to a pen kit for an article, but I wanted to try a different type of project for the first article. For this article I ordered an Artisan Safety Razor Kit in gun metal finish (**Photo 1**). I will be putting it to use so I also ordered a pack of razors. Shaving is wet business and stabilized wood should hold up to moisture, so I chose a dyed buckeye burl pen blank for the handle. Having been reprimanded by my daughter for mixing spring and winter colors, I was curious to see if the dyed brown blank would go nicely with the gun metal finish.

Kit contents

The kit with additional accessories and printed instructions.

Pen, pencil, and small-handled kits like this razor are turned between centers on a mandrel. The blank is sandwiched between bushings that slide onto the mandrel. The mandrel and bushings are sized to the kit, and they are not one-size-fits-all. It's important to verify which size mandrel and bushings will be required for the kit you select and make sure that you either have them in your collection or buy them with your kit. It turns out I do already have the necessary mandrel and bushings for this kit, and the 7mm drill bit to bore out the center of the handle blank.

A barrel trimmer is another essential item. The trimmer is a 3/4"- (19mm-) diameter cutter head that facilitates milling the ends of the blank flush and perpendicular to the brass insert. This step ensures that your hardware—in this case the razor head and bottom cap—will mate perfectly with the handle ends.

The box arrived in a few days, and I noticed there were no instructions with the kit. I downloaded and printed the instructions from the website—not a big deal. I have been ordering kits long enough to remember when instructions came with them, but it really is no longer necessary when it's so easy to download. Progress, they say.

Like a pen kit, this kit includes a 7mm brass tube; it's a little longer than most pen tubes. A threaded rod runs through the tube and connects the head coupler and end cap, both of which screw onto the rod. Quite a clever design. This allows the razor head to come off for cleaning while keeping the head and end caps securely fixed to the tube. Any apprehensions I had about turning and putting this kit together faded away, as it is so like the pen kits which I am very comfortable making.

Trim the blank

I place the brass tube on the buckeye blank. The extra length of the blank allows flexibility in selecting the best grain figure. After identifying a promising section, I add about 1/8" to each end of the tube and mark the blank for cutting (**Photo 2**). Drilling through the center of the blank sometimes blows-out wood where the bit exits, so this extra length gives me room to trim away any potential defect. Cut the blank using a handsaw or bandsaw—these blanks are far too short to risk a tablesaw.

Drill the blank

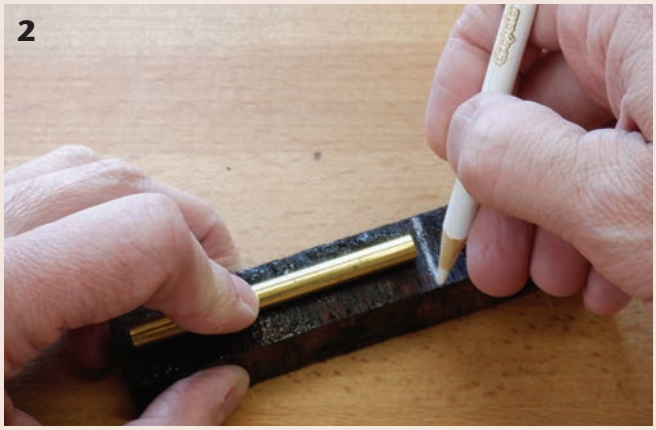
Lacking a drill press, I use my lathe to bore the center of the blank. I use my chuck with pin jaws to secure blanks for drilling. With my chuck on the headstock holding the buckeye blank, I use a drill chuck holding a 7mm bit in the tailstock quill (**Photo 3**). It helps to align the blank by lightly holding the blank in the chuck jaws so that the center of the blank touches the tip of the drill bit, then tighten the jaws securely.

Because the stabilized blank is infused with plastic, I drill slowly—around 600rpm—and retract the bit frequently to remove chips. You don't want to generate too much heat with the plastic content. I both see and hear the bit break through the back of the blank.

Whenever you retract the drill bit, be sure to apply rearward pressure to the drill chuck to keep it seated in the tailstock quill. Turning the lathe off and retracting the drill bit once the blank stops spinning is a reasonable practice.

Cut and drill

2



3

Use the kit's brass barrel to locate the best grain and mark the blank for cutting. Drill through the center of the blank. Slow the bit feed rate as you near the bottom of the blank to reduce blowout as the bit exits the wood.

Insert tube

I scuff the outside of the brass tube with some 120-grit abrasive; this improves the adhesive bond between the blank and the tube (**Photo 4**). I put the tube on a pen tube insertion tool, which is a shopmade tapered dowel, and put several lines of flexible CA glue running from top-to-bottom on the tube. Then I press the tube into the drilled hole in the blank (**Photo 5**). Twisting the tube while inserting it in helps distribute the adhesive completely around the tube. Use the insertion tool to make sure the tube is seated and approximately centered inside the blank—there should be a little wood extending beyond the tube on each end.

Square the ends

I let the CA cure for several minutes after inserting the tube. I admit some impatience in my nature, which is why I use CA glue. I also have a spray can of CA curing accelerator, which cures CA glue instantly. I spray the blank ends after a few minutes and go right to squaring the ends with my barrel trimmer. I securely tighten the blank into my bench vise and use the barrel trimmer in conjunction with the 7mm pen blank shaft to square the ends (**Photo 6**).

Mount the blank

I set my lathe up just as I do for pen turning (**Photo 7**). I have an adjustable pen mandrel set to the length of the tube and bushings. The tailstock holds a revolving center with a 60-degree tip for the end of the mandrel.

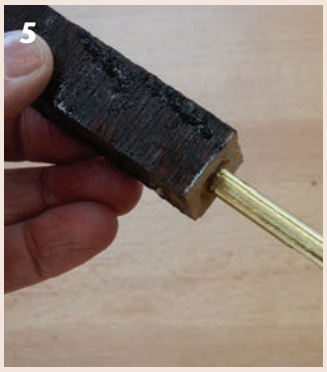
Turn the blank

Alternating between a skew and spindle gouge, I turn the blank slightly vase shaped (**Photo 8**). Imitation is the sincerest form of flattery, and I loosely copy the design of the blank in the catalog picture for the kit. One of the benefits of using the proper set of bushings is that they will be the same diameter as your hardware—the top and end caps, in this case. I taper each end of the blank to meet the bushing, knowing this will give me a perfect fit for the hardware.

Once I am happy with the form, I sand it through 600-grit; that's the finest paper I have on hand.

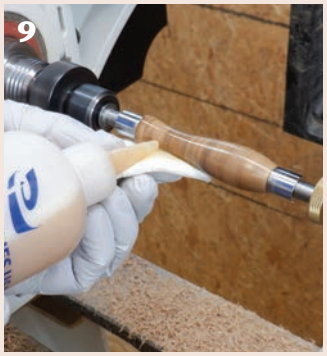
I decide to apply the same friction polish that I use for pens (**Photo 9**). The finish brings the grain to life and the stabilized blank is stunning—certainly worth the purchase price (**Photo 10**).

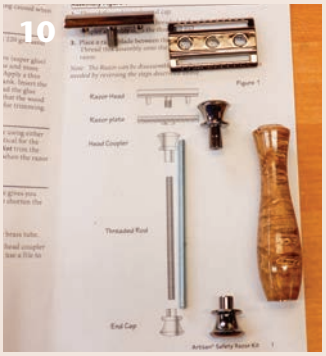
Glue insert



Scuff the outside of the brass insert before gluing it into the blank.

Trim, mount, turn, finish





True the ends of the blank with the trimmer. Mount the blank on the mandrel and turn your desired form. Sand and apply a finish.

Assembly

I follow my pre-assembly routine for pen kits, cleaning any finish and sanding residue from the blank ends by lightly hand twisting the barrel trimmer head on the blank ends. Following the basic printed instructions, I thread the rod into the end cap, then slide the blank over the threaded rod and thread the head coupler assembly onto the threaded rod. To mount the head, the directions suggest placing a razor blade between the head and plate before threading the assembly onto the head coupler (**Photo 11**). Easy enough.

When I put the razor blade between the head piece and plate, I felt a little uneasy about actually shaving with it. I am used to disposable razors with their thin little blades sunk around brightly colored plastic, not this fine looking, old fashioned original "safety" razor! I had an unreasonable worry that the razor blade would slip out and cut me. After shaving with the completed razor, I was impressed with the close shave and can say that my worries were unfounded. I found the kit to be as easy to put together as a slimline pen, useful for its intended purpose, and—sitting on the shaving stand I made for it—truly a thing of beauty (**Photo 12**). ■

Assemble the kit

Follow your kit instructions to assemble the components.

Reflect on your good work

Any good project opens the door to more projects—shaving stand, brush, perhaps a shaving mirror?

Rick Rich is a woodturner from Washington State. He is a member of the American Association of Woodturners (AAW), the Cascade Woodturners Association in Portland, Oregon and a founding member of the Southwest Washington Woodturners in Vancouver, Washington.

SHAVING STAND

BY RICK RICH

I put together a shaving razor kit, a straightforward project that made a quality little shaver. That project made me recall seeing shaving stands in Archie Milton and Otto Wohlers' 1919 book, *A Course in Wood Turning*.

The book is available as a free PDF download from Google Books. I did attempt to purchase a printed copy from another source and was disappointed upon opening the package to discover all illustrations had been stripped out prior to printing. Buyer beware!

This shaving stand project includes detailed spindle turning, moderately complex faceplate turning, and

RESOURCE INFORMATION

Follow one of the links below to download your own copy of A Course in Wood Turning. This project comes from pages 295-301.

tiny.cc/CourseinWoodTurning

some basic handtool work. Not every element is round—the base is elliptical. The only non-wood item is a 4" (10cm) round mirror, with the instructions specifying "French Bevel Plate Glass." The mirror I purchased came with a beveled edge, and I will refer to it as a French bevel. In my haste I made several mistakes on this project, and I will explain along the way how I address these self-inflicted wounds.

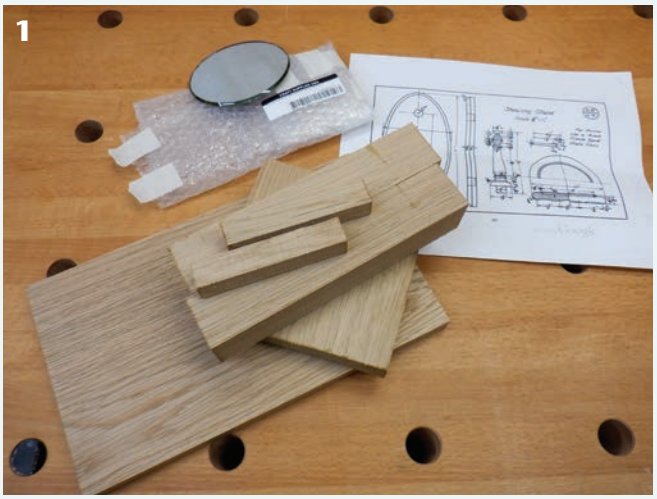
Mill stock

From the dimensions listed in the scale drawings, I milled a piece of 8/4 white oak into blanks for the base and mirror and spindle blanks for the supports, pins, and knobs (**Photo 1**). I cut the just-over 3/4"- (19mm-) thick blank for the base to 11" x 5-3/4" (28cm x 15cm). With plenty of mill marks from the bandsaw, I hand planed the base smooth, flat, and 3/4" thick in short order. The 5-1/2"- (14cm-) square, 1"- (25mm-) thick mirror blank also had plenty of milling marks, but it will be completely turned on the lathe. The two spindle blanks are 1-3/4"- (4cm-) square x 7-1/2"- (19cm-) long. I cut the two knob-and-dowel blanks 3-1/2"- (9cm-) long x 5/8" (16mm-) square.

Elliptical base

I do not have the artistic ability to draw an ellipse, which I proved by trying. But I remembered a Lost Art Press book on my bookshelf by the legendary Charles Hayward, titled Woodworker's Pocket Book. It has a section on "common" woodworking geometric shapes and includes a simple method for making an ellipse of any size.

Gather project materials



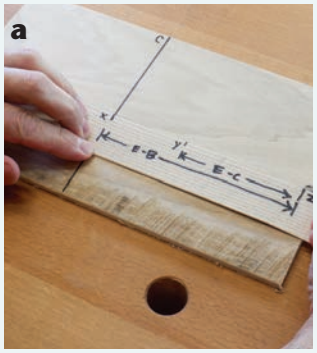
Assemble your cut blanks with your purchased mirror, and take a minute to download Milton and Wohlers' manual and print out their instructions.

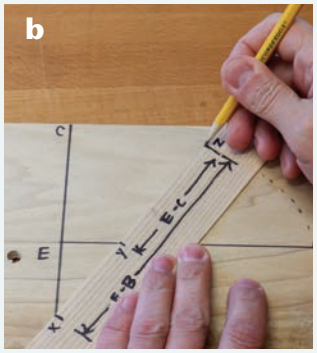
Make an ellipse

Here is how to make an ellipse using a piece of scrap sheet goods. The strategy is to create a template for a quarter of an ellipse and flip it around a central point to draw the complete ellipse. Save the template for making several shaving stands for Holiday Season gifts.

Start with 5-1/2" x 11" stock and mark vertical and horizontal centerlines. Label the ends of the lines A (left side) and B for the 11" centerline, and C (top side) and D on the 5-1/2" centerline (see article Photo 2). Label the intersection of the lines at the center as E. Transfer the distance from E to B to an 8"- (20cm-) long thin offcut, and label the end points X and Z. Continuing with your offcut, align mark Z with location C on the vertical axis and make a new mark (label it Y) at the intersection with point E. It takes longer to write this than to do it; follow step-by-step and refer to Photo 2 and you'll be fine.

Align your offcut so that point X meets point E and the offcut is aligned with the E – B axis. Make a mark on your template where the cutoff indicates point Z (Photo a). To outline the perimeter of the ellipse, move the cutoff incrementally and make a series of marks at point Z; the trick is to move point X downward along the C-D line while keeping point Y on the E-B line (Photo b). Connect your points by hand, maintaining a fair curve through the arc (Photo c).





Use a bandsaw to extract your quarter-ellipse from the scrap sheet material, then use the template to trace all four quarters on the base blank (**Photo 2**). Cut the base blank along the perimeter of the ellipse. Remove the milling marks and refine the surface with a spokeshave (**Photo 3**). I also cut a small French bevel around the top edge of the base (see opening image).

Turn the mirror housing

I start turning with the component that houses the mirror. It's 1"-thick, so I drill a 3/8"- (10mm-) deep hole in the center for a woodworm screw. The woodworm screw is too long for the hole, so I cut a spacer to place over the woodworm screw so that it projects a fraction less than 3/8" beyond the spacer. With the woodworm screw securely in the chuck and the spacer set, I mount the mirror blank. Once tightly in place, I bring up the tailstock for support and begin turning.

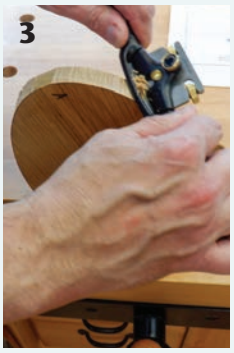
Using a square blank created my first little issue—not quite the level of a "mistake." My bandsaw would have made short work of rounding the blank and made turning much easier. Instead, I have to make a series of light, careful push cuts with my bowl gouge to round the blank. Once round, I mark out my final dimension, remove the excess material, and cut edges to the round profile specified in Milton and Wohlers' diagram (**Photo 4**). I refine the edges by scraping with the wings of my bowl gouge. Despite white oak's reputation for tearout, I am pleased with the clean results.

Because the face will feature the mirror, the mirror can be used to hide a recess for my chuck jaws (**Photo 5**). I cut a recess for the mirror, being careful to sneak up on the size. It's best to allow a little clearance around the perimeter of the mirror to accommodate for seasonal wood movement—otherwise you may end up with a cracked mirror. About 1/16" (2mm) around the perimeter should do. For a neater look, use the point of a skew chisel (presented flat) to cut a slight dovetail that opens towards the bottom of the recess—this will help disguise the gap around the mirror.

At one point while testing my mirror for fit, I got the mirror stuck in the recess. I didn't want to remove the blank for fear of not having it run true when re-chucked. A piece of double-sided tape attached to a scrap of wood solved the problem, giving me a temporary handle on the mirror face. I suppose the nozzle of my shop vacuum might also have grabbed the mirror for removal.

I reversed the blank using the chuck in expansion mode. I turned the back to the design on the diagram.

Make a base template



Mark out an ellipse on your base stock and use a bandsaw or jigsaw to cut out the form. Refine the edges with a spokeshave.

Turn the mirror frame

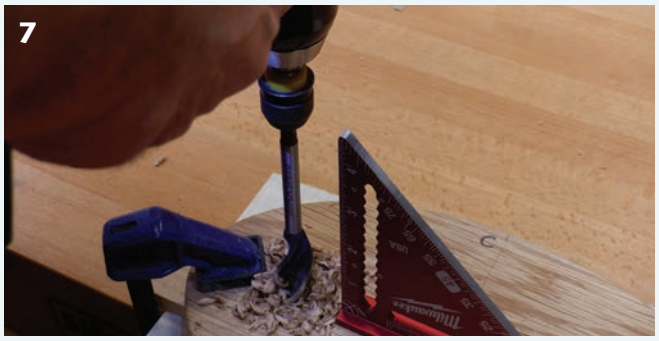
Mount the mirror frame blank in facegrain orientation and round the edges.

Carefully cut a recess for the mirror, then cut a rebate to receive your chuck jaws in expansion mode.

Reverse the mirror frame in the chuck and turn the back.

Well, kind of like it anyway. This was my first real mistake—not carefully using the diagram to make a story stick to transfer the design measurements. I ended up with an acceptable design that is missing a swell just outside of the central depression (**Photo 6**). I added an incised line with the tip of my parting tool to add a detail to compensate for messing up.

Prepare the base



Locate and drill holes in the base to receive the tenons from the upright spindles.

Prep the base

With the mirror blank complete, I turn my attention to the base. I want the holes in the base drilled before turning the support spindles for the mirror. This way I will be able to properly size the tenons that will pass through the drilled holes. The diagram shows the drilled holes to be 3/4"-diameter, on the centerline, and spaced 6-1/2" (17cm) apart. With the blank clamped upside down on sacrificial scrap wood, I make marks on a line 3-1/4" (8cm) on either side of the center and drill the holes (**Photo 7**). I perform this task with the blank upside down so I can drill completely through it as I intend to kerf and wedge the tenons.

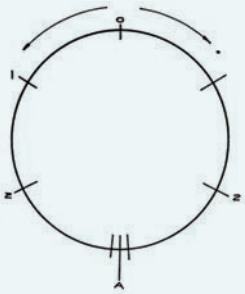
I use a small square to keep the holes perpendicular, and they turned out accurate. Once drilled, I remove the clamps and scrap only to realize I drilled into my benchtop with the spur of the bit. Lesson learned: use thicker scrap next time. Sigh.

Turn the spindles

Carefully make a story stick according to the dimensions from Milton and Wohlers' diagram. To accommodate my kerfed tenons in the base, I add an extra 1/4" (6mm) length to the bottom end of the tenons.

I mount the first spindle and round it to 1-5/8" (4cm) diameter. I mark the location for the knob that will connect the spindle to the mirror frame—this is the top dead center location. I want to drill through vertical grain—not the flat grain face. Using the step-off method (see sidebar) with a pencil compass, I step three steps around from the top dead center mark in both directions (**Photo 8**). The third step marks are in close proximity and between them lies the point 180 degrees from the top dead center mark. Using a 1/4" spade bit, I drill just over halfway through from each mark, ending up with a straight-through hole exactly where I wanted it (**Photo 9**).

Step-off Method



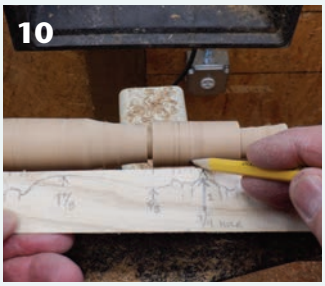
I first learned this tip from Wood Turning by George Ross, printed in 1909. Here is the method straight from the source:

"To lay out the hole, take a compass and set it to the radius of the [circle you need to bisect]. Commence at a point selected on the center line and space off three spaces on one side, then go back to the starting point and space off three spaces on the other side. Most likely it will be found that in spacing, the points will not meet. Divide this space equally; this will give the point on which to bore; the first point will be the point to bore on the other side."

When boring the hole, drill just over halfway from both sides.

Turn the upright spindles

Bring each long spindle to round. Locate the holes for the knob-and-dowel assembly by stepping off marks with a pencil compass. Drill the holes from each side to meet in the middle to avoid tearout.



Transfer the design from the plans to a story stick, then to the turning and shape the large spindles.

I use the story stick to mark the high points of the decorative elements (**Photo 10**). Using outside calipers and a parting tool, I established the diameters of these features. I removed the waste around them and again put the story stick up so that the details could be re-marked. I set down the story stick and started turning (**Photo 11**).

I promptly and efficiently made two parting cuts just below the large vase bottom because I had made two marks on the story stick. Those two marks were size reference marks on the diagram to show a 1/8"- (3mm-) thick fillet at the bottom of the base! Tsk. I now had a good quarter inch fillet that was not on the original plan. With the design opportunity staring me in the face, I fixed my mistake by making a very small cove in the middle of the fillet. The rest of the spindle turned out similar to the diagram as I paid a bit more attention to detail.

Turn the knob-and-dowels

After turning both spindles, I used a small piece of thin scrap material to make a story stick for the knobs with their protruding pins or dowels (**Photo 12**). At this point I realized my blanks were too small. I had cut them just over 5/8"-square and they needed to be just over 3/4" square. A quick trip back to the bandsaw and I return with two appropriately sized blanks.

These small spindles end up as a knob attached to a 1-3/4"- (4cm-) long, 1/4"-diameter dowel. I used the parting tool to dimension the blank and then I used a skew for the knob and dowel (**Photo 13**). The small cove beneath the knob is a nice detail easily executed with a spindle gouge. Once these are turned, the parts are almost ready for assembly.

Drill the mirror frame

Looking at the mirror blank, I decided I wanted the mirror to sit with the endgrain on the horizontal plane. I used my center finder to mark the center line along the endgrain (**Photo 14**). Following the line down along the rim, I used an awl to mark locations for drilling. I used my small square again to align the 1/4" drill bit and drilled about 1" deep on each side (**Photo 15**).

Dry fit

I dry fit the project pieces and discover that the first spindle tenon I turned is too small. A small piece of paper towel tube wrapped around the tenon shims the fit perfectly, so I use glue and rubber bands for clamps to hold the cardboard in place while the glue tacks up (**Photo 16**). I have used anything from printer paper to grocery bag material to make similar repairs, but this situation required thicker material.

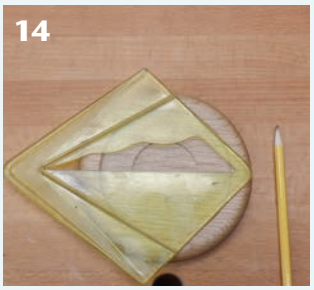
Cut kerfs for wedges

Mark the kerfs to be cut on the tenons. They need to be perpendicular to the grain direction on the base or your spindles will split like firewood when you hammer home the wedges. Basically, the wedges spread the tenon and the force needs to be across rather than with the grain.

Turn the knob-and-dowel spindles

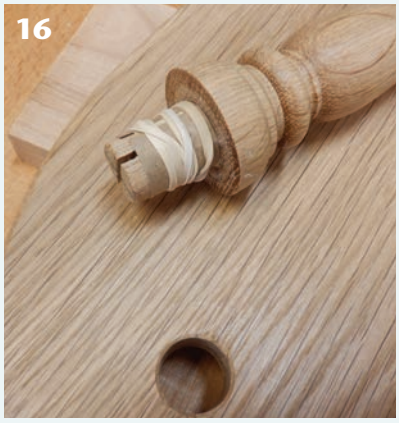
As you did with the long spindles, transfer your design to the shorte spindle blanks using a story stick and turn the knobs with protruding dowels.

Drill the mirror frame



Use a center finder to draw a line across the center of the mirror frame. Follow this line down the edge of the frame to locate and drill holes to mount the mirror.

Assemble the base



This is often the time mistakes show up. Take time to make repairs as needed—here shimming an undersized tenon with cardboard.

Assemble

I used plenty of water-resistant wood glue, applying it into both drilled holes in the base (**Photo 17**). I seat the spindle tenons while the base rests on scraps of dimensioned lumber thick enough to allow the tenons to protrude through the bottom.

To help keep the two spindles properly spaced for the mirror, I insert a 7"- (18cm-) long, 1/4" dowel through the drilled holes on the top part of the spindles. I then turn the assembly over. I have a set of wedges prepared, cut 3/4" wide, about 1"- long, and tapering down from 1/8"-thick. I put a little glue on each wedge before hammering them home (**Photo 18**). Wedges make a certain sound while being driven home and when they are seated, the sound changes. Don't hit them anymore after the sound change.

To secure the mirror into the turned mirror blank, you need an adhesive that will remain flexible after it has cured. An adhesive silicone works well, as does E6000. Because the wood will move with humidity fluctuations and the mirror will not, using a hard-curing adhesive (like epoxy) will likely lead to a cracked mirror.

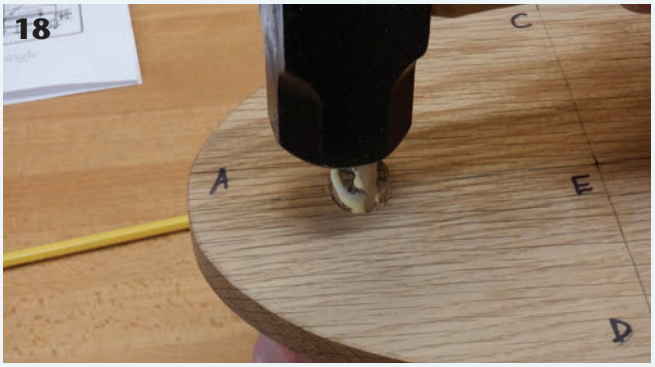
I want to make sure my mirror rotates easily (hopefully with one hand) but also stays in place once adjusted. I remove my dowel spacer from the upright spindles and partially insert the knob-and-dowel spindles. I take a moment to apply some beeswax to the roughly 3/4"-long sections of the dowels that will be housed in the upright spindles.

I add some wood glue to the drilled holes on the mirror frame and push the knob-and-dowel spindles through the uprights and into the mirror blank (**Photos 19, 20**).

I let the glue dry for several hours before I dare to turn the mirror knobs and cut the bottoms of the tenons flush with the base bottom. Working up the nerve for a test spin, I discovered the mirror turned smoothly, yet stayed in position. I am very happy with the little stand. ■

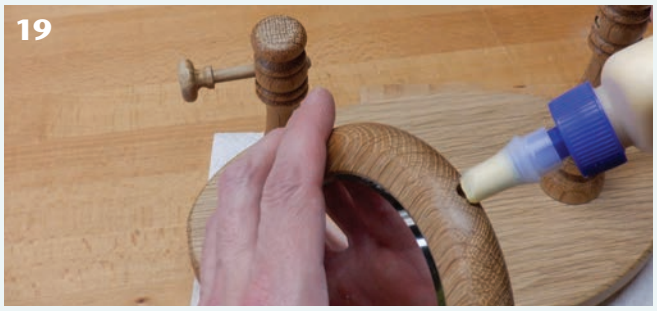
Rick Rich is a woodturner from Washington State. He is a member of the American Association of Woodturners (AAW), the Cascade Woodturners Association in Portland, Oregon and a founding member of the Southwest Washington Woodturners in Vancouver, Washington.

Assemble the base



Apply glue to the base holes and insert the upright spindles. User a spacer between the uprights to keep them parallel (not shown). Flip the base over and drive wedges into the tenon kerfs.

Attach the mirror



Add glue to the holes in the sides of the mirror and attach the mirror with the knob-and-dowel spindles.

STICK PENS

BY LINDA FERBER

Pen turning constitutes an entire branch of the craft of woodturning, and some turners devote themselves exclusively to this pursuit. Along with pen turning comes a drawer or two full of paraphernalia—blank cutters, trimmers, mandrels, presses, drills...the list continues. This project borrows its "mechanism" from a Bic pen and relies on a shopmade mandrel. The financial investment is small, and the creative possibilities, huge. By the end of the project, you will have exercised your spindle turning skills, completed some carving and painting, and coordinated a little scavenger hunt for odds and ends.

I'm going to discuss two different styles of pen. The ergonomic pen is short and squatty, fitting into the palm of the hand. The carved pen can take on a variety of shapes, but I describe one carved and embellished to look like a pea pod.

Gather supplies

You will need a drill chuck, 5/32" (4mm) drill bit—4" (10cm) and 6" (15cm) long, or one 12" (30cm) drill bit, and spigot jaws for your four-jaw chuck. You will also need a selection of pen blanks, 5/8"- (16mm-) square and 6" or 7" (18cm) long. The material can be wood, acrylic, or a combination of the two. Oh, and some inexpensive Bic-type pens of your color choice (**Photo 1**).

Finally, you'll need to make a mandrel. You can either sacrifice one end of your 12"-long drill bit, or you can purchase a piece of drill rod of the same 5/32" diameter.

Make a mandrel

A mandrel is a type of drive that helps center and support a long, narrow form like a pen. I measured the diameter of the Bic ink insert at its widest point, which is where the writing point is inserted into the ink tube. This is how I identified the need for a 5/32" bit or drill rod but you should verify that you have a refill with the same specifications.

Cut off a section of your drill rod or the smooth end of your 12" bit about 1" (25mm) longer than your ink insert (**Photo 2**). You will secure one end in the drill chuck. On the opposite end, use a Dremel-style tool with a grinding- or cutoff wheel to create spurs on the end, similar in shape to those on a traditional drive center. These teeth will help drive the pen blank and prevent it from slipping on the mandrel. The advantage of this custom drive mechanism is that the blank is centered on the drilled hole and not with the outside surfaces of the blank; this compensates for the bit wandering during the drilling process.

Project supplies

Your inserts will come from a box of inexpensive pens. Grind or cut teeth on the tip of a drill rod or cut-off drill bit for a mandrel drive.

Drill the blank

I find it easiest to drill the blank on the lathe using a 5/32" x 6" drill bit. Mount a chuck with spigot jaws to securely tighten the square blank, placing the corners of the blank between the jaws.

Place a drill chuck in the tailstock and secure the 5/32" x 6" drill bit (**Photo 3**). I mark the center of the blank and use a spring punch to give the drill bit a starting location. Transfer the length of the pen refill to the bit with a bit of blue tape or marker pen.

Drill with a slow lathe speed while also slowly advancing the drill bit, retracting the bit often to extract chips and prevent binding. I check the depth after drilling to verify that the ink refill will fit (**Photo 4**). I mark the location of the bottom of the drilled hole on the outside of the pen blank. I recommend a small batch of six to get started. This mini-production approach will give you an indication of how you can maximize efficiency by grouping repeated steps together.

The pen body

With a drill chuck in the headstock, insert the mandrel so it extends about 1/2" (13mm) further than the blank. Bring up the tailstock to hold the blank in place with light pressure and engage the teeth at the mandrel tip (**Photo 5**). This set up will have the pen tip (where the refill is inserted) facing the headstock. The lathe speed can be moderately fast; I have it set at 900 – 1100 rpm. Consider your own skill and choose a speed below your comfort threshold. Armed with your favorite 1/2" spindle gouge, you are ready to turn.

You can, of course, create a pen of any shape your heart desires—that's part of the fun of using a repurposed ink insert. For this project, though, let's aim for a form that we will embellish with painting and carving to create a pea pod pen.

As you turn the spindle that will become your writing implement, keep the barrel outsized. Retain as much of the 3/4" diameter of the pen blank as you reasonably can. Shape the tip so that it slopes down to the writing point. I like to do most of the shaping of the top with carving tools, so I turn only a simple curve on the top. Sand the pen body while it is on the lathe.

Pea pod pen

You will need to leave sufficient material on the pen body to accommodate your carving, so the pen that comes off the lathe will probably look a bit chunky. Even when completed this pen is not going to slip invisibly into a shirt pocket, so don't get too hung up on weight or bulk, especially for your first pen.

Embellishing—carving

The carving is done with a micro carver or a Dremel-style tool. I use three bits: a Kutzall rotor saw, a ball nose bur for shaping, and a ball bit for smoothing.

Turn the pea pen blank

Use a drill chuck to drill completely through the pen blank. Verify that your ink refill seats snugly in the hole. Mount the blank on your shopmade mandrel.

I use the Kutzall to carve simple lines in the front of the form, which I then shape into a vee groove of about 1/4" (6mm) width and 3-1/2" - 4" (9cm-10cm) length where the peas will rest (**Photo 6**). Take care when carving to not remove so much material that you expose the hollow for the pen refill. Use the ball bur to smooth the edges of the pea pod opening creating a small lip to give it a finished appearance (**Photo 7**).

Roll the peas

To make the peas, I use Apoxie Sculpt, a two-part modeling compound (**Photo 8**). I mix a small amount of each component, rolling it into snake-like ribbons and folding the ribbons to thoroughly mix the compound. From this roll you can cut off evenly sized pieces to form the peas (**Photo 9**). Roll each piece into small balls, making enough to fill the hollow you created on the side of the pen blank. To adhere the clay peas, use a paint brush to apply a small amount of water to the pen. After all the peas are in place, press lightly on each one to create a more realistic appearance. The clay adhesive will harden in 24 hours. The next day you can start painting.

Embellishing—painting

I chose green, white, and brown Golden Paints (**Photo 10**). Don't be afraid to mix paints for shading. I added a small amount of brown to the green for a more earthy hue. I added a small amount of white to a corner of the green, brown mixture to highlight the color pallet of a pea.

Because these pens will not be carried in a shirt pocket, the owner will likely appreciate an accompanying stand. Suggestions for stands include a basic spindle turning and a bit of wire coiled around a small tool handle for shaping for the pea pod pen. As shown in the article's opening photo, I drilled a small hole in the base to anchor the coiled wire. The base for the cucumber or okra is a found piece of wood with bark with a couple of flowers made from clay and painted.

Power carving with burs

Tool grip

- o Always brace your stance with a triangle formed between your hands, work, and table surface.
- o Pressure: a gentle first pass to outline the shape, going back with more pressure to add depth.
- o Tool, or traverse speed: faster for roughing out material, slower for a superior finished surface.

Making cuts

- o Always carve towards yourself.
- o Make more than one pass to create depth—don't try to remove too much material in one pass.

Carving can also be employed to create texture to add depth and interest.

Carve for peas

Carve out a space on the side of your pen to hold the peas. The author recommends rotary burs, but a vice and carving chisels would also work.

Make peas

Roll peas from two-part molding epoxy. Before the epoxy hardens, press the peas in place in the dampened shell opening you carved on the side of the pen. Paint the pen and peas for a realistic pea pod appearance.

The cucumber pen shown in the opening photo is a variation on the approach I've described. I started with a 1"-square blank, which is quite large. For the carving I used two burs--the Kutzall and a ball bur. The Kutzall carves the grooves while the ball bur smooths the surface and rounds-off corners. I selected two colors of green, white, and a touch of brown for the paint pallet.

The ergonomic pen

Start with a 3-1/2" (9cm) cube mounted between centers in spindle orientation and turn a cylinder (**Photo 11**). Turn a tenon on one end to fit your four-jaw chuck.

Mount the tenon in a four-jaw chuck and check that the blank is still running true—if not, bring it back to round with light passes from your spindle gouge.

Mount a drill chuck in the tailstock and drill a hole using the 4" x 5/32" bit (**Photo 12**). I drill this hole about 1/2" shorter than the length of the blank protruding beyond the chuck jaws. This gives me room to shape the top of the pen and part it off the lathe.

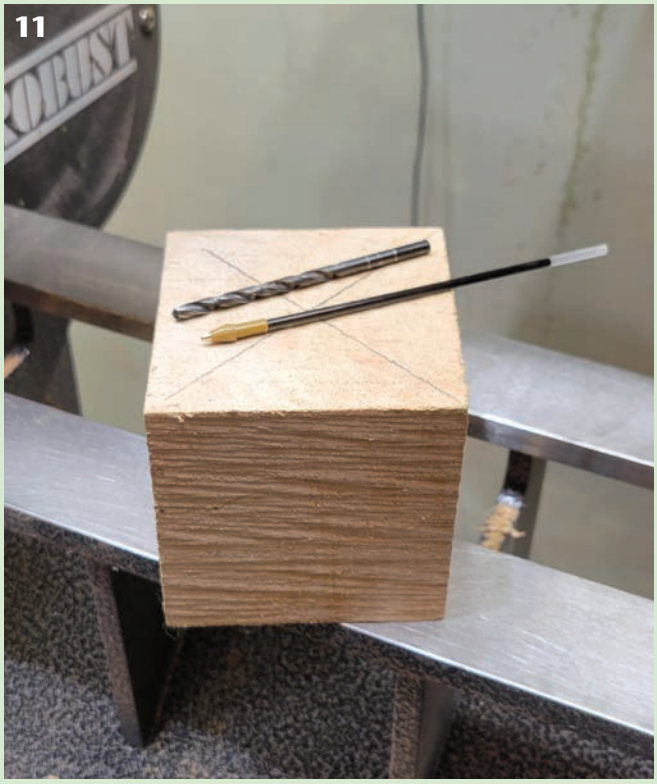
Trim one of the Bic refills to just shy of the length of the hole you just bored. You can easily cut the plastic refill tube using a sturdy pair of kitchen shears or a utility knife. So far, I have not had any problems with leaking. While you're at it, mark the location of the bottom of the bored hole on the outside of your cylinder.

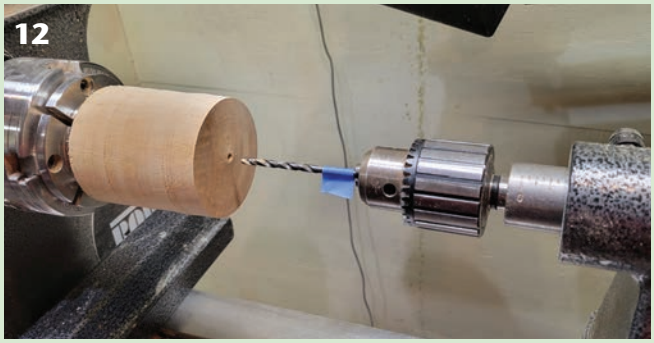
With a 1/2" spindle gouge, begin shaping the writing tip end of the pen side (**Photo 13**). This style of pen is shaped like a palm awl and is gripped and used a little differently than a conventional pen. The user's fingers wrap over the top of the pen while the mushroom-shaped top rests in the palm. I like to turn a 1/4" (6mm) - 1/2" concave sweep for the finger grip. Study a few pens (and palm awls) and find a shape you like.

The turning task is simple. Begin by removing material at the tip (tailstock) end. Gradually work your way back towards the headstock, removing material to create the cove that connects the top to the tip. Make a parting cut to create room to work between the top of your depth marking and the chuck jaws. Shape the top of the pen in a shallow, sweeping curve towards the axis of rotation. This is a steep cut, starting with the gouge open towards the ceiling and rotating to face left as you move through the cut.

Sand the entire pen through 600-grit. Pen turners typically turn off the lathe and sand with the grain between each grit; this is helpful in removing sanding scratches.

Turn a palm pen





Turn your palm pen using a cube of timber—watch the grain orientation as you want the grain parallel to the lathe bed for a spindle orientation. Drill for the shortened ink refill insert, shape, and part-off.

Part the blank off with a parting tool or by using a shearing cut with the spindle gouge to cut through the tenon. After removing the pen from the mandrel, hand sand the tip and the nubbin at the top end.

The refill should seat with a pressure fit. This allows the writer to replace the refill as necessary—or change the color on a whim.

Embellishing the ergonomic pen

Inspired by the concept of wrapping hands—both the ones that made the object and the ones that will be using it—I decided to use the concept as a decorative motif. I traced a handprint that I had downloaded from the internet onto a piece of vinyl and cut out the shape (**Photo 14**).

I applied acrylic paint thickened with gel medium to the vinyl hand (**Photo 15**). Thickening the paint adds texture and evokes the impression of fingerprints or skin texture. The vinyl can be used on either side to create a left or right hand, and the paint washes off the template easily.

Apply the paint and gel medium mixture in a moderate-to-thin layer and place the hand template on the wood, pressing gently and then carefully lifting it up (**Photo 16**). With a little paint on a finger or small brush, fill in any gaps. These are not neat and tidy, so if that is your preference, I would suggest outlining the hand template on wood with pencil and fill in between the lines with paint. I have tried this method of painting hands on wood without the gel medium and it is still successful, but the print is flat and does not have the fingerprint look.

Start planning and preparing your supplies to make a few pens. I guarantee it will put a smile on the face of everyone who receives one. ■

Linda Ferber recently retired from her position as AAW's Program Director. She is the founding editor of Woodturning FUNdamentals.

Go hands-on

Cut a hand-shaped template smaller than the top of your pen from a vinyl sheet. Coat the surface of the template with acrylic paint and apply the paint to the top of the pen; gently peel away the vinyl.

INLAY RING

BY BILL WELLS

A wood inlay ring can add an unusual and attractive feature to a bowl. The process involves precise measuring and cutting, but the method outlined below provides tips to simplify the process.

In brief

I use a small maple bowl as an example, but the procedure can be used with any cylindrical project such as a turned box. **Figure 1** shows a cross-section view of the bowl with the inlay ring in place. Cut a groove in the bowl first, then cut the ring from a hardwood board. The tricky part is achieving a snug fit between the ring and groove—you want the ring to look like it is a natural part of the surrounding form. I found the best method is to make the ring slightly wider than the groove, then carefully enlarge the width of the groove to fit the ring. When the groove and ring are the same width, make a break in the side of the ring to allow it to slip around the bowl and into the groove. After securing the ring with glue, trim the ring flush with the side of the bowl.

Now for a step-by-step breakdown.

Project cross-section

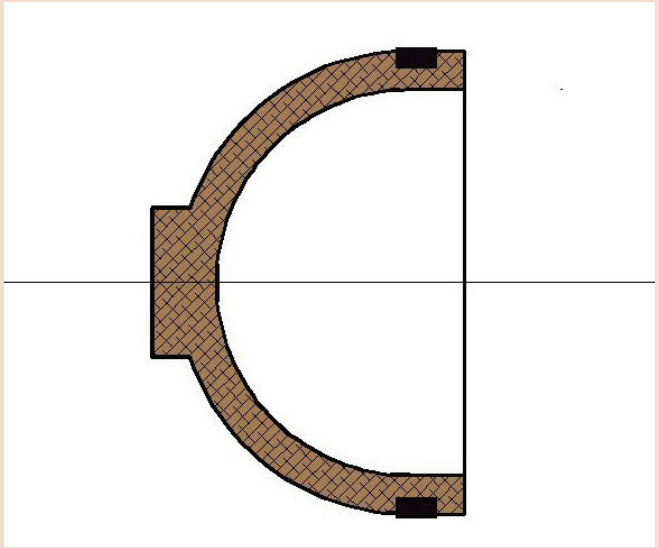


Figure 1. The completed project in cross-section shows how the inlayed ring relates to the form.

Turn your primary form

For this article, I chose to turn a simple bowl from a well-seasoned maple blank. Turn the bowl with about a 1/2" (13mm) wall thickness where the inlayed ring will be located.

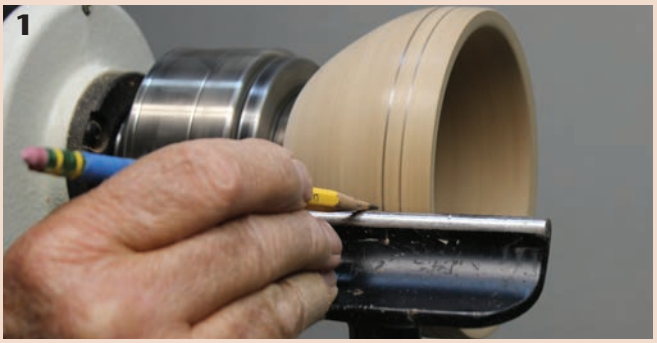
Cut the groove

Start by marking the location and width for the inlay (**Photo 1**). For this project, I laid out the ring to be about 3/8" (10mm) wide. The width of the groove need not be precise, as long as the sides and bottom are cut square and true. I use a plywood disk held by the tailstock live center to help stabilize the bowl (**Photo 2**). Cut the groove with a sharp parting tool, measuring often to ensure the groove depth does not exceed half the wall thickness (**Photo 3**). I cut the groove 1/8" (3mm) deep. Why stop at this shallow depth? This is to allow deepening the groove later, after the inlay ring is made. It's easiest to adjust the groove to fit the ring. Although I'm not finished with the groove, I set the bowl aside while moving on to the next step.

Make the inlay ring

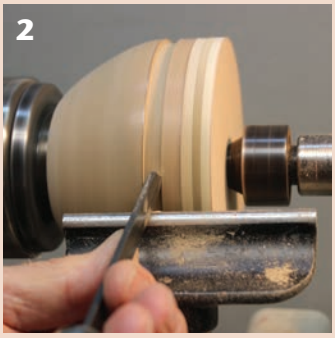
The inlay ring will be parted from the rim of a form that looks something like a drink coaster (**Figure 2**). I like to use a hardwood of contrasting color. Any seasoned hardwood will do, as long as the board is wide enough to encompass the ring and at least 3/4" (19mm) thick. I use a bandsaw to cut a disk from a 5"- (13cm-) wide piece of bubinga, then use a Forstner bit to drill a shallow mortise for mounting onto the lathe chuck, and then true the face of the disk (**Photo 4**).

Mark ring location



With the bowl turned to about a 1/2" wall thickness, mark the location for the ring inlay.

Cut the ring groove



Cut a groove for the ring using a sharp parting tool. Monitor the depth of the groove with frequent measurements with the lathe off. A plywood disk distributes pressure from the tailstock and helps stabilize the form during the cut.

Visualizing the ring

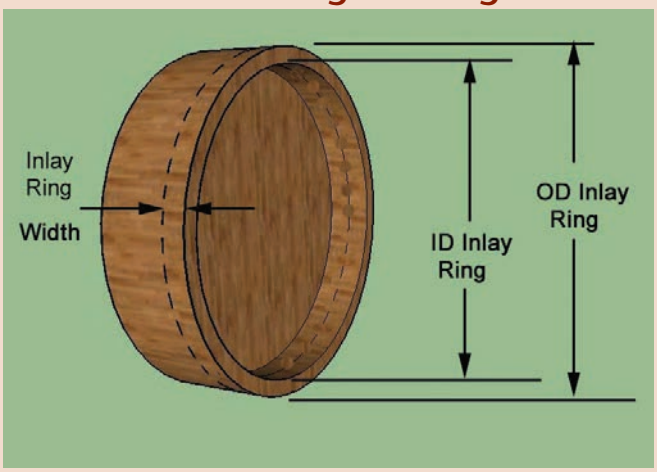


Figure 2. Create the inlay ring by parting off a rim section from a straight-sided form.

Ring preparation

Use a contrasting piece of hardwood for the ring blank. Bore a recess in the back to mount the blank on your chuck in expansion mode.

To establish the outer diameter of the insert ring, I add 1/4" (6mm) to the diameter of the bowl at the location of the ring. With a 1/8"-deep groove, this will produce a ring that will stand 1/8" proud of the bowl surface and allow material for flush trimming.

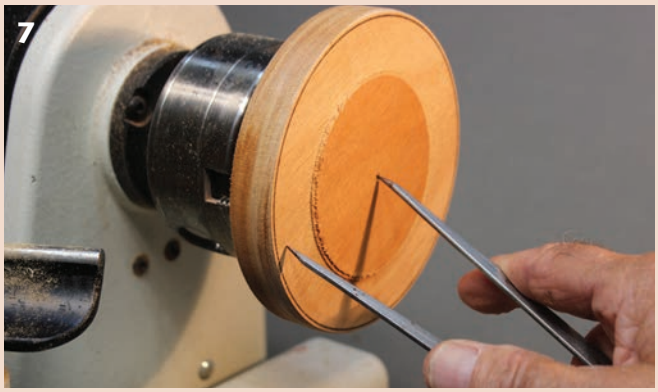
A well-fitting ring requires two more measurements to determine its width and internal diameter. For the ring width, I transfer the bowl groove width as measured with a caliper (**Photo 5**). For the internal diameter, I use an outside caliper to measure the diameter of the bottom of the bowl groove (**Photo 6**).

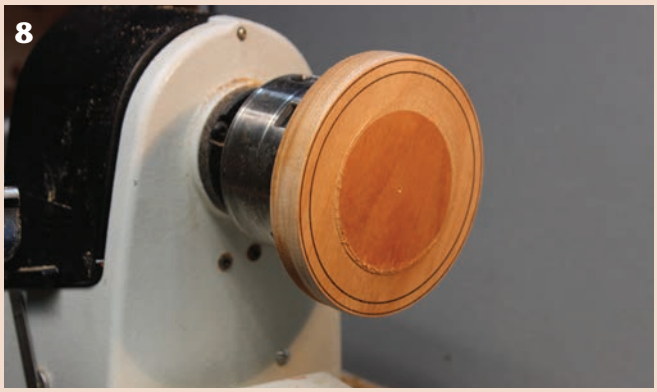
Transfer these measurements to the disk (**Photos 7, 8**). Shape the inlay ring using a carbide tool, or bedan (**Photo 9**). Keep the sidewalls reasonably straight. Use a narrow parting tool to separate the disk from the blank (**Photo 10**). You now should have a ring that is slightly wider than the groove (**Photo 11**).

Ring preparation

The width of your ring should be slightly larger than the groove you cut in the bowl. You can determine the internal and external diameters with an outside caliper.

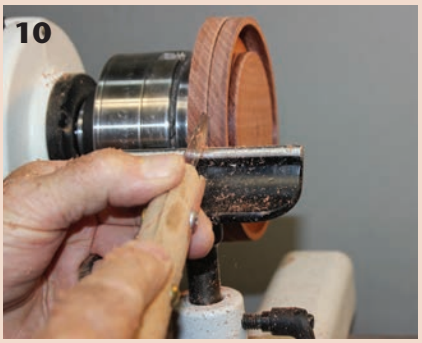
Transfer measurements





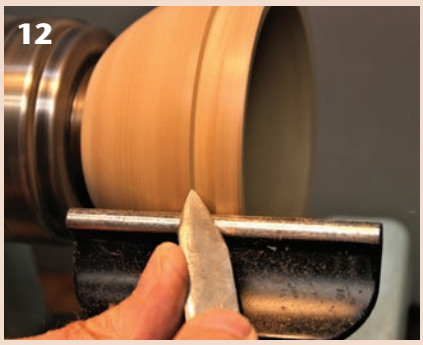
True the ring blank and transfer the inner and outer diameters to the face; mark the ring width on the outer edge.

Turn the ring



Use a carbide tool or bedan to define the inside face of the ring—this should be a reasonably straight wall. Part the ring with a narrow parting tool.

Fine tune the fit



Re-mount the bowl and gradually widen the groove to fit the ring. A pointed scraper works well for this task.

Make one break in the ring in the middle of the long grain and slip the ring into place. To close the break, remove the ring and gradually increase the depth of the groove until the gap in the ring disappears when the ring is re-fitted.

Attach the ring

Glue the ring in place. A hose clamp makes a handy ring clamp to apply pressure until the glue dries.

True the ring to bring it flush with the bowl surface. At this point you can remove more material from the bowl interior if you prefer thinner walls. Otherwise, sand and apply a finish.

Trim the groove to fit the ring. Carefully widen the groove, checking often for fit. I use a pointed scraper for this task (**Photo 12**). When the ring just fits into the groove, break the ring (in one place only, in the middle of the long grain) and slip it over the bowl and into the groove. The ends likely will not meet, so use a parting tool to deepen the groove until the broken ends do come together (**Photos 13, 14**).

Glue the ring into the groove (**Photo 15**). I use Titebond II and a hose clamp to apply pressure to the ring. Allow the glue to dry thoroughly.

Finish turning

Trim the ring flush with the exterior of the bowl (**Photo 16**). Do not remove too much material—only enough to make the ring flush with the bowl surface. Finish turning the interior, but measure often to make sure the rim does not get too thin and you break through the back side of the inlayed ring. ■

Bill Wells is a retired engineer living in Olympia, Washington, and is a member of Woodturners of Olympia. Bill welcomes comments or questions at bill98502@msn.com.

BY MARK F. PALMA

SAFER SPINDLE DRIVING

Driving work between centers isn't a topic given much thought by woodturners. Safety with work mounted between centers is possibly given even less. Let's back up and consider some simple actions we can take at the lathe to make center turning safer.

Avoid complacency

Many turners pride themselves on the tenons they cut for chucking facegrain work at the lathe yet put far less effort into preparing work for turning between centers. Start by making the ends that will engage the headstock and tailstock square to the long axis and flat. The drive center and the tailstock will engage the work and do their jobs better if they are in full contact.

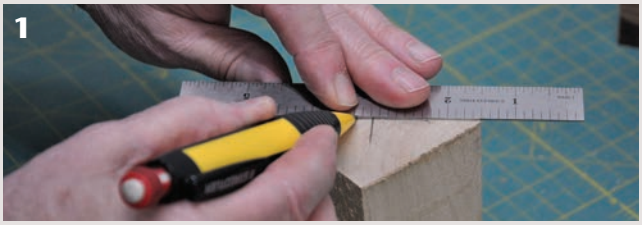
Mark the center on the ends of the blank, and center punch the work (**Photo 1**). Those dimples will help you accurately center the drive and tailstock and prevent the endgrain of the wood from pulling the work off center when you tighten the blank.

The more pressure you put on the tailstock, the more pressure you put on the work. This may seem to be a statement of the obvious, but the effects of over-tightening the tailstock quill can be subtle and frustrating. As the work gets thinner, too much tailstock pressure will introduce "whip" into the work. Essentially, the work will bow in response to the compressive force from the tailstock center.

Match the drive to the application

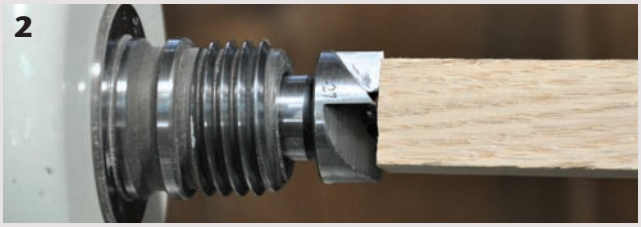
Drive centers come in various diameters. The diameter of the work at the final turned dimension should be greater than the diameter of the drive center. If the drive is too large it can catch the turning tool and potentially injure the turner (**Photo 2**).

Locate centers



Locating and punching the centers will help balance your blank from the moment it's mounted on the lathe. This step also minimizes the amount of material you will need to remove to bring the blank to round.

Size your drive



This four-prong drive is too large for the spindle. The protruding prongs pose a hazard that could easily catch a tool tip or your skin, flesh, and bone.

There are times when a chuck can be the perfect aid for center work. For example, when turning a box, peppermill, or endgrain vessel, you will need access to the tailstock end of the blank for hollowing or drilling. A four-jaw chuck with the proper jaws and a good tenon on your blank (more on those features below) can provide excellent support for work on the free end of the project.

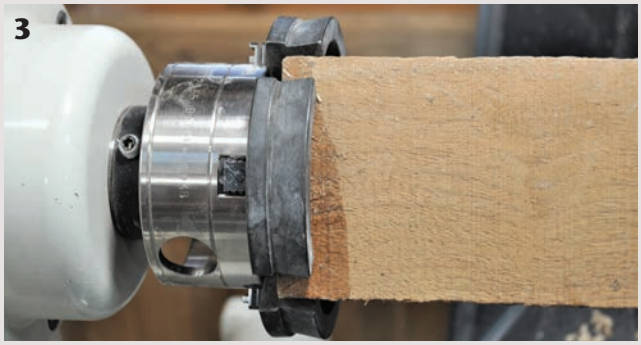
On the downside, a chuck can limit access to the headstock end of the work. And if you've experienced that moment of inattention followed by brushing your knuckles against spinning chuck jaws, you've lived one of the chuck's drawbacks. Just because you may already have a chuck mounted on your lathe doesn't mean that it is the best option for mounting the project at hand. Make a purposeful decision to determine the best device for center work in the application you are undertaking.

Chucking for center work

Grabbing square work in the jaws of a chuck is one of the most common missteps I see (**Photo 3**). This arrangement only engages the work with the very corners of the jaws, providing minimal contact between the chuck and the blank. If the work isn't perfectly square, you may only engage two corners of the work--a dangerous situation. Chucking square work can cause the jaws to extend beyond the chuck body. This sets up a dangerous situation, increasing the likelihood that your knuckles will collide with the jaws. Take the time and put a tenon on any work you plan to mount in a chuck (**Photo 4**).

There seems to be a misconception that when you put work in a chuck, you do not need support from the tailstock. Nothing could be further from the truth. Chucks are great, but the longer the spindle, the more leverage can be exerted against the tenon and the face of the chuck jaws (**Photo 5**). A catch on the unsupported end of a spindle can easily pry a blank out of chuck jaws and turn the blank into an unguided missile. Whenever the situation allows, use your tailstock.

Tenons, not billets



If a four-jaw chuck is the right choice for your project, take an extra minute to mount your blank between centers and turn a tenon to fit the chuck jaws. A dimensioned billet may not run true, is difficult to re-chuck on the same axis, and pressure from the jaws is often unevenly distributed, reducing the effective holding power.

The gripped tenon derives considerable strength from the contact between the top of the jaws and a properly formed shoulder. This blank includes adequate length for waste material and clearance near the chuck, keeping fingers safely away from spinning jaws.

Length is a factor

The longer the unsupported spindle, the more likely leverage from the cutting tool will pull it off-center, or even out of the jaws.

Cut a proper tenon

To counteract leveraging forces operating at the end of long spindles, or to create access to the end of a blank for drilling or hollowing, use extended jaws and a long tenon.

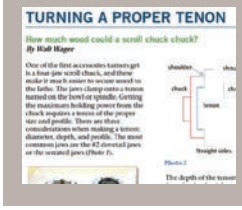
In circumstances when you must turn long work on a lathe without tailstock support, consider the type of work you will be doing and the force it will put on the spindle. Drilling directs force towards the headstock and a well cut tenon for a standard set of jaws will suffice. If you are going to exert force against the side of a spindle, such as for beads and coves, use a stouter tenon and an extended set of jaws (**Photos 6, 7**). Yes, you sacrifice a little more wood in the jaws, however, you gain more lateral resistance. Even with a stout tenon, take lighter cuts, possibly with a smaller tool to lessen the leveraging force you exert against the chuck. Remember, the longer the spindle, the greater the leverage lateral pressure will create; spend the extra time to make a stronger tenon and use the correct chuck jaws. ■

Mark Palma is a cook, woodturner, educator, prolific writer, and reformed attorney in Cameron, WI.

EXPLORE!

Use the AAW's Explore! tool to find the numerous articles published over the decades on the subject of chucking. Two particularly helpful articles include Walt Wager's article "Turning a Proper Tenon," and Richard Raffan's more general discussion of chucks in "It's All in the Jaws." For the links to work, you must be logged into your account at woodturner.org.

tiny.cc/WagerTenons



tiny.cc/RaffanJaws

INTRODUCTION TO Iridescent Paints

BY JOHN LUCAS

I was introduced to iridescent paint (also called interference paint) through a video by Tim Yoder called "Cosmic Clouds Platter." Yoder demonstrates a technique developed by Gary Lowe, using diluted paint with a flow medium, and then a straw to focus his breath and blow the paints around the piece, creating his cosmic clouds effect. Fascinating. I had to try it, I did, and I immediately saw other possibilities to explore.

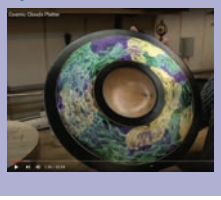
Basic iridescence

Here's the short version of the technique. Paint the wood black. Dilute the paints with flow medium (also called flow extender) and apply some of the mixture to the surface of the turning. While the paint is still wet, blow it around to create cloud formations (**see opening image**). As is my inclination, I experimented with the technique and application and discovered some new ways to use the paints.

INSPIRATION

Follow one of the links to see Tim Yoder demonstrate Gary Lowe's cosmic cloud painting technique.

tiny.cc/YoderClouds



I used Jo Sonja iridescent paints, readily available from numerous online sellers, purchasing the small pack of six colors (**Photo 1**). I also purchased a bottle of the Flow Medium (**Photo 2**). After getting the paints, I made a test board for reference, which makes choosing colors easier. You do have to apply iridescent paints over a black background or the colors won't show.

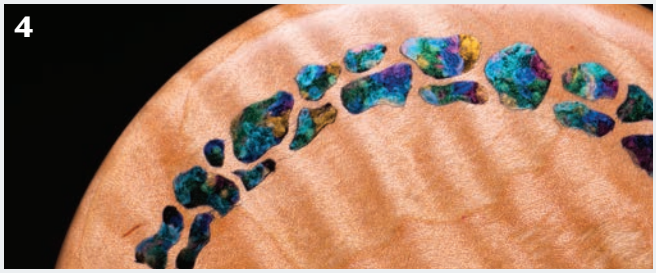
I also did a test to determine how much to dilute the paints (**Photo 3**). Using the paints undiluted and straight out of the bottle results in improper drying and leaves a light or white area. After playing around a lot, I found that estimating the dilution at about 50/50 is good enough—no laboratory equipment needed. Knowing the paints have to be applied over a black background, I wondered how the technique would work over pyrography. I used some wood burning tips to create shapes and experiment with the iridescent paints—it worked spectacularly.

Abalone

With my testing done and a few pieces created using the Gary Lowe's technique, I decided to stretch out and play. Applied correctly, I noted that the colors resembled abalone inlays. My first project was to build a mirror and try out my decorating idea (**Photo 4**). So now I will discuss how I did that and show you how you might use this for other projects.

New ideas emerge

4



Iridescent paint applied over pyrography looks remarkably like abalone shell.

Paint supplies

1

2

You'll need a modest selection of iridescent paint colors and the flow medium to achieve the correct consistency.

3

When using a new medium, make sample boards to identify appropriate dilutions and to develop your application technique.

Cover the area you intend to paint with tape—I use green FrogTape®. Cut out an opening. In these pieces, I used the long point of a skew with the piece on the lathe and cut the circles, taking care to cut only through the tape (**Photo 5**). For the mirror, I cut radial lines through the tape so I was left with little rectangles defining the perimeter of the circle. On the vessel, I cut and removed the inner circle. I then painted these areas black (**Photo 6**).

With the masking complete, pick a color, dilute it, and start dabbing it on (**Photo 7**). Mix the next color of paint you'd like to apply and dab on more (**Photo 8**). When you're finished applying paint, peel the tape off.

Mask for control

Green FrogTape® is treated to repel paint and create a neat boundary. You can cut out areas to be painted using a craft or utility knife. Apply a black background paint, then iridescent paints in layers, letting each application dry (it happens quickly) before applying the next color.

If you get some bleed-through, use a craft or utility knife with a new blade or a razor blade and scrape off the excess (**Photo 9**). In diluted form, iridescent paints dry pretty quickly, but you can speed the process with a hair dryer or heat gun. When the paint is completely dry, I apply a coat of finish over everything. It wouldn't hurt to do an advance test of your finishes, but so far all of my finishes have been compatible.

Pyrography

Encouraged by the results I got using my wood burner and paints on a test board, I decided to apply my new-found technique to decorate one of my angels.

I used my small ball-end tip to burn all the areas on the angel that I wanted to decorate. To my delight, the combination of the pyrography texture and iridescent paint took on the appearance of bead work (**Photo 10**). At only 4" (10cm) tall, the decorating task was not too big but resulted in a satisfying visual impact.

Next, I decided to try burning just the high points on a carved platter. To my surprise, the paint carried over onto the non-burned areas, creating a contrast between the burned peaks and the unburned valleys (**Photo 11**).

Now you have an introduction on how to use these paints. There are so many rich ideas I have yet to explore. One thought is to mask-off a basket weave pattern, or a pattern of touching diamonds. I've also seen a technique for applying the colors that involves smearing them with a balloon, which creates a markedly different look than blowing the colors around.

Let your mind go wild and do some experimenting. ■

Retired photographer John Lucas has been working in wood for more than 35 years; he also dabbles in metalworking. John enjoys modifying machines, making tools, and sharing his knowledge through written articles and videos. He has taught classes at John C. Campbell Folk School, Arrowmont, and The Appalachian Center for Craft.

ANGELS

To learn how to turn one of the author's angels with attitude, follow one of the links below.

tiny.cc/AngelsLucas

Clean up

Clean any paint that leaks under the tape with a razor, using the thin, sharp blade like a cabinet scraper.

Experiment!

The author decorated one of his turned angels using a combination of texturing, pyrography, and iridescent paints.

The author burned the peaks on this carved platter rim before applying iridescent paints. The result is intense coloration against the black peaks, and a contrasting faint wash of color in the surrounding valleys.

Chucking with ADHESIVES

BY DAVID SPRINGETT

Want a low-tech, economical method for holding work on the lathe which leaves no hold marks? I have a couple of ideas for you. The first method uses newspaper and glue; the second uses hot-melt glue.

Newspaper and glue

This method wastes little wood as no allowance needs to be made for the work to be gripped in a chuck.

Start by attaching a reusable softwood faceplate to a metal faceplate at the headstock—a large screw chuck works well. This softwood disc can be sized to suit your workpiece, anywhere between 3" (8cm) and 12" (30cm) in diameter. True the edge using a bowl or large spindle gouge. This can be a challenging cut, especially if your blank is well out of round. Your gouge will bounce around, so take light passes until you can initiate the cut in solid wood, riding the bevel through the cut.

Next, true the face with a gouge or scraper. Verify that the face is flat by checking for bumps and dips with a straightedge with the lathe off—the back of your gouge is a handy reference.

Cut (or purchase) your turning blank from planed wood, close in dimension to the diameter of the piece you wish to turn. Starting with surfaced wood means you have two nominally flat surfaces to mate together.

Cut a sheet of newspaper about 2" (5cm) larger than your softwood faceplate.

Spread white carpenters' glue (PVA) on the surface of both the softwood faceplate and the planed surface of the workpiece (**Photo 1**). Sandwich the newspaper between the two glued surfaces. Bring up the tailstock to center the workpiece and apply pressure while the glue sets (**Photo 2.**) When the glue has tacked up enough to hold the workpiece so that it will not slip, place a larger piece of wood between the revolving center and the workpiece; this will spread the clamping pressure more evenly.

Leave the glue to dry overnight and attain its maximum holding power.

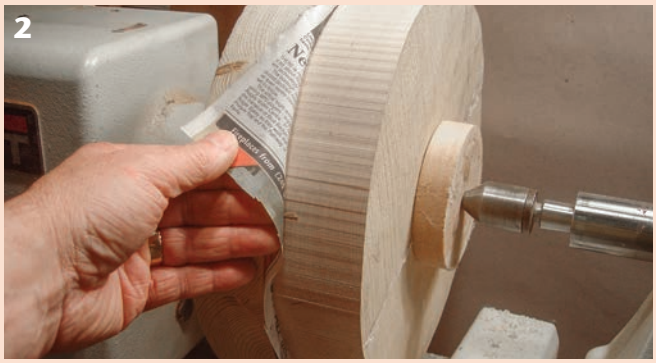
When the curing time has passed, the work may be turned with confidence. Even so, supporting the work with the tailstock through as much of the turning process as you can manage adds security and helps dampen vibration. This step is especially helpful while turning at the edge of the form.

Turn the work to the desired shape, then sand and polish. Remove the finished piece from the softwood faceplate by placing the blade of an old dinner knife on the joint line and tapping the back of the knife blade with a hammer. The joint line will begin to open enough to insert a thin softwood wedge in the gap (**Photo 3**). With more persuasion from the hammer, the wedge will open the joint without damaging the underside of the workpiece (**Photo 4**). Use a palm sander to remove any remaining newspaper and glue.

A few thoughts on safety are appropriate. Remember that PVA glue may take longer to dry in a cold, damp workshop. Before turning, test the newspaper/glue joint. Give the back of your blank a few thumps with the palm of your hand; there should be no movement at the glue joint. Support the work with the tailstock whenever possible. Turn gently—wood doesn't like to be tortured.

Strong, yet easily separated

Sandwich a sheet of newspaper between two glue-coated surfaces. Note that the faceplate shown here is MDF, an option to softwood.



The tailstock provides clamping force and helps center the workpiece.

A wood wedge separates

Use a softwood wedge and a hammer to separate a newspaper/glue joint.

Clean-up the base with a palm sander or cabinet scraper.

Hot-melt glue

The hot-melt glue technique is mainly used when turning smaller pieces.

As with the newspaper/glue method, start with a softwood disk affixed to a metal faceplate. True and flatten the softwood disk (**Photo 5**). Cut the hardwood workpiece close to the required diameter from planed wood.

Switch on the hot-melt glue gun. Hot glue applied to a cool surface can quickly chill, reducing open time and adhesion. I heat my workpiece in a microwave on full power for 30-40 seconds. Hold the warmed piece against the softwood so that some of its heat is transferred. Alternatively, use a hot air gun to warm both pieces.

Apply the hot glue to the softwood faceplate (**Photo 6**). Press the planed surface of the hardwood onto the faceplate (**Photo 7**). Bring the tailstock up to apply pressure until the glue has set. Placing a small scrap of wood between the work and the tailstock center prevents the work from being indented.

It should take about 10 minutes for the glue to set, but to be safe, always wait until the work feels cool; you can then begin turning. For safety, maintain tailstock pressure during the initial roughing cuts, and check the security of the joint when you do need to remove the tailstock.

Once the finished piece has been sanded and polished, remove the softwood faceplate with the turning still attached from the metal faceplate. Take the joined pieces to a microwave and heat them on full power for 30-40 seconds. This should soften the glue enough to separate the joint. Scrape away any hot-melt glue residue after the glue hardens.

EDITOR'S NOTE

In addition to his books, David Springett published eight articles and had his work shown in numerous issues of American Woodturner. *David passed away on April 3rd, 2022. I encourage you to use the Explore! tool, linked below, to visit some of the author's many contributions to our woodturning community.*

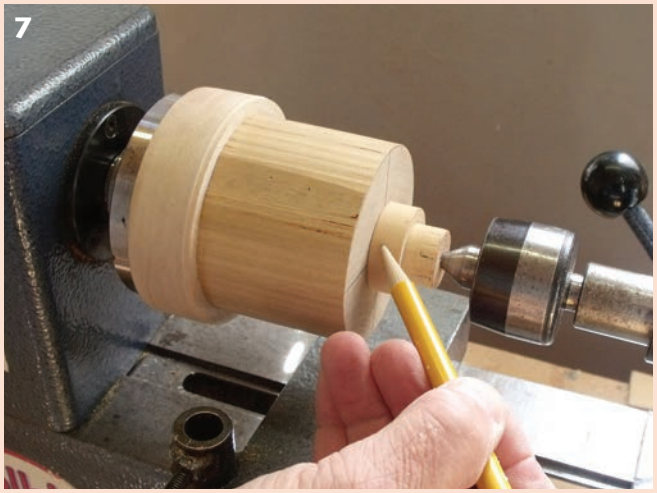
AAW EXPLORE!
AAW AMERICAN ASSOCIATION OF WOODTURNERS
AAW Video Source

Flat for maximum hold

For either glue joint method, the softwood faceplate must be flat. This maximizes contact between the surfaces.

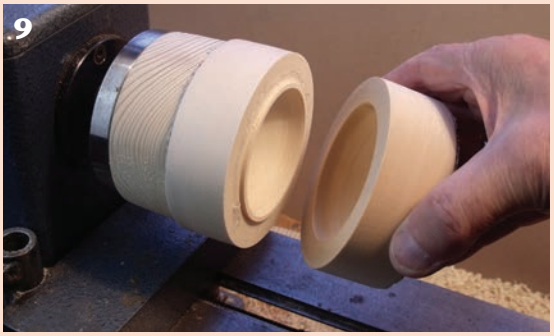
Hot-melt glue

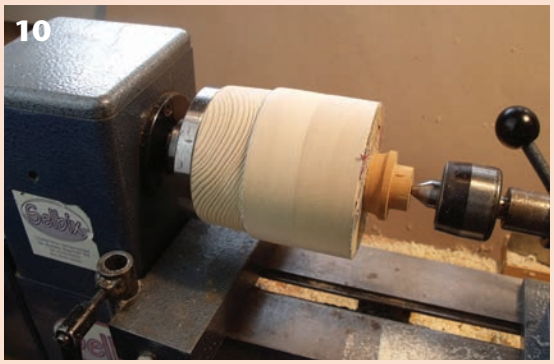
Apply hot-melt glue to warmed wood, which helps distribute the adhesive and extends working time.



The tailstock provides clamping pressure while a scrap piece of wood prevents the center point from marring the workpiece.

Hot-melt for box lids





For box turning, apply hot melt glue to the base's rim and push the lid onto the rim. Turn the box as one piece.

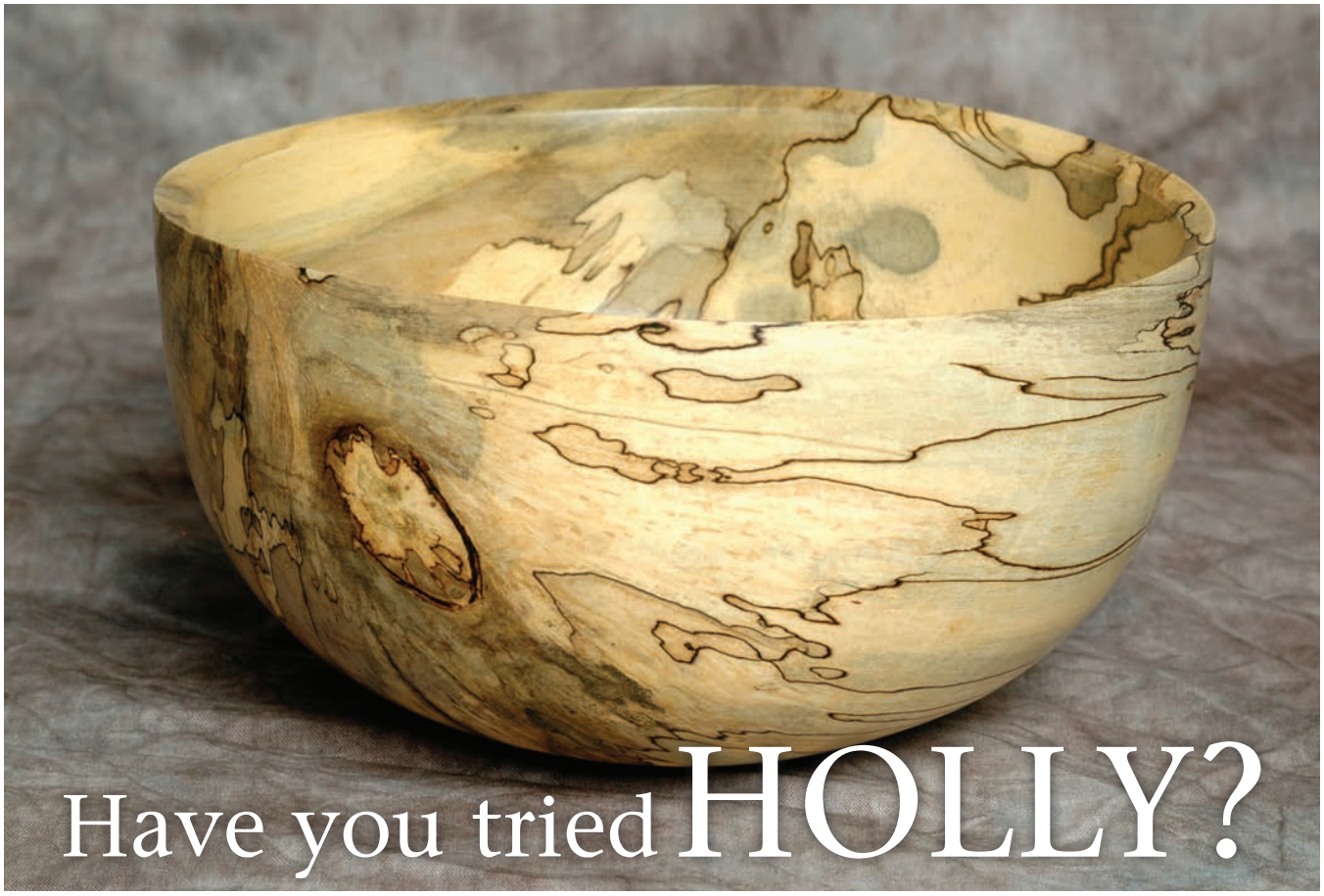
The top of the lid is accessible without the need for tailstock support.

Remember making that lidded box where the lid had to be a jam fit on the part-turned base so the top of the lid could be turned? Either the lid flew off at the touch of the gouge or it became so jammed it was difficult to remove. Try using hot-melt glue as a temporary method for holding that part-turned lid in place (**Photos 8-11**). To separate the completed lid, heat the box in the microwave to soften the glue.

More words of caution. Overheating your work in the microwave or with a hot air gun will cause surface cracks. And any work which is held using hot-melt glue should be firmly tested before turning.

Now it's up to you to decide how to best take advantage of these techniques. ■

David Springett was a British woodturner known for his inventive creations. He is the author of Woodturning Wizardry, Woodturning Full Circle, Woodturning Magic, *and, with Nick Agar,* Woodturning Evolution.



Have you tried HOLLY?

D. E. MCIVOR

BY DAVE SCHELL

When I moved into my house a few years ago, I was surprised to see a holly tree in my neighbor's yard. The tree is about 25' (8m) tall and the trunk is about 10" (25cm) wide at the base. The neighbor has a bamboo forest in their yard, which is slowly covering the holly tree. I'm hoping he will want to cut the holly tree down at some point because I'd like to keep all the wood. A few articles ago, I wrote that the burl at the bottom of my birch tree is one of the reasons I bought my house. The neighbor's holly tree might be another.

Holly is prized for various forms of woodworking, though I don't encounter a lot of it being used for woodturning. I struck gold a year ago at my local compost facility when I saw some holly leaves in the pile. I put on my gloves and dug into the pile to find parts of a holly trunk and limbs! After I emptied my vehicle of bags of wood shavings, I loaded up with as much usable holly as I could find.

I rarely find holly along the road, in wood piles, or other places I scout for free wood. My arborist connections all know I am on the lookout for holly. In my geographic area, it's rare to find holly large enough to turn into bowls. My favorite lumber yard carries kiln-dried holly, but already milled into 4/4 boards—too thin, unless your interests lie in segmented forms. Holly is relatively expensive for a domestic hardwood in my area, and I reserve the kiln-dried and milled boards for inlays and accents in other forms of woodworking. Holly's white wood contrasts dramatically against black walnut, sapele, mahogany, or dark cherry.

Natural history

When I talk to people about holly, they usually think of ornamental holly bushes and don't understand why I'd want any of that wood. After I explain that I don't want the bushes, I want the trees, they say they've never seen holly trees and didn't know they existed. Holly is in the genus Ilex, which includes between 400 – 600 related species ranging in form from bushes, to vines, and trees. Represented by so many species, it's no surprise that holly is found all over the world.

DANNY SCHISSLER. COURTESY OF WIKIMEDIA COMMONS.

In its native setting, holly is most distinct in winter when its evergreen foliage makes it prominent in the forest understory.

American holly *(Ilex opaca)* is an evergreen tree that can grow 40' – 60' (9m – 15m) tall (**Photo 1**). It is generally disease and pest resistant. Within their climatic range, the trees are easy to grow and require little maintenance. Sometimes planted as a privacy screen, their spine-tipped leaves and branch density help keep animals (and people) out of yards.

Holly is used for piano keys, decorative inlays, jewelry, and small projects. There can be little variation in color from heartwood to sapwood. Color can range from white to light grey or light blue grey (**Photos 2, 3**). The wood usually lacks any figure, and the grain can be all but indiscernible. The grain is typically straight and fine but can also be interlocked. Knots are common as the trunks often feature dense branching right to the ground. The wood sands easily and a lustrous polish can be achieved. The bark is light grey and smooth (**Photo 4**). The leaves can vary based on species, but most of us carry an image of the holiday wreaths and decorations made from the iconic pointed, waxy leaves accompanied by red berries.

The turning experience

I've turned holly in both its green and seasoned states, and both are a joy to work. In my experience, the tree can harbor a lot of stress wood and can crack like crazy during seasoning. I turned a few green bowls and their

Holly in cross-section and as a facegrain bowl blank. Note the blue-grey staining and the branch knot—both typical features.

TOM POTTERFIELD, USED UNDER CREATIVE COMMONS LICENSE.

The bark of American holly is smooth and grey.

DRYING WOOD

If you'd like to learn more about drying green blanks, check out Don McIvor's article in the February 2022 issue of Woodturning FUNdamentals, *linked below.*

tiny.cc/GreenBlank

movement in drying warped and cracked the forms, converting them from functional vessels to art pieces and firewood. These were with bowls with finished wall thickness of around 1/4" (6mm) and I left them out to air dry after turning. The dramatic degradation took place over 72 hours. I had another piece buried in sawdust to slow the drying and it warped over a week, but not to the extent of an air-dried piece. If you do rough-turn green holly forms, you may wish to try some of the many options described in the February 2022 issue of *Woodturning FUNdamentals* for controlling the drying process.

Green holly turns smoothly and is reminiscent of other fruitwoods. Dry holly feels denser and harder than green holly. It cuts easily with sharp tools, but not as easily as wet holly, and I have to take shallower cuts to get a good finish.

I prefer to turn seasoned holly to sidestep the warping and cracking issues and give me a more predictable outcome. While it turns easily, I sharpen my tools frequently. Bowl gouges leave a noticeably better surface on holly than scrapers.

Color variation

I have found holly that is bright white, but most of the holly I find has a grey or light blue tinge to it. The wood's lack of natural color makes it highly susceptible to staining from fungi after the tree dies. Sometimes the resulting spalting can create dramatic contrasts in the wood, but much of the time it seems to result in a less distinct and generalized greying of the wood. If you have the opportunity, harvest holly during winter and promptly kiln the wood to preserve its white lumber.

I like the color variations in holly when using it as a turning wood. While white wood is unique, it can also be bland, especially when the wood also lacks discernable grain. Color variations make for a more attractive bowl (in my opinion) because it does show some grain pattern. I also like to burn the edges of my holly bowls to create contrast with the light-colored

A completed holly vessel with a rim decorated by friction-burning.

wood (**Photo 5**). I hold a folded piece of 300-400 grit sandpaper against the rim until it smokes. It takes a few practice runs to get the technique, and you should wear a canvas gardener's glove or you'll burn your hand, too!

Toxicity

Holly has no detectable odor during turning. The sap of green holly can cause a slight skin reaction in some people. But don't think you get to snack on holly's red berries while turning the wood—they are poisonous. I wish my area grew larger holly trees to provide correspondingly larger turning blanks.

Overall, I have to say I still value the lumber more for my flatwork than turning, unless I'm making a wand. Holly wands sell quickly at shows. In the future, I would like to try turning a segmented bowl with holly and black walnut. Combining holly with ebony would make a striking statement, but black walnut would keep the cost down. Keep an eye out for holly and add some to your wood supply when you can. You will enjoy the experience. Holly bowls are a surprise find at any craft show, so they may not stick around long! ■

Dave Schell lives in Mount Joy, PA and is a Main Street Executive Director by day, and bowl turner by night and weekends. Email Dave questions dave@imakebowls.com or view his work online at: imakebowls.com, facebook.com/imakebowls or instagram.com/imakebowls.

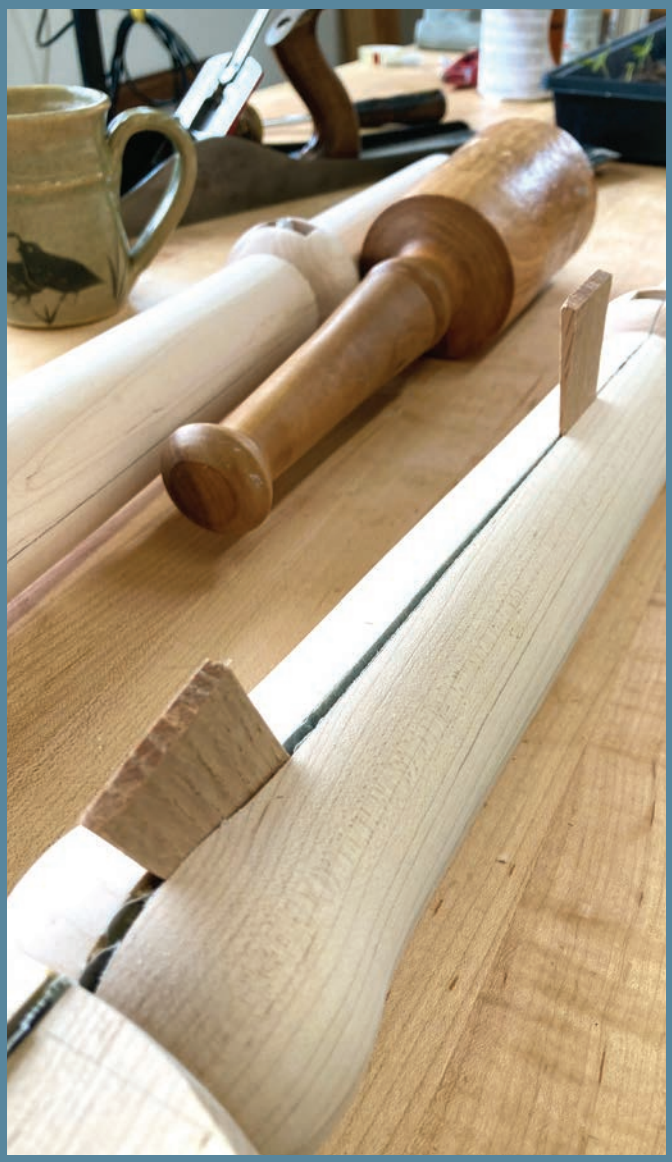
ADDITIONAL RESOURCES

For more information on holly, including toxicity data, check out Eric Meier's Wood Database at one of the following links.

Wood Database

Woodturning FUNdamentals

is an informative digital publication and online learning portal aimed at new turners. Whether you're starting a new hobby or plan to become a pro, the projects, techniques, tips, videos, and resources in *Woodturning FUNdamentals* will help you build essential knowledge and skills. The AAW publishes *Woodturning FUNdamentals* digitally, four times each year and free to members.



D.E. MCIVOR

The temporary paper joint is one of woodturning's coolest tricks—secure enough to hold work for turning, but easily separated along the glue seam when the task is done. Here the technique is used for split turning. Two glued-up forms are turned and then split with wedges to become eight identical table legs. Another application uses the glue joint as a chucking technique—see David Springett's Pro Tips article starting on page 35.

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