VOL. 3, NO. 1 ISSUE 13

\$4.95

# WEEKEND WOODWORKING TO THE STATE OF THE STA

NEAT THINGS YOU CAN BUILD IN A HURRY

Turned mortar and pestle

Cypress-tree wall mirror

Catch-of-the-day cutting board

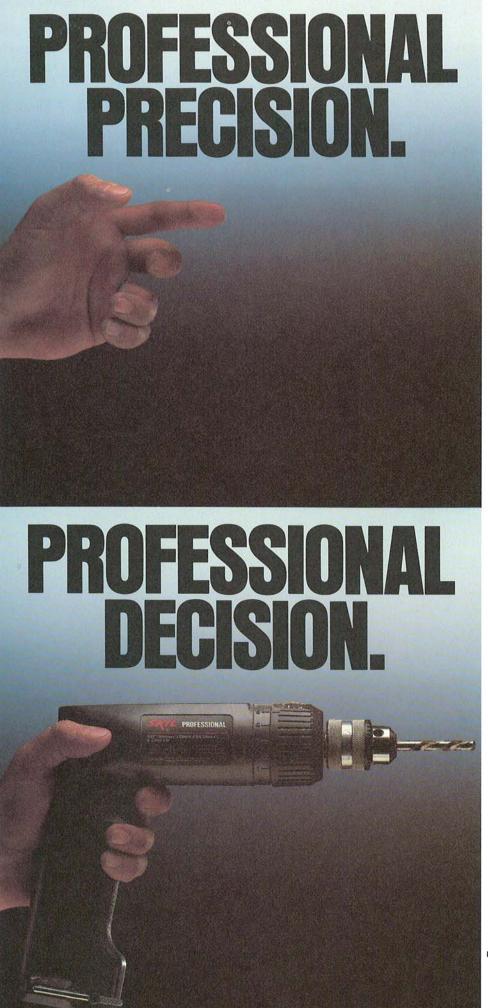
Grasshopper pull toy

Colonial-style lantern

DOVETAIL SHELVING SYSTEM

Sophisticated storage that adjusts to your needs

FROM THE EDITORS OF WOOD, MAGAZINE



Exacting tradesmen feel empty-handed without the right tool.

That's why they're reaching for the Skil 2503 cordless %" drill/driver. It delivers features professionals demand.

Like a 5-position variable torque clutch to prevent overtightening screws. Two-speed trigger switch. A builtin 7.2 volt battery pack that recharges in an hour.

All at a price that's as comfortable as its feel. Even for serious do-it-yourselfers.

For a decidedly superior cordless drill/driver, the Skil 2503 is precisely the right choice.

Subsidiay of Emerson Electric Co., 4300 W. Peterson Avenue, Chicago, IL 60646. © 1989 Skil Corp.



Dear Reader,

#### WITH A LITTLE HELP FROM MY FRIENDS

Every few days, a subscriber sends in a letter and photo of a project that he or she has developed and asks if we would be interested in showing it in the

magazine. When this happens, I walk the photo of the project around the

department and share it with the staffs of both WOOD and WEEKEND WOODWORK-ING PROJECTS—the project builders, writers, designers, and secretaries. Even those passing through the department have been asked to give their opinion on a project design.

As you might imagine, reactions vary. You hear things such as "Too difficult to build," "The design is too personal," and "That idea has been around the block one too many times."

Sometimes though, you hear "Wow, that's really neat!" Such honest

praises tell me exactly what I need to know, helping me decide whether or not the project has any chance of making magazine stardom.

One candidate that passed this acid test happens to be in this issue, and it's a good example of how we work with subscribers on accepted project ideas. The project is the colonial-style lantern on pages 14-17, submitted by John Breisch of Lakewood, Ohio.

Back in September of 1988, I received John's letter. In it were photographs of what he called his "Paul Revere" lantern, building instructions, and a line that read, "I built about 50 [lanterns] and gave them to my friends and they all think they're great."

When I shared the idea with the department, it turned out that everyone agreed with John's friends. But we felt some design changes and minor construction improvements were in order.

As we proceeded to develop working drawings and build the project, we made still more design improvements, consulting with John, project builder Don Wipperman, and John Williams, a curator at Colonial Williamsburg, Virginia. (Note that where we use silicone to hold the glass pieces in place, John glues on wood strips. He feels it's less messy and offers a more finished look. We'll leave

this decision up to you.)

#### MAIL-ORDER LANTERN PARTS

Then came the business of assembling the mail-order lantern kits which contain the wiring and brass parts. This appeared to be a stumbling block until John's son Jack, a carpenter among other things, stepped in and offered to fulfill the kit orders at a reasonable price. Finally, and I say this with a great sigh, we reached the point when we could photograph and write about the project.

If this sounds like a lot of work, I can tell you that it was. But when I

look at the walnut lantern, with its gleaming solid brass and flickering light, I know the effort was worth it. Thanks, John, for your great contribution.

Jim Harrold Managing Editor

Jem Hassol

- CHECK OUT THESE TIPS AND JIGS
   Using a dowel plug when drilling a hole within a hole—page 16.
- Using paper to transfer drill-hole marks from one part of a project to another—page 17.
- Drill-press jig for centering wheels and other round wood pieces—page 20.
- Jig for routing a recess in a board—page 23. Note: To find the tips and jigs, turn to the pages and look for the tinted step numbers.

#### WEEKEND WOODWORKING

JAN. • 1990 VOL. 3, NO. 1 ISSUE 13





## ODOVETAIL SHELVING SYSTEM

Add beauty to a bare wall with this super storage project. Adjustable-shelf supports and bookends let you design a system suited to your needs.

## CATCHY FISH CUTTING BOARD

We stacked maple, cherry, and walnut boards, applied our fish pattern, and cutout the parts for the cutting board shown *below*. With the remaining cut pieces, we assembled two more cutting boards. What a bargain!



### COLONIAL-STYLE

If you enjoy early American furnishings, then you'll love this project. We fashioned our lantern after the candle-burning ones of the 18th century. We've also assembled a kit with all of the electrical and brass parts.



PROJECTS FOR ALL TASTES

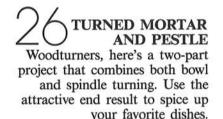
HOP-ALONG GRASSHOPPER

When tugged, this happy-go-lucky grasshopper rolls forward, its hind legs leaping and abdomen bobbing much like the real bug. For contrast, we used maple and mahogany for the legs and body.



## 22 CYPRESS-TREE WALL MIRROR

This striking project looks like something only a skilled artist could make, but with our techniques and full-sized pattern, you'll find it easy to do. All you need is a scrollsaw, router, carving gouge, a rotary carving tool, and a free Saturday.





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#### **OUR PLEDGE TO YOU**

Prior to publication, we build every project presented in WEEKEND WOODWORKING PROJECTS step-by-step in our shop. Then, a team of editors reviews each element of each wood project-directions, illustrations, and bill of materials—to make sure the instructions we provide you are clear, concise, and complete.

The Staff of Weekend Woodworking Projects\*

## DOVETAIL SHELVING SYSTEM

IT ADJUSTS TO YOUR EVERY NEED

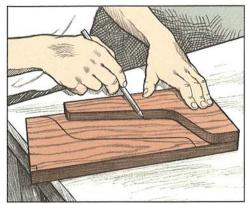


Adjustable shelving has never been easier to use or more attractive. Our oak system features sliding dovetails to make adjusting shelves and built-in bookends a breeze. Better yet, you can reduce or enlarge the system to accommodate your storage and display needs.

Note: We spaced our shelving supports at 32" intervals, attaching them to wall studs on 16" centers. If your wall studs measure 24" from center to center, you'll need to adjust the shelf lengths accordingly. You will find the dimensions and number of pieces needed for the system pictured at left listed in the Bill of Materials opposite. Feel free to modify the system to fit your needs.

#### FIRST, CUT ALL OF THE PIECES TO SHAPE

- 1 From ¾"-thick oak, rip and crosscut the wall standards (A) to size, or to the lengths you need.
- **2** To make the shelf supports (B), rip and crosscut a piece of  $\frac{3}{4}$ "-thick oak to  $7 \times 12\frac{1}{2}$ " for each pair (see the Cutting Diagram on page 9 for how we layed out the parts).
- 3 Using carbon paper (or a photocopier) and the Shelf-Support and Bookend-Support patterns on page 9, make full-sized templates for these parts. (We traced the patterns onto thin plywood, and then cut them to shape on our scrollsaw.) Put the bookend-support template aside for now. Place the shelf-support template on the oak pieces and trace around it as shown top right.
- **4** With a bandsaw, saw the shelf supports (B), including the  $\frac{3}{8} \times \frac{3}{8}$ " corner notches, to shape. (To save time when making identical pieces,



we stuck several pieces together face to face with double-faced tape, and then cut them out in one operation.)

5 Sand the bandsawed edges. (We cut outside the line, then sanded the curved portions to the line, using a drill press fitted with a 11/2"-diame-

ter sanding drum as shown at right. The auxiliary wood top on our drill press table has a 2"-diameter hole in it so the bottom end of the sanding drum can be lowered below the surface of the top.)

6 From 34"-thick oak, cut the support caps (C) to the dimensions listed in the Bill of Materials.

7 For each bookend support (D), rip and

crosscut the required number of pieces (two per shelf) of 3/4"-thick oak to 3×61/8". Trace the bookendsupport template made in step 3 onto each piece. Bandsaw the pieces to shape. Sand the curved edges.

8 Rip and crosscut one piece of 34"-thick oak to 31/4 × 61/4" for each bookend (E) needed. Scribe a 3/8" radius on the top corners of each. Bandsaw the corners, and sand.

9 To make a shelf (F, G), rip three 34"-thick oak boards to 31/4" wide

Dovetail groove centered. 1/4" chamfers on sides only. Do not chamfer ends. Support cap (C) Shelf support (B) Rout each side using a 1/2" B dovetail bit to form a 1/2"wide dovetail tenon. 1/4" chamfer on both sides and on top edge. 5/32" hole countersunk inside of groove spaced 6" apart. 1/2" dovetail groove 3/8" deep **TENON AND GROOVE** 1/4" dowel 1" long shelf-support stop. DETAIL 1/4" holes spaced 3" apart for shelf-support stops.

3/32 × 11/4 × 9" cork

1/4" chamfer

Wall standard (A)

(backside shown)

#8×2" F.H. wood screw

and crosscut to the desired length plus 2". (We extended our shelves 4" beyond the outside standards.) Edge-join three boards to form each shelf. Later, trim the shelves to 91/2" wide and the length you need.

#### **Buying Guide**

Cork Sheet. One 3/32×12×13" piece. (One sheet yields 12-11/4 ×9" strips.) Specify catalog no. 8880. Price: \$2.50 per sheet, plus \$3.50 postage and handling per order. Order from: Meisel Hardware Specialties, P.O. Box 70-WWW, Mound, MN 55364.

Bill of Materials							
Part	Fi	-:					
rui	T	W	L	Matt.	Ory		
A* standard	3/4"	13/4"	72"	0	3		
B shelf support	3/4"	61/8"	93/8"	0	10		
C cap	3/4"	11/4"	9"	0	10		
D bookend support	3/4"	3"	61/8"	0	8		
E bookend	3/4"	31/4"	61/4"	0	8		
F* shelf	3/4"	91/2"	74"	0	2		
G* shelf	3/4"	91/2"	42"	0	2		

Dovetail tenon (top edge)

Dovetail tenon (back edge)

Dovetail groove centered.

81/4"

\*Adjust the length of the above parts marked with an \* to fit your requirements. Adjust the number of parts as needed also. Please read all information before cutting the stock.

Material Key: O-oak

Supplies: #8×1" flathead wood screws, #8×2" flathead wood screws, 1/4" dowel, cork, finish.

Project Design: James R. Downing

Illustrations: Kim Downing, Carson Ode

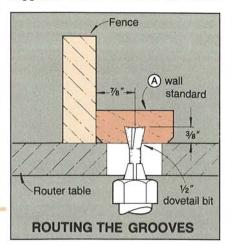
Photograph: Bill Hopkins

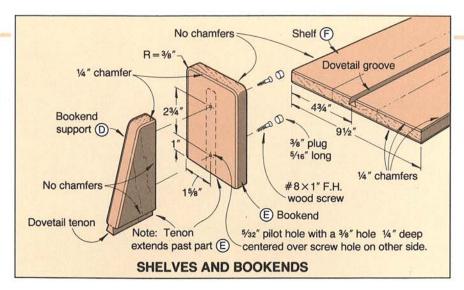
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#### SHELF SYSTEM

#### TIME FOR SOME ROUTER MAGIC

- 1 Fit your table-mounted router with a ½" chamfer bit. Cut a ¼" chamfer along the edges on the standards, shelf supports, support caps, bookend supports, bookends, and shelves where shown on the exploded-view drawing, the Tenon and Groove Detail, and the Shelves and Bookends Drawing.
- 2 Chuck a ½" dovetail bit in your table-mounted router. As shown in the Routing the Dovetail Grooves Drawing below, rout a dovetail groove down the center of each wall standard, support cap, and shelf.
- 3 Without moving the bit, set the router-table fence as shown in the Routing the Dovetail-Tenons Drawing below right. Test rout a dovetail tenon along one edge on a piece of scrap. Check the fit of this test tenon in the dovetail groove of a support cap—you want it to fit snugly but slide in the groove. Move the fence to change the tenon thickness.
- 4 Next, rout a dovetail tenon along the top edge of each shelf support. Don't tenon the back edge yet—you'll do that in the next step.
- **5** Reposition the fence to rout a slightly narrower (about ½32") dovetail tenon. Again, test-cut the tenon in scrap stock, and check its fit in a wall standard's dovetail groove. The supports should slide a bit easier

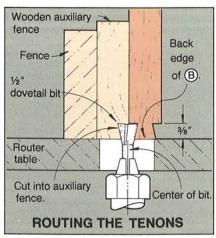




than the support cap does. Rout a tenon along the *back* edge of each shelf support and along the *bottom* edge of each bookend support.

#### NOW, LETS ASSEMBLE THE SYSTEM

- 1 Apply glue to the dovetail on the top edge of the shelf supports. (We used yellow woodworker's glue.) Slide on the support caps, and align the front ends.
- **2** Mark the centerpoints for the screw holes on the face of each bookend. (See the Shelves and Bookends Drawing *above*.) Drill the holes as detailed. Glue and screw a bookend to each bookend support. Using a 3%" plug cutter, cut 5/16"-long oak plugs, and glue them in the 3%" holes. Sand the plugs flush with the face.
- **3** Using the dimensions on the exploded-view drawing, mark the centerpoints for the screw mounting holes and dowel holes in each wall standard. (To ensure alignment of the holes on all standards, we

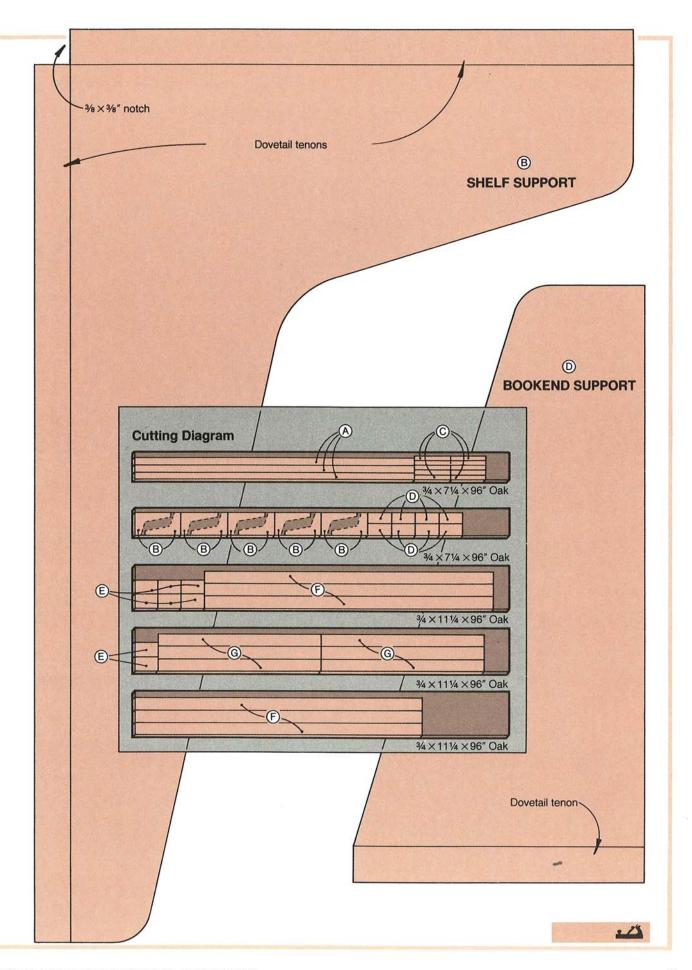


ganged the standards side by side and marked them with a square.)

- 4 Drill and countersink the 5/32" holes in each wall standard for the mounting screws and the 1/4" holes for the shelf-supporting dowels.
- **5** From ½"-diameter dowel stock, cut 1"-long pieces (we cut 10) for the shelf-support pins.
- **6** Cut  $1\frac{1}{4} \times 9^{n}$  strips of  $\frac{3}{32}^{n}$ -thick sheet cork (available at crafts supply stores or from our Buying Guide source) and glue one to the top face of each support cap. (See the exploded-view drawing.)

#### APPLY THE FINISH, AND THEN HANG THE SYSTEM

- 1 Finish-sand all pieces.
- 2 Apply the finish. (We left ours unstained, brushed on three coats of polyurethane, rubbed each coat with #0000 steel wool, and then wiped the surface with a tack cloth.)
- **3** Locate the studs in your walls, and with the shelf support holes level, fasten the wall standards to the studs. (For this, we used  $\#8\times2''$  flathead wood screws.)
- 4 To assemble the system, slide the shelf supports into the wall standards' dovetail groves. Insert the ½"-dowel pins beneath each support to hold them at the desired location. Add the shelves, and insert the bookends in the shelf grooves.



#### CATCH-OF-THE-DAY



# CUTTING BOARD

Walnut, maple, and cherry combine to make this one of the more decorative cutting boards you'll find anywhere. Use one side for cutting and the other for show. A hole in the tail lets you hang the board neatly on your kitchen wall. With our full-sized pattern and instructions, you can make three cutting boards at once.

#### FIRST, CUT OUT THE PARTS

1 Start with 34"-thick pieces of walnut, cherry, and maple measuring at least 10" wide and 19" long. Square each piece, and then rip three ½16"-wide strips from the edge of each piece for use as trim. (We cut extra strips in case one broke while assembling the board.) Rip the boards to 9" final width.

**2** Using double-faced tape, stack the three pieces face to face, aligning the edges.

**3** Trace (or photocopy) the three pattern parts on pages 12 and 13 onto pieces of paper. Tape the tail pattern to the rest of the pattern where indicated to make a

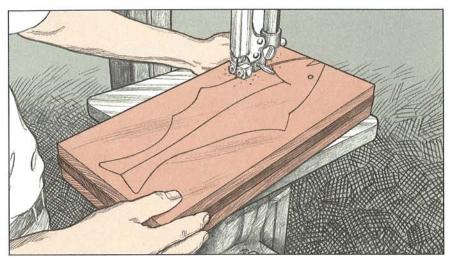
complete pattern.
Apply spray adhesive to the back of the pattern, and adhere it to the top board of the stack, aligning the fish's nose with the front edges, and the pattern sides with the side edges.

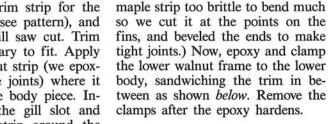
4 Chuck a 3/8" bit in your drill press and drill the eyehole through all three pieces where indicated.

**5** Using a bandsaw equipped with a ½"-wide blade, saw the pattern to shape as shown *opposite top*. Make the saw cuts in the sequence and direction shown on the pattern. (We cut to the inside line on the fish's double outline, and centered the blade on the double line when cutting within the fish body.) Separate the pieces and remove the tape.

#### NEXT, ASSEMBLE THE FISH

1 Dry-assemble the board, mixing and matching the pieces until you have the wood pattern you want. (On the board pictured, we used maple for the head and upper body, cherry wood for the fish's lower body, and walnut for the frame.)



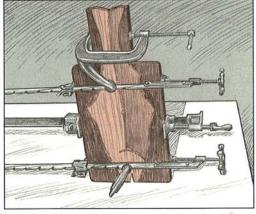


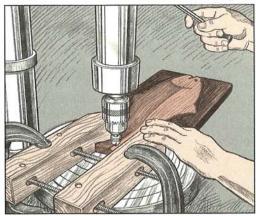
4 Fit the cherry strip between the fish's head and upper body and the upper walnut frame. Epoxy and clamp these parts together the same way you joined the first subassembly. Remove the clamps from the assembly after the epoxy hardens.

**5** Fit a walnut strip between the two subassemblies, apply epoxy to

the adjoining edges, and then clamp the subassemblies together, as shown top right. (We placed scrap pieces between the clamps and board to prevent marring the wood.) Remove the clamps from the assembly after epoxy hardens.

6 Using a plug cutter, make a 3/8"-diameter plug from a scrap of 3/4"-thick walnut. Epoxy the plug in the eyehole. Us-



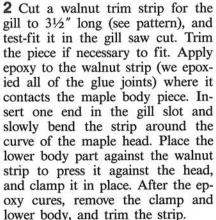


ing a 50-cent coin, place it on each corner of the board and scribe the corner radius. Bandsaw the corners. Belt-sand both surfaces and the exposed edges using 80-, 120-, and finally 220-grit sandpapers. Using a 1/8" round-over router bit, round over the edges on both sides. Next, clamp the board to the drill press table, and then drill and countersink the 3/8"-diameter hole in the tail as shown above. Finally, turn the board over, and with the same bit, countersink the same hole on the opposite side.

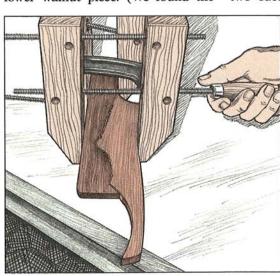
7 Finish the board with a safe, non-toxic product such as vegetable oil or Behlen's salad bowl finish. (To preserve the wood, avoid soaking the cutting board in water. Periodically reapply the finish to renew it.)

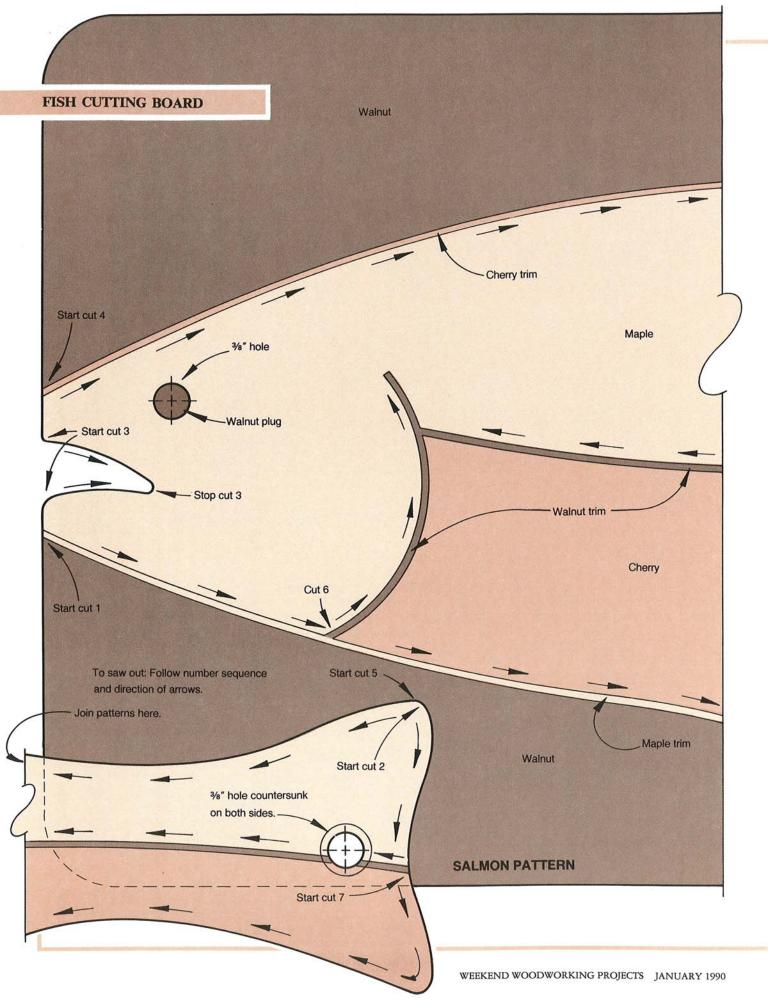
Supplies: Epoxy, finish.

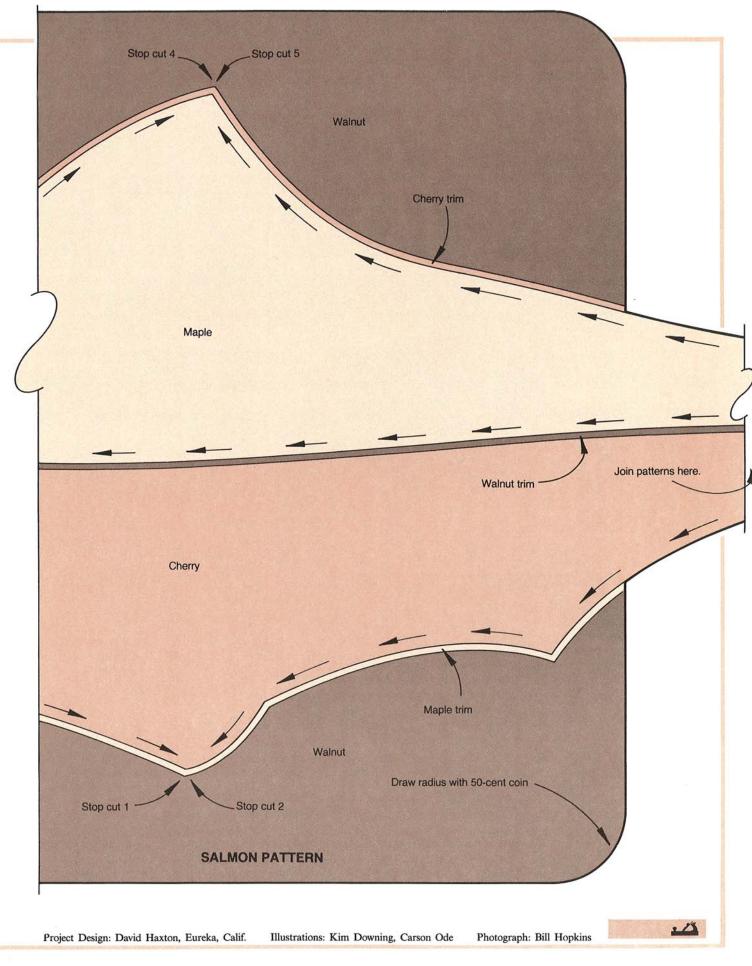
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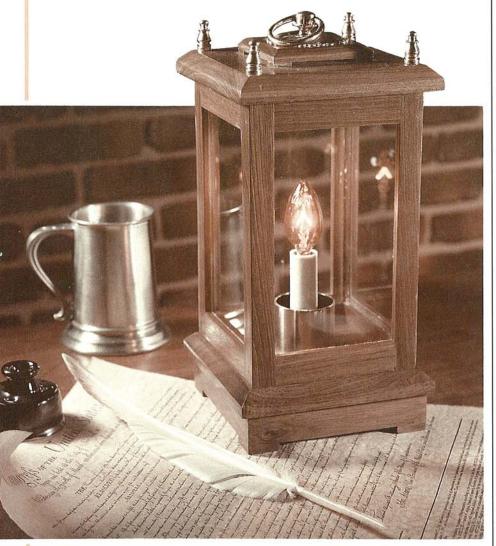
3 Cut and fit a maple trim strip between the fish's lower body and the lower walnut piece. (We found the







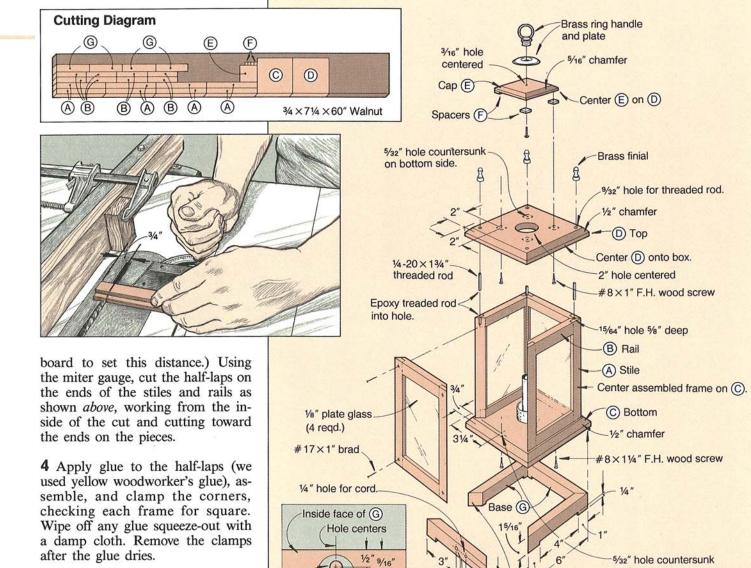
# COLONIAL-STYLE LANTERN WITH A MODERN TWIST

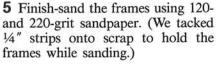


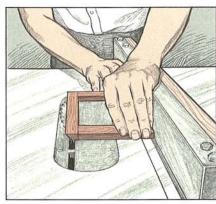
During Paul Revere's day, people in the Colonies used primarily candle lanterns to light their way through the darkness. These were made from punched tin, sheet iron, brass, copper, and wood. Our walnut and glass lantern offers a historically faithful design with a modern twist-it's lighted by electricity. To help you make our lantern, we've assembled all of the electrical and quality brass parts in a one-stop-shopping kit listed in the Buying Guide on page 15.

#### MAKE THE GLASS FRAMES FIRST

- 1 From ¾"-thick walnut, rip two 37"-long strips to ¾" wide. (We started with a 7½ × 54" board and crosscut it at 37". See the Cutting Diagram top right.) From the same ¾" stock, rip and crosscut two 23"-long strips 1" wide. Next, plane or resaw these ¾"-thick strips to ½" thickness. Sand all edges.
- 2 Cut a ¼"-wide, ¼"-deep rabbet for the glass panels on one edge of the ½"-thick strips. Crosscut eight 9" lengths from the ¾"-wide strips for the stiles (A). Crosscut eight 5½"-long lengths from the 1"-wide strips for the rails (B).
- 3 Lay out the stiles and rails with their outside face up to form four frames. (We marked the outside face of each part.) Mark the location of the ¾" half-laps on the ends of each piece. (Study the Half-lap Detail on the Frame Assembly Drawing on page 16 carefully.) Lower the saw's blade to ½ the thickness of the frame pieces (¼"). Clamp a spacer block to the fence. Adjust it so the spacer block measures ¾" from the outside edge of the saw blade. (We used a ¾"-thick







**6** Tilt the saw blade 45° from vertical and away from the fence. Adjust the fence so the top of the blade bevel-cuts through the top outside

#### **Buying Guide**

3/8" hole

● Lantern kit. Brass ring handle and mounting plate, four solid brass finials, threaded rod, 4" plastic tube, 2" solid brass tube, canopy push switch, lamp cord and plug, lamp socket, candlestick bulb, wire nuts, staple. \$30. ppd. Order from: Chagrin Falls Woodworks, 110 Laurel Rd., Chagrin Falls, OH

1" hole 1/2" deep

SWITCH HOLE

DETAIL

corner of the frame. (See the tinted areas in the Frame Assembly Drawing.) Bevel-cut both edges on the four frames as shown at *left*. (For clarity, we do not show the saw guard in place here, but recommend using one whenever possible.)

Part		Fi	-			
		T	W	L	Matt	Qty.
A	stile	1/2"	3/4"	9″	W	8
В	rail	1/2"	1"	51/2"	W	8
С	bottom plate	3/4"	61/2"	61/2"	W	1
D	top plate	3/4"	61/2"	61/2"	w	1
E	сар	3/8"	31/4"	3¼"	W	1
F	spacer	1/8"	1/2"	1/2"	W	4
G	base	3/4"	15/16"	6"	W	4

Miter corners.

Material key: W-walnut

Supplies: Masking tape, 1/6" plate glass, epoxy, 8—#5x1" flathead wood screws, clear silicone caulk, finish.

continued

on bottom side.

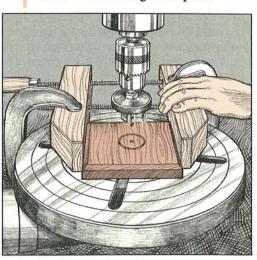
#### LANTERN

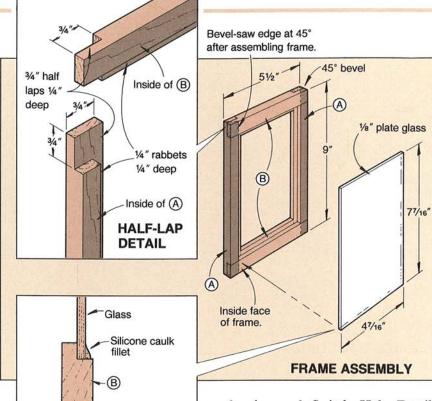
#### NEXT, MAKE THE LANTERN TOP AND BOTTOM

1 To make the plates (C, D), rip and crosscut two 3/4"-thick walnut pieces from the remaining 71/4"-wide walnut stock to 61/2" square. Finishsand the edges. Draw diagonal lines on one face on both squares to locate the centers. Using the exploded-view drawing, mark the four screw holes in both pieces.

**2** Drill the 5/32" pilot holes (and countersink them on the underside) through the top and bottom plates where marked. (When drilling, we backed all workpieces with scrap to prevent chip-out, and clamped them to the drill press table to keep the pieces from moving.)

3 Using a holesaw or Forstner bit, form the 2" hole in the center of the top plate. Next, cut the 2"-diameter, 3/8"-deep recess (see the Wiring Drawing on page 17) in the top surface of the bottom plate for the brass tube. (See the lantern kit description in the Buying Guide at the end of the article.) We used an adjustable dial saw as shown below, and tested the setting on a piece of scrap. Without moving the bottom plate, plug the hole left by the dial saw's centering bit with a length of dowel. Switch to a Forstner bit and drill a 3/4" hole 5/8" deep. Now, drill a ½" hole through the plate.





4 To make the cap (E), rip and crosscut a piece of walnut to  $3\frac{1}{4} \times 12^{"}$ . Resaw or plane this piece to  $\frac{3}{8}$ " thickness. Crosscut a  $\frac{3}{4}$ "-square from the piece. Finish-sand the faces and edges. Drill a  $\frac{3}{16}$ " hole through the center. From the remaining walnut, cut four  $\frac{1}{4} \times \frac{1}{2} \times \frac{1}{2}$ " spacers (F).

**SECTION VIEW** 

**5** Rout a ½" chamfer along the edges on the top and bottom plates where shown on the exploded-view drawing on page 15. Cut a 5/16" chamfer along the edges on the cap.

**6** Rip a 26"-long strip of ¾"-thick walnut to 15/16" wide for the base (G). Tilt the saw blade to 45° from vertical, and using the saw's miter gauge, bevel crosscut four 6"-long pieces. As shown on the explodedview drawing, mark, and then bandsaw the ¼"-deep, 4"-long notches on each piece.

**7** On one base piece mark the centerpoints for the cord hole and the two switch-mounting holes as dimensioned on the exploded-view

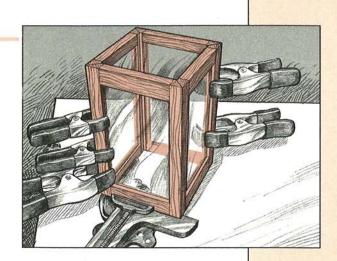
drawing and Switch Hole Detail. Drill the 3/8" switch hole through the piece. Plug that hole with a length of dowel, and then bore the 1"-diameter hole (we used a Forstner bit) 1/2" deep on the *inside* face of the piece. Next, remove the plug, and drill the hole for the electrical cord. Finish-sand the parts.

#### NOW, FINISH AND ASSEMBLE THE LANTERN

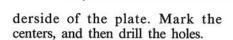
Note: Some parts will be difficult to finish when assembled. Finish these parts before assembling the lantern.

1 With masking tape, mask the areas on the frames, top and bottom plates, and cap that will be glued later. Apply finish to the inside faces of the frames, the underside of the cap, and to both sides of the top and bottom plates. (We applied three coats of clear semigloss lacquer, and sanded between coats.) Remove the tape.

2 Cut four panels of glass to fit the frame openings. Place a panel in each frame and apply a bead of clear silicone caulk around the edges of the glass. After the caulk sets, clean the frames and glass.



- **3** To assemble the frames, clamp the bottoms of two adjoining panels in a miter vise (or corner clamp) and adjust to get a good fit on the mitered corner. Loosen one clamp screw to release the frame, apply glue to the mating edges, and then reposition the frame panel in the vise again and tighten. (We drove a #17×1" brad through each frame corner to add rigidity.) Add clamps to help hold the joint until the glue sets. Using the same procedure, assemble the other corner. Next, join the corner pairs as shown above. Remove the clamps after the glue sets. Finish-sand the edges.
- 4 Position the box on top of the bottom plate and center it. Glue and screw the plate to the box with  $\#8 \times 1\frac{1}{2}$ " flathead wood screws.
- 5 Cut a piece of paper 6½" square. Center it over the top of the lantern box. In the center of each corner, mark the centerpoints for the threaded rods with an awl, pressing the point through the paper and into the wood.
- 6 Using a drill press and ¼" bradpoint bit, drill 5/8"-deep holes in each corner of the box where marked. (We held the assembly in a large woodscrew clamp and clamped it to the drill press table.) Redrill the four holes with a 15/64" bit. Epoxy a length of threaded rod (from the kit) in each hole.
- **7** To locate the matching holes in the top plate, center the paper template you made in step 4 on the un-



1/4" hole

2" dia. recess

3/8" deep for

brass tube.

Canopy push switch

Run cord

Polarized plug

Positive blade

through cord hole.

- 8 Glue the four spacers (F) between the cap and the top plate. On the underside, drill pilot holes through the existing holes in the top plate, through the spacers, and into the cap. Drive the four #8x1" flathead wood screws.
- **9** Using a miter vise, assemble two base corner pairs, and then join the two pairs together to make a square. Center, glue, and clamp the base to the underside of the bottom plate.
- 10 Mask the outside of the glass panels, and cut a piece of scrap to fit in the top of the lantern box. Finish all exposed parts. Remove the masking tape and the scrap.

- 11 Insert the 2" brass tube in the 3/8"-deep recess in the base plate. Install the canopy push switch in the switch hole as shown on the Wiring Drawing above. Wire the socket. Insert the cord and socket in the tube. Epoxy the tube in the 3/4" hole in
- **12** Thread the end of the long electric cord through the cord hole in the base. Finish wiring the switch as shown on the Wiring Drawing. Secure the cord to the underside of the bottom plate with the wire staple provided in the kit. Screw the bulb into the socket.
- **13** Attach the polished brass carrying ring and plate to the cap. Place this assembly over the threaded rods and screw on the brass finials.

WIRING DIAGRAM Wire nuts the bottom plate.

Tack wire to bottom of (C)

Threaded rod

3/4" (O.D.) plastic tube 4" long.

2" (O.D.) brass

3/4" hole 1/2" deep

#8×11/4" F.H. wood screw

tube 2" long.

Socket

A

Gold

screw (positive) Smooth

# HOP-ALONG GRASSHOPPER

A BIG BUG FOR A GOOD KID



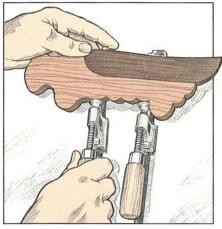
Cam-action rear wheels tell the tale of this friendly member from the insect world. Tug on the cord and our wooden grasshopper

comes alive. Its hind legs-attached off-center on the rear wheels-give the illusion of propelling the bug forward, while causing the tail to bob up and down.

#### MAKE THE BODY, WING, AND LEG PARTS FIRST

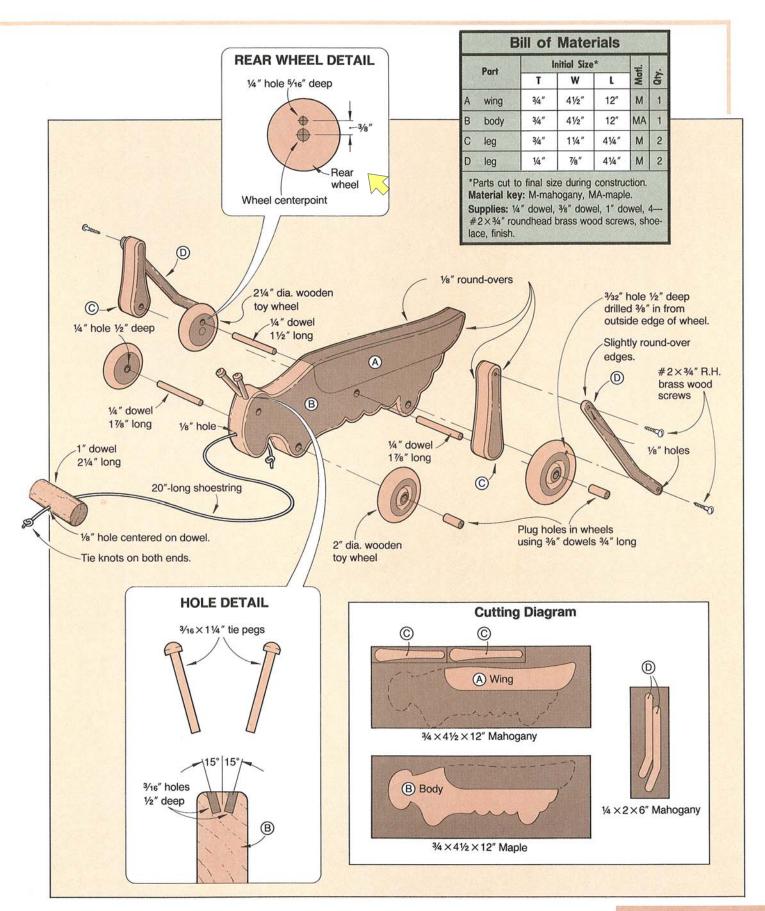
1 Rip and crosscut one piece each of  $\frac{3}{4}$ "-thick mahogany and maple to  $\frac{4}{2} \times 12$ ". (See the Cutting Diagram on page 19.) Using double-faced tape, stick the pieces together, face to face.

2 Using carbon paper, transfer the full-sized Body and Wing Pattern on page 21 onto the face of the maple piece. Mark the centerpoints for the two wheel axles, the leg axle, and the eye. With a drill press, drill the three 5/16" holes and the 1/4"-eyehole through both pieces. (We backed all parts with scrap when drilling to prevent chip-out.)



3 Using a scrollsaw, follow the solid lines on the pattern, and saw the body and wing to shape. Separate the parts and remove the tape. Next, glue and clamp the mahogany wings (A) to the maple body (B) as shown above. (We used yellow woodworker's glue.) Remove the clamps after the glue dries. Sand all edges to remove any saw marks.

Note: You can make a second grasshopper combining the remaining wing and body with the woods reversed. If you assemble the second one, you'll need to double the number of leg parts, axles, and wheels.

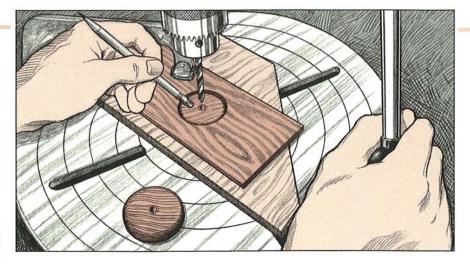


continued

#### **GRASSHOPPER PULL TOY**

- 4 Trace two full-sized patterns (page 21) of the leg (C) onto a scrap piece of 3/4"-thick mahogany. Mark the centerpoint for the 1/4"-diameter hole on one face of each leg. Drill the 1/2"-deep holes in each piece. Next, scrollsaw the parts to shape. (If you prefer, stack the two pieces together to saw out both parts at once.) Using the pattern again, mark the screw pilot hole centerpoint on the face opposite the 1/4" hole on each part. Drill these 3/32" pilot holes 1/2" deep.
- **5** Resaw a  $34 \times 2 \times 6''$  piece of mahogany to 14'' thick. (We used our tablesaw.) Sand both faces on the piece. Trace two copies of the rearleg pattern (D) onto the face of the piece. Mark the centerpoints for the 16'' screw holes. Drill the four holes. Scrollsaw the parts to shape.
- **6** Crosscut a 2½"-long piece of 1"-diameter birch dowel for the pull string's knob. Sand the sharp edges to round them over. Clamp the knob in a wood-screw clamp and drill a ½" hole through the dowel at the center for the pull string.
- 7 Chuck a ¼" round-over bit in your router, and round over the edges on the body. (As shown below, we placed the grasshopper's body on a ½"-thick foam pad while routing the edges.)

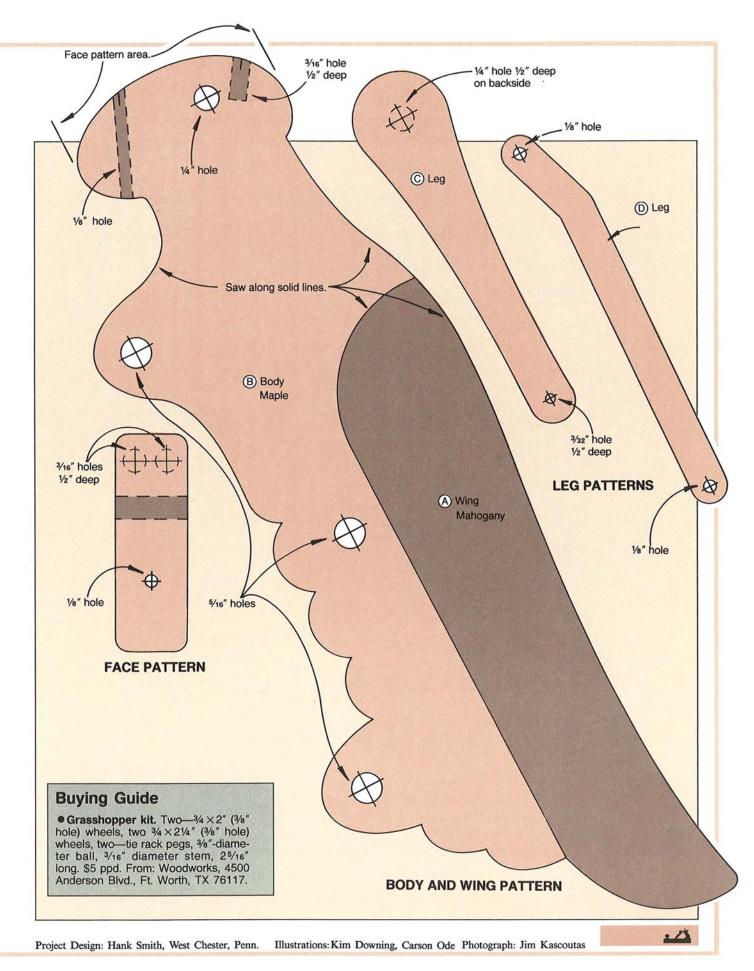




- **8** Finish-sand all parts. Hand-sand a slight round-over on the edges of leg parts C and D.
- **9** Crosscut four ¾" lengths of ¾s" dowel. Glue one in the hub of each wheel, aligning the dowels flush with the outside faces of the wheels. (See the Buying Guide on page 21 for a source of ¾"-thick hardwood wheels.) Sand the dowels flush.
- 10 Using the dimensions on the Rear Wheel Detail accompanying the exploded-view drawing on page 19, locate the centerpoint for 3/8" off-centered axle holes on the inside of the rear wheels, and the screw pilot holes on the outside. Drill the 1/4" axle holes 5/16" deep and the 3/32" pilot holes 1/2" deep. Next, locate the centerpoints on the inside of each front wheel and drill the 1/4" holes 1/2" deep. (We made the scrap plywood jig shown above to hold the wheels while drilling.)
- **11** Cut two 1%"-long lengths and one 1½"-long length of ¼" dowel.
- 12 Trace the Face Pattern on page 21 onto paper. Using the Body Pattern as a guide, place the pattern on the front edge of the body's face area. Mark the centerpoints for the two angled antenna holes (see the Hole Detail on the exploded-view drawing) and the hole for the pull cord. Drill the holes. (We clamped the body in a wood-screw clamp to hold it firmly, and then drilled the holes at the angle shown with a portable electric drill.)

#### FINISH AND ASSEMBLE THE GRASSHOPPER

- 1 Finish all parts before assembling. (We sprayed on three coats of glossy polyurethane and let each coat dry thoroughly. We sanded after the first two coats; rubbed the third coat with #0000 steel wool.)
- **2** Assemble the leg pairs as shown on the exploded-view drawing. Leave the screws slightly loose so the joints move freely.
- 3 Glue a 178"-long axle dowel in the hub of one front wheel. Glue the second 178"-long dowel in the 14" hole of one leg part C. Glue the 11/2"-long dowel in the off-centered axle hole in a rear wheel.
- 4 Place the front wheel axle through the front axle hole and glue on the opposite front wheel. (We allowed 1/8" of clearance between the wheels and body.) Next, insert the rear wheel axle through the rear hole, glue on the other rear wheel, and align them. Insert the dowel with leg part C attached to it, through the center hole in the body, glue on the other leg, and then align both legs. Finally, screw the leg parts D to the rear wheels.
- **5** Thread the pull cord through the pull-knob and the hole in the grass-hopper's nose and tie knots at each end. (We used a 20" length of shoelace.) Shorten the stem on the tie rack pegs (see the Buying Guide) to 1½" long, and then glue one in each of the antenna holes.



21

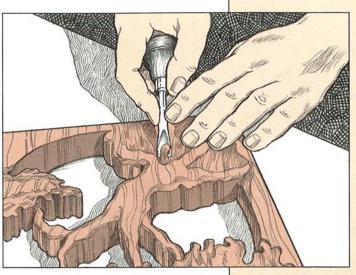


# FIND BEAUTIFUL REFLECTIONS IN OUR CYPRESS-TREE MIRROR

You don't have to be an expert carver or master scrollsawer to achieve great success with this classy mirror project. In fact, a wandering scrollsaw blade actually adds to the life-like quality of the tree's foliage. Likewise, the carving assignment amounts to little more than contouring the tree's edges with a gouge and a rotary carving tool to create relief.

#### PREPARE THE BLANK, AND SAW IT TO SHAPE

- 1 From  $\frac{3}{4}$ " stock (we used butternut), rip and crosscut six pieces to  $3\frac{3}{4} \times 13$ ". Edge-join the pieces to make two  $\frac{3}{4} \times 11\frac{1}{4} \times 13$ " panels. After the glue dries, remove the clamps, scrape off the glue, and sand the faces on both. Next, glue (we used yellow woodworker's glue) and clamp the two panels together face to face to form a  $1\frac{1}{2}$ "-thick laminated blank. After the glue has dried, remove the clamps. Now, square the blank, trimming it to a final size of  $10 \times 11\frac{5}{8}$ ". Belt-sand the surfaces and edges.
- 2 Using carbon paper (or a photocopier), make a copy of the full-sized patterns on pages 24 and 25. Include the oval outlines and the borders on the copies. Cut out the patterns, leaving a ½" margin around them. Join the two half-patterns along the lines where indicated to make one full pattern. Apply spray adhesive to the back of it, and then adhere it to the face of the blank, aligning the borders of the pattern with the edges of the blank.
- **3** Using a bandsaw, saw the radius on the corners of the blank. (We sawed outside the line, then sanded to the line using a disc sander.)
- 4 Chuck a 3/8" bit in your drill press. Drill a start hole at the centerpoint mark in each of the five areas to be cut out.
- **5** Thread a scrollsaw blade (we used  $.110 \times .020 \times 5''$  20-teeth perinch blades) through one of the pilot holes in the pattern, and attach it to the saw. Saw out the open background area. (We sawed along the oval first, and then cut along the tree outline. From time to time, we would stop the saw and pop out chunks of waste.) Repeat this process for each of the remaining areas.



# Rout ¼"-deep recess for mirror. Nail strips with 2d nails. ASSEMBLY DRAWING

95/16"

95/16"

185/8

Backside

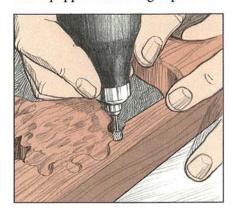
Screw eye-

Clip off corner.

NEXT, CARVE THE TREE

Note: Before carving, study the photograph and tree pattern. The carving key on the pattern suggests the depth to carve. We carved in three main areas—on the branches leading to the foliage, the edges of the foliage, and around the roots to separate them from the ground. You do not have to duplicate the relief exactly as shown. Also, we found it helpful to practice carving on scrap first.

- 1 Using a spoon gouge (we used a ½"-wide #7), carve the relief on the branches first. Take small, fingernail-sized shavings with the tool, working toward the sawed edges. Use a similar technique to cut in the shallow relief around the tree roots as shown *above*. Now, shape the edges of the foliage the same way. The carving does not have to be smooth—a rough-sculpted look actually enhances its final appearance.
- 2 Using a hand-held rotary carving tool equipped with a high-speed cut-



Design: George Myhervold, Des Moines, Iowa

ter, round the edges on the carved areas. Also, cut the shallow relief and shape the rounded carved areas where the foliage meets the frame as shown below left. (We used a Dremel Moto-Tool equipped with a ½"-diameter high-speed cutter for defining the foliage lines and some of the final detailing.) If you do not have a tool like this, complete the shaping with the carving gouge.

22"

26"

**ROUTING JIG** 

Dimensioned to use with 3/4" straight bit.

2" dia. hole

#### ROUT THE RECESS FOR THE MIRROR

1 Make the simple jig shown on the Routing Jig Drawing above. (To lay out the jig, we first drew diagonal lines on the ½"-thick plywood from corner to corner to find the center. Next, we marked the midpoint along each of the four edges. Then, using these points and a car-

penter's square, we drew lines to divide the panel into four quadrants to give us centered vertical and horizontal centerlines. From these, we measured and marked the locations for the fence strips.) Using the dimensions given on the drawing, position the  $34 \times 1''$  strips on the marks (to the outside of the marks) and nail them to the plywood. With a holesaw, cut a 2"-diameter hole through the center of the plywood.

Supplies: 1/8" plate-glass

mirror, silicone caulk, two screw eyes, 12" length of

picture wire, finish.

2 Place the plywood on your router table, center the hole over the collet, and clamp the piece to the table. Chuck a 34" straight-face bit in the router and elevate it so the bit extends 1/8" above the plywood's surface. Place the workpiece face up on the jig, starting the router bit in one of the open, scrollsawed areas.

continued

Illustrations: Carson Ode, Kim Downing

Photograph: Bill Hopkins

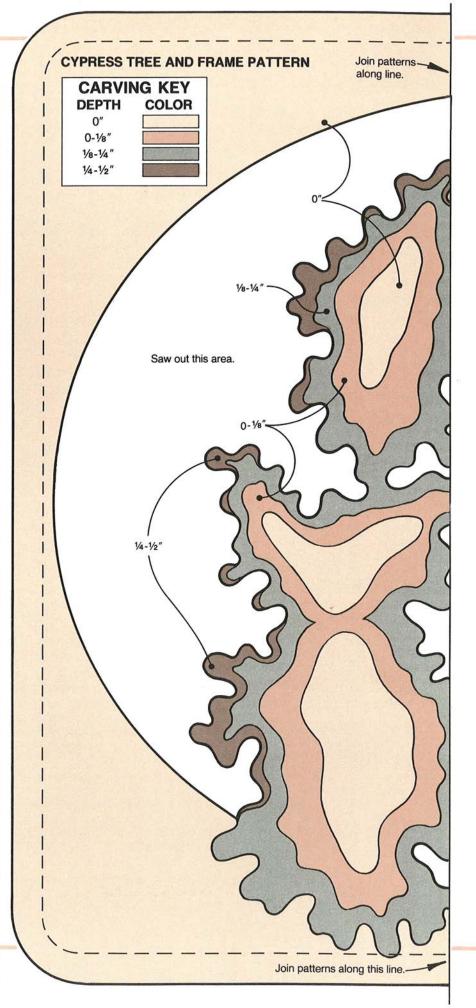
#### CYPRESS TREE MIRROR

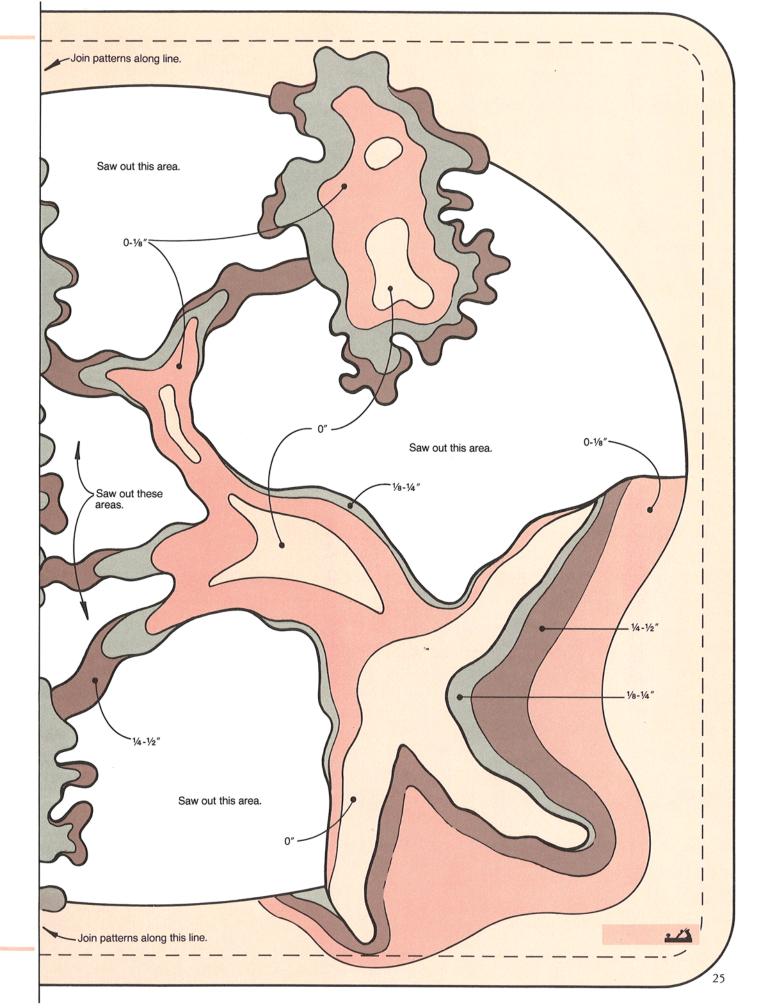
- 3 Start the router, and, holding the piece along the borders, rout the recessed area in the back as shown below. Move the workpiece back and forth across the router bit within the confines of the frame. For best results, move the workpiece at a slow, uniform speed, especially along the edges of the cutout. Rout out all of the wood within the recess. Elevate the bit to ¼" and make a second cutting pass.
- 4 Have a piece of 1/8" plate-glass mirror cut to fit the recessed back. With a glass cutter, score diagonally across the top two corners 3/4" in, and then break off the corners. Measure in 3/8" and down 3/8" from the inside top corners of the recessed back. Make a mark at each spot and drill small pilot holes. Next, turn a small screw eye into both of these holes.

#### A FEW FINISHING TOUCHES

- 1 Finish the piece. (We applied three coats of clear semigloss spray lacquer, sanding lightly between coats.) At the same time, place the mirror on a flat surface and spray a protective coat on the back of it, but do not sand it.
- 2 Install the mirror in the back recess (see the Assembly Drawing, on page 23). Apply two beads of silicone caulk along the inside edges to hold the mirror in place. String picture wire between the two screw eyes, and you're ready to hang your cypress-tree mirror.



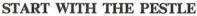




#### ADD A LITTLE SPICE WITH OUR

# MORTAR AND PESTLE

For thousands of years, cooks have ground herbs, seeds, and spices in utensils like the one below, and then sprinkled the tasty morsels on their culinary creations. Our mortar and pestle lets you continue the



1 Using carbon paper or a photocopy and spray-on adhesive, transfer the full-sized pestle and mortar template patterns on page 28 to thin cardboard. Using a crafts knife (we used an X-acto knife), carefully cut the templates to shape. Set the templates aside for now.

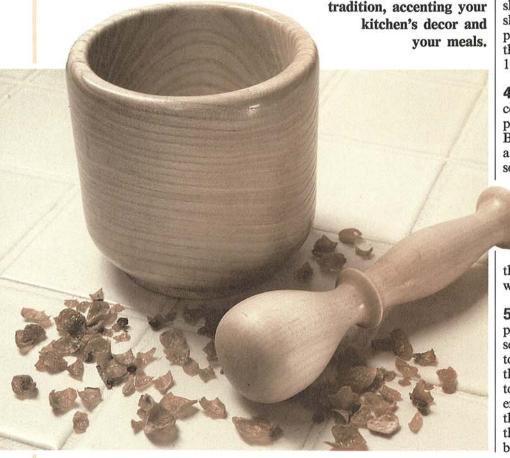
2 Square one end, and then crosscut a 7½" length from a 2" turning square. (We used maple.) Draw diagonal lines on each end of the turning square to find the center. Mount the piece between centers on your lathe, and then turn it round (we used a ½" gouge and a lathe speed of about 1,000 rpm).

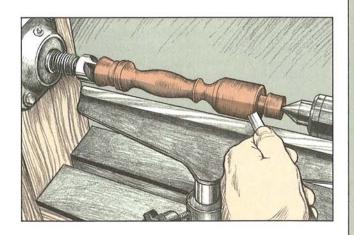
**3** Next, increase the lathe speed to about 1,200 to 1,500 rpm. Now, as shown *top right*, turn the pestle to shape using a 3/8" gouge, and the pestle template for reference. Sand the pestle smooth. (We used 100-, 150-, and 220-grit sandpaper.)

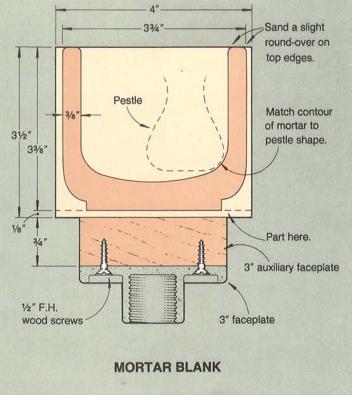
4 Wipe off the dust, and apply a coat of water-resistant finish to the pestle. (We used Behlen's Salad Bowl Finish [see the Buying Guide at the end of the article for a source] and applied it by hand with

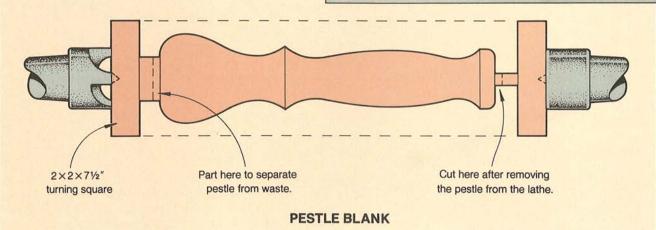
a piece of clean, used nylon hose.) Let the finish dry (overnight), and then using fine steel wool or 600-grit sandpaper, lightly sand the finish. Apply a second and third coat, and again, lightly sand, wiping off the dust between coats.

**5** To separate the pestle, make a parting cut at the bottom end to separate the turning from the bottom waste where shown on the Pestle Drawing *opposite*. Using a finetoothed saw or bandsaw, cut the top end of the pestle. Now, hand-sand the top and bottom ends of the pestle smooth and apply finish to the bare ends.









#### NEXT, TURN THE MORTAR TO SHAPE

- 1 Make a 3"-diameter auxiliary wooden faceplate and fit it to your lathe's 3" faceplate. (We made ours by bandsawing a 3"-diameter disc out of a 34"-thick piece of solid wood scrap, and then screwing it to the faceplate.)
- 2 To save turning work, round off the corners on a 4"-square, 4"-thick bowl blank. (We used our jointer and disc sander to cut down the four sharp corners.) Center and glue (we used 5-minute epoxy) one end of the bowl blank (we used ash for its decorative grain but suggest using a more commonly available

wood if you can not buy ash locally; see the Buying Guide for a source of native-wood blanks) onto the auxiliary faceplate as shown on the Mortar Blank Drawing top right. If you can't buy turning stock locally, or don't want to order it by mail, you can make your own blank. Simply cut five pieces of 34"-thick stock to 414" square. Apply glue to the mating faces, align the edges, and then clamp the pieces.

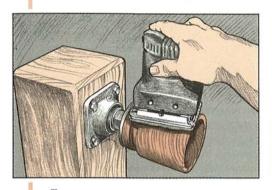
3 Thread the faceplate assembly onto your lathe's headstock. Slide the tailstock against the mortar blank, and lock it in position. The tailstock offers extra stability while turning the mortar exterior.

#### **Buying Guide**

- Turning stock. One 4"-square by 4"-thick bowl blank and one 2×2×8" turning square. Available in walnut, cherry, and maple. \$9 ppd. Johnson Wood Products, R.R. 1, Box 69, Strawberry Point, IA 52076.
- Behlen's Salad Bowl Finish. FDA approved, nontoxic finish for kitchen woodenware. One pint available for \$8 ppd. Armor Products, Box 445, East Northport, NY 11731.
- 4 Finish-turn the mortar blank round. (We used a ¾" roughing gouge and a speed of about 700 rpm. Then, we switched to a ½" gouge and turned the blank to 3¾" diameter, checking the diameter as we turned with an outside caliper.)

continued

#### MORTAR AND PESTLE



**5** Using a parting tool, form the recessed base, comparing the shape with the mortar template. Increase the lathe speed to about 1,500 rpm, and sand the mortar's exterior. (We sanded the mortar with the lathe running, then stopped it, and used a palm sander as shown *above*, to finish-sand the end grain.)

**6** Stop the lathe, back the tailstock away, adjust lathe speed to about 1,000 rpm, and position the tool rest at the end of the mortar blank.



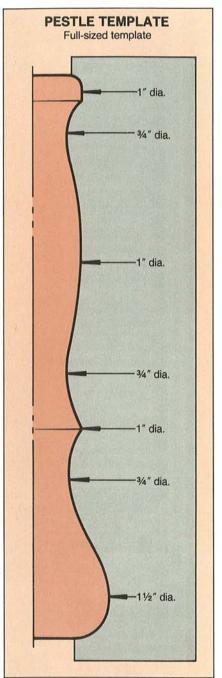
Next, using a 3/8" bowl gouge, turn the mortar cavity to shape as shown above. Keep the wall straight and a uniform 3/8" thick as dimensioned on the Mortar Blank Drawing. Shape the bottom inside curve of the mortar to match the curvature of the pestle bottom (see the Mortar Blank Drawing on page 27).

7 Increase lathe speed to 1,500 rpm, and sand the inside of the mortar smooth. Sand a round-over on the top edges of the mortar

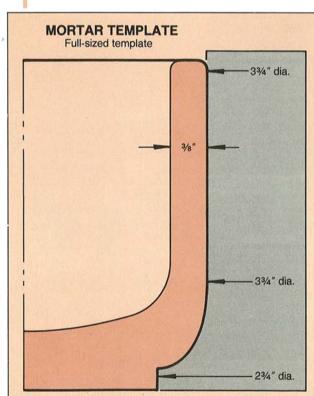
where shown on the Mortar Blank Drawing.

8 Apply the finish to the mortar, using the same process used to finish the pestle. For best results when crushing seeds and spices, use fine steel wool and slightly rough up the finish on the bottom of the mortar. Don't rub through the finish. Just remove the sheen to make a less slippery surface.

**9** Adjust the lathe's speed to about 800 rpm, and then carefully part the mortar from the faceplate, catching the piece in your right hand as it comes free. Sand the mortar bottom smooth, and apply finish to the bottom surface.



Note: You'll need to apply a new coat or two of the finish when you notice it wearing thin. To apply a new coat, lightly sand or rub the entire surface with steel wool. Apply the finish and let dry overnight. Add a second coat of finish if necessary.



Project Design: James R. Downing

Illustrations: Kim Downing, Carson Ode

Photograph: Jim Kascoutas



# Readers Corner

Because this is your magazine, it's important that you have an opportunity to sound off. Here, you can register your suggestions, criticisms, and, if you wish, a kind word or two. We may not be able to publish every letter, but we'll get in what we can. Send your letters to:

Reader's Corner
WEEKEND WOODWORKING PROJECTS™
1716 Locust St.
Des Moines, IA 50336

#### HANGING BASKETS, A FAMILY AFFAIR

toron to sentesse

I thought you'd like to hear about my experience with the hanging basket featured in issue 10.

I liked the design and decided to build one for my wife. Big mistake. It was such a hit that other family members began to grumble about being left out. (I have a big family —

15 kids and 8 grandbabies.) So I stocked up on more 1×6 redwood and started cutting it up.

Eighteen hanging baskets later, the supply finally caught up with the demand. Assembly turned into quite a family enterprise, with kids and grandkids participating in the pilot-hole drilling, gluing, and nail driving. One two-year-old grandson even got into the action with a small hammer, hitting the small finish nails about 14 percent of the time.

Anyway, your project served its purpose. A great time was had by all, and the results now hang proudly all around Dallas and Houston.

Les Gibson, Southlake, Texas

Les, that has to be one of the most heartwarming stories ever to cross my desk. Incidently, readers, Les later said in his letter that he made two separate jigs for the basket—one for the left and right basket half-assemblies.

#### PATCHING THE PLATE RACK

As an avid reader, I enjoy all of your projects, trying most as soon as possible. This month I tried the "Picture-Perfect Plate Rack" in issue 11 [pages 10-14] and ran into a few problems.

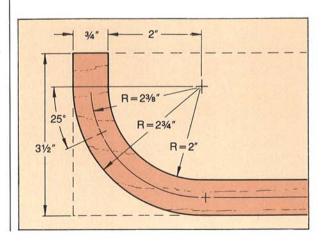
First, the Bill of Materials lists sizes that don't match up with the sizes in the text on page 11. The widths of B and C were switched.

Secondly, the rail diagram on page 13 for the rail has incorrect radii dimensions. Both misprints were detected early and I feel it an honor to find them. Keep up the good work.

Tracy Migliasccio, Marmora, New Jersey

Tracy, you earned our "Eagle-Eye-of-the-Month" award for detecting the dimension errors on the plate rack. The widths of parts B and C are indeed transposed in the Bill of Materials and should read 23/4" for B and 31/2" for C. The radii for rail C on page 13 should read as shown below. Readers, please note these changes on your copy.

We appreciate your calling the errors to our attention. So many precise facts exist in a woodworking project write-up that weeding out mistakes requires our full attention. Even though we build each project, and check each dimension several times, on rare occasions, an error slips through. I hope all our readers take the time—as you did—to let us know of any problems by writing a letter. Thanks. —JH



# WWP PROJECT INDEX

Looking for a special project featured in a previous issue of WEEKEND WOODWORKING PROJECTS™? Find it quick, using this alphabitized listing.

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Classic wall sconce	1	18-21	Oak towel ring	4	18-21
Colorful Christmas blocks	12	6-7	Off-the-wall cutting board	1	8-9
Contemporary coaster set	8	18-21	Old-thyme spice rack	1	14-17
Country basket	7	20-21	Piano music box	6	20-24
Country wood quilt	11	6-9	Picture-perfect plate rack	11	10-13
Country-kitchen butter churn	10	12-15	Pineapple bookends	11	26-28
Domed bowl (turning)	3	21-24	Planter/bench combo	9	4-7
Dresser-top mirror	4	10-13	Pocket watch clock	1	22-24
Duck-motif house sign	4	4-7	Puppy crayon caddy	4	22-24
Edge-joining boards -A primer	12	30	Push penguins (toy)	2	12-15
Eggs and bowl centerpiece	11	22-25	Rockabye doll cradle (toy)	12	24-28
Executive nameplate	3	12-13	Rose-covered keepsake box	2	4-7
Exotic wood jewelry	12	14-17	Rubber-band dragster (toy)	11	4-17
Fancy footstool	5	8-11	Rush seating made easy	10	26
Ferris wheel (toy)	6	12-15	Safari-sunset wall plaque	10	16-19
For-all-time hourglass	10	6-7	Scandinavian candle holder	6	4-5
Four novel napkin rings	2	20-21	Scrollsawed carousel	9	20-21
"Giddyap" rocking horse	3	14-17	Seagull-At-Sunset door harp	6	6-7
Handsaw bookends	7	16-19	Shadow-box showcase	12	8-11
Hanging-garden planter	10	4-5	Sportsman's coatrack	3	4-7
Heirloom child's rocking chair	10	20-25	Tapered table lamp	8	8-11
Heirloom quilt hanger	7	12-15	Tea-for-two dining set (toy)	9	12-15
High-rise basket	5	12-15	Teddy bear bookshelf	3	18-21
Holiday Candle holder	12	22-23	Terrific Turned teleidoscope	12	18-21
Hollow-log bandsawed box	6	16-19	Turned biscuit cutter	8	22-24
Honeybee pull toy	4	14-15	Whale of a stamp box	8	12-13
Indoor plant stand	5	16-19	Whirlybird on a string (toy)	1	4-7
Jelly-bean machine	2	22-24	Zigzag serving tray	8	4-7