



- Two great weekend projects: the phone center and a biplane shelf
- Save a bundle building your own contemporary sideboard
- Recreate a bit of history in the shop: a classic tea table project

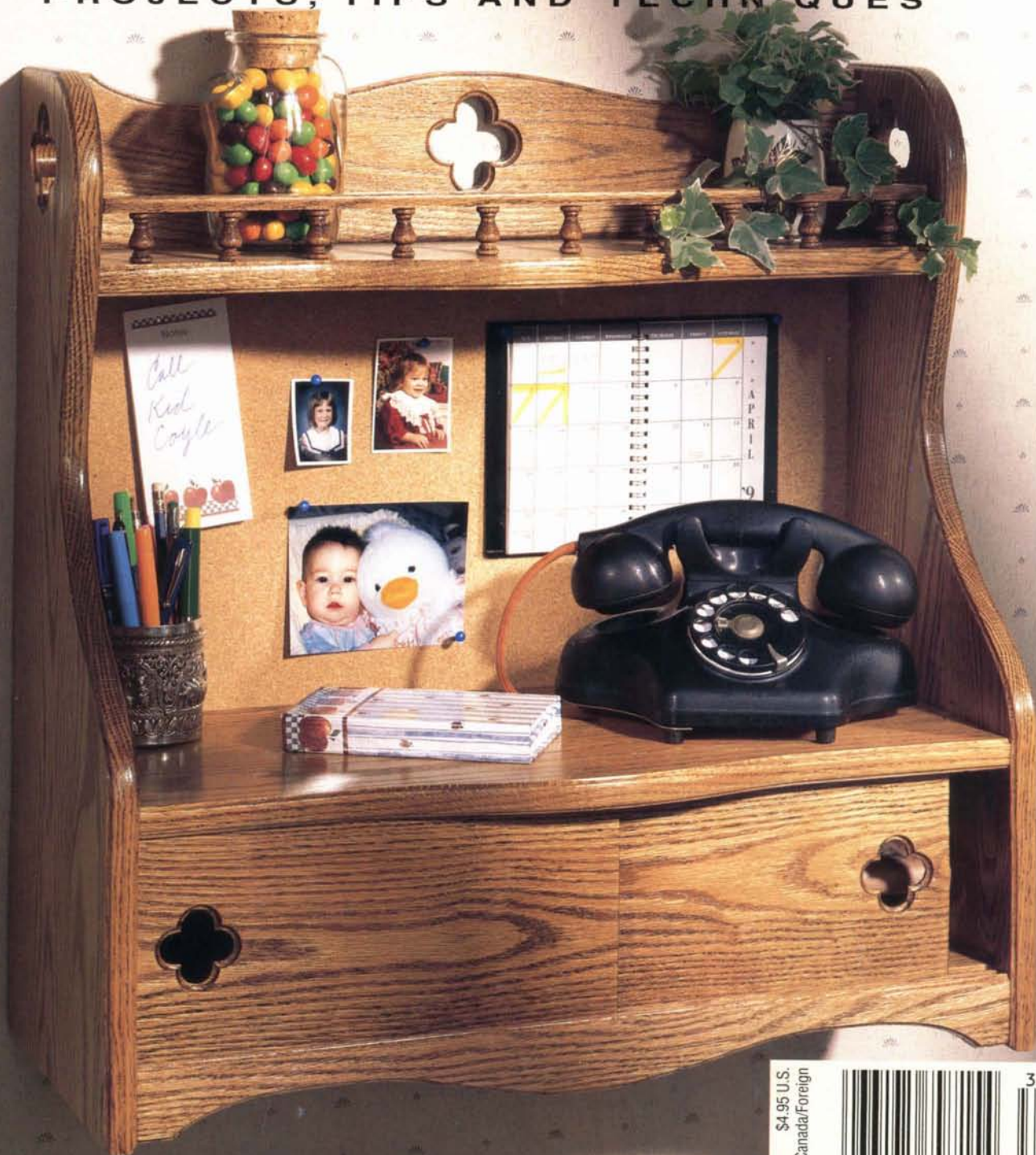


TODAY'S

Issue 38

WOODWORKER[®]

PROJECTS, TIPS AND TECHNIQUES



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TODAY'S

WOODWORKER[®]

PROJECTS, TIPS AND TECHNIQUES



21 Home Phone Center

By David Larson

Here's a great weekend project that will help you organize and store your growing list of telephone accessories.



13 Biplane Coat Rack

By Richard Starr

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6 Scandinavian Sideboard

By Rick White

In response to your many requests, we proudly present the third piece in our Scandinavian dining room set.

16 Cherry Tea Table

By Chris Inman

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Lock yourself in the shop! Hardware clerks everywhere are up to their annual lies about the delights of yard work.

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5 Today's Wood

Used wisely, rosewood and its man-made substitutes will provide colorful highlights on your special projects.

11 Techniques

Veneering with contact cement is easy if you start with the right base materials.

Safety First

Learning how to properly operate power and hand tools is essential for developing safe woodworking practices. For purposes of clarity, necessary safety guards have been removed from the equipment shown in some of the photos and illustrations in Today's Woodworker. We in no way recommend using this equipment without safety guards and urge readers to strictly follow manufacturer's instructions and safety precautions.

MARCH/APRIL 1995

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ON THE LEVEL

This Year, Let the Grass Grow

I've warned you before, but it's certainly worth repeating. As you read this, well intentioned but seriously misguided hardware store clerks are quietly stocking their shelves with a number of items that will have a serious impact on your time in the shop. You probably know what I mean: grass seed, lawn fertilizer and, (gasp) spare lawn mower parts.

It's a crying shame. Just as we're all honing our woodworking skills to a finer edge, spring rolls around and we're faced with the annual onslaught of clever come-ons about beautiful gardens and luscious green lawns.

I want to wish you the best of luck battling your own yard wars this spring and, all kidding aside, encourage you to stay in close touch with our craft of choice. Your woodworking skills will stay sharper and your shops will be a tad safer as a result.



We're presenting an exciting new idea in this issue of Today's Woodworker. The hardware kits that accompany many of our projects have been a real hit. We have, however, heard from a number of you that we shouldn't necessarily limit these kits to hardware. In our last issue we tested this idea by providing readers with easy access to a 3" square maple blank and a bent gouge for carving Susie's Soup Spoon.

The response has been terrific!

In this issue we're expanding your kit options on the Biplane Coat Rack featured on page 13. As in the past, you can still get the hardware kit by itself. If, on the other hand, you're a little short on scrap wood, we've put together an extended kit that includes the hardware mentioned above plus just the right amount of ash, walnut and cherry stock.

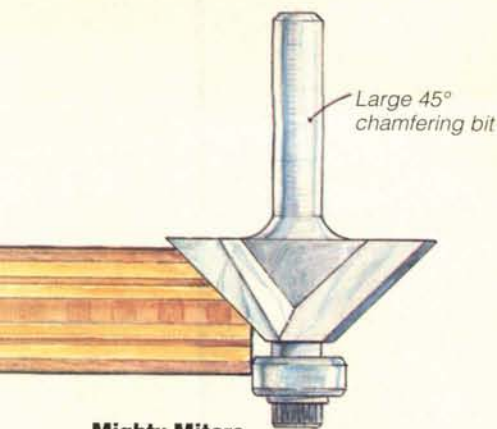
The choice is yours.



The dining room table featured in issue 23 provided Jeff Adams of Duluth, Minnesota with just the inspiration he needed for the adjustable trestle legs on his little girls' desk.

The sideboard in this issue rounds out our dining room set (we think). The table from issue 23 that started it all had to be one of our most popular large pieces. We've heard from many satisfied readers who tackled that project along with the chair from issue 24. The sideboard is not particularly difficult, but when it comes time to glue up the carcass, be sure you have some friends on hand to help. An interesting side note to this piece is that when Rick brought it in, the base was about 3" taller. Everyone thought it was a little too spindly so Rick started shaving off an inch at a time until we all agreed that it looked just right. This demonstrated how personal the woodworking design process is.

Nothing here is written in stone and I hope we emphasize that fact enough. We invite you, like Jeff Adams (see photo above), to improvise, alter and adjust our plans to your own liking.

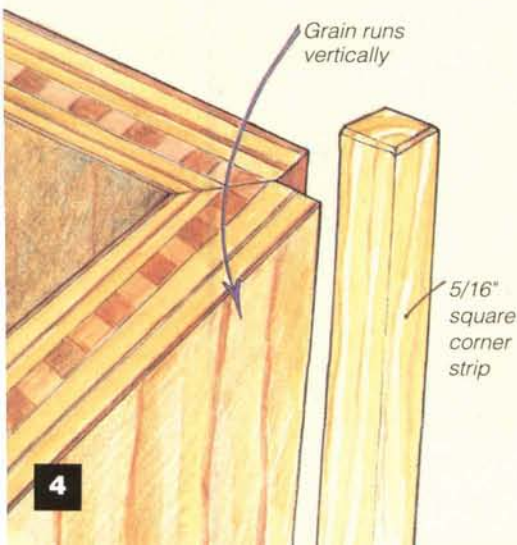


Mighty Miters

Mitered plywood corners are very fragile and susceptible to damage. I have a technique for reinforcing the corners that also eliminates any flaws in the miter cuts. This method is most effective when the miters run parallel with the grain of the plywood, unless you want to highlight the corners with contrasting grain patterns or colors.

Cut your plywood pieces 1/2" shorter than the lengths you need for your project, then rout the miters using a large 45° chamfering bit. The key here is to adjust the cutting depth of the bit to leave 1/4" of the edge unrouted, which is just what you need for the bit's pilot bearing to ride against. Now glue the perfectly cut miters together, and glue a 5/16" square strip into each corner rabbet. After the strip is secure you can plane it flush with the plywood. Pick your stock for the strip carefully and no one will ever know it's there.

*Mike McGlynn
Minneapolis, Minnesota*

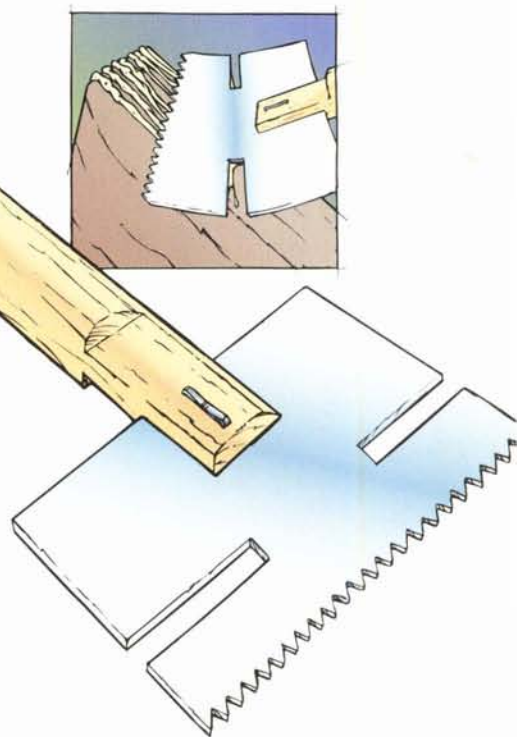


Recycled Shop Helpers

Glue Spreader

I've found that the plastic spine inside most foam paint brushes is a great tool for spreading glue. Remove the foam after its no longer useful and trim the end of the plastic with a pinking shear to control the amount of glue you'll leave on the board. You can cut deeper serrations with a utility knife if you want. After you're done, allow the glue to dry, then flex the plastic and the glue will flake right off.

*Ron Waldron
Sonoma, California*



Cover Up!

One of the most aggravating conditions in my woodworking shop is the inescapable presence of airborne dust. It's always there, unnoticed and unseen, until it's discovered on a project freshly finished the day before.

In my shop, where I specialize in making small music and jewelry boxes, I came up with at least a partial solution. After spraying a completed project with polyurethane, I quickly cover it with an old, deep meat loaf pan. The next morning I can see the dust on the inverted pan, but beneath it the workpiece has dried in an almost dust free environment.

*Jim Tite
Fayetteville, Arkansas*

It's Not Just for Halloween

Dry ice is useful for removing many types of adhesives, including the squeeze out of normal wood glues. While wearing heavy gloves I hold the ice against the glue squeeze out for about one minute, then scrape it off with a chisel. Dry ice is also useful for removing damaged floor tile.

*E. Wegner
Bloomington, Minnesota*

Grocery Bag Rags

A wet grocery bag may not hold much weight, but the paper doesn't turn to mush either. We've discovered that it's perfect for wiping up shop spills.

*Alice and Robert Tupper
Canton, South Dakota*

Take a Little Off the Top

Disposable barber shear blades make excellent whittling knives. Keep in mind, however, that the heat treatment of these blades is critical, so grind the blades to shape under water if possible and be careful to avoid overheating the steel.

*Fran Courteau
Coon Rapids, Minnesota*

Today's Woodworker pays from \$35.00 (for a short tip) to \$150.00 (for each issue's "Pick of the Tricks") for all Tricks of the Trade published. Send yours to Today's Woodworker, Dept. T/T, Rogers, MN 55374-0044.

Imperial Rosewood

By Gordon Hanson



Rosewood is to timber what gold is to metals—a highly valued and revered commodity. The name rosewood applies to species from the Dalbergia family—a group of trees spread out over the world's tropical regions. The wood from each member of the family has its own characteristics, but all of them are rich in appearance.

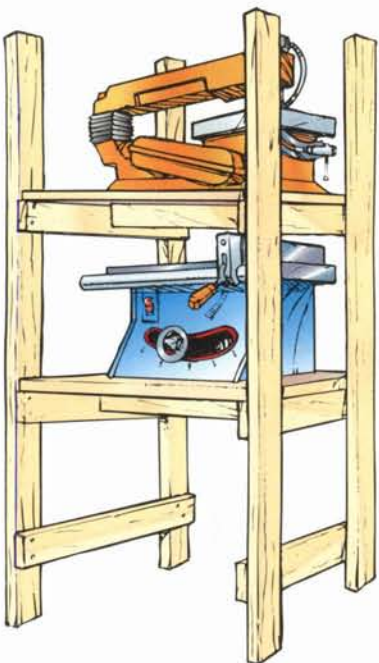
Rosewood's popularity dates back to the 1700s when affluent Europeans imported it to adorn their opulent homes. During the Louis XV period rosewood was used extensively for crafting the intricate rococo styles of the time. Beginning in the 1800s, some rosewood species were overharvested, leading to their depletion in many regions. Most notable on that list is Brazilian rosewood (*Dalbergia nigra*)—a species that now is quite scarce and extremely expensive.

Honduras rosewood (*Dalbergia stevensonii*) has a lighter color than Brazilian and is the most commonly available species today. Due to hardness it's a difficult wood to machine, and finishing requires lots of care.

Another rosewood (*Dalbergia latifolia*) comes with forenames like Indian, Indonesian and East Indian. It too is exceptionally hard, and the interlocking grain sometimes causes tear out when planing. Unlike Honduras rosewood, however, this species has good bending qualities and takes finishes well—it even polishes to a high luster when a filler is used. Indian rosewood also offers excellent dimensional stability.

Because of its oiliness, rosewood can be difficult to glue, making epoxy the best adhesive choice. For better adhesion, many woodworkers wipe both surfaces with a benzene dry cleaning fluid prior to spreading the epoxy. You'll want to wear a mask when machining rosewood as all species contain irritants that can cause allergic reactions.

Rosewood is typically priced at over \$20 per square foot. Prices like these mean rosewood is generally reserved for small projects and special accents. For larger projects, veneer is the most cost effective and wisest use of the resource. The high price and limited availability of rosewood has also inspired the fabrication of some man-made substitutes like Exotic Birch (available from The Woodworkers' Store) and Juara™. These materials are made from common domestic veneers that are compressed and dyed to look like rosewood. They're very stable and dense, but are still workable with standard wood shop machinery.

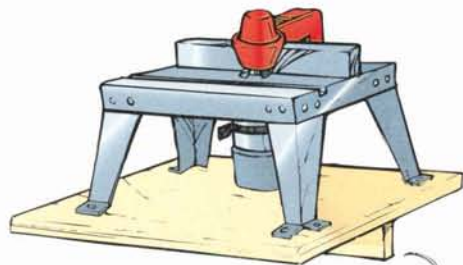


Tool Apartment

I have several bench top power tools, but don't have space to set them all up at once. As a result, I've developed a system that makes the tools easy to store and use.

I mount each tool on a 3/4" plywood base with a length of 2x4 screwed to its center. I stack the tools I'm not using in a sturdy rack, and the one I do need is held securely in my Workmate® stand.

Steve Tkaczyk
Gaithersburg, Maryland



East Indian
Rosewood



Honduras Rosewood

Scandinavian Style Sideboard

Here's the long awaited finale to our cherry dining room ensemble.

By Rick White

Over two years ago Today's Woodworker featured a dining room table that caused quite a stir (see issue #23). Furniture projects have always been popular with our readers, and the dining room table has proven to be one of the most well liked of all. We've received a steady stream of pictures from folks who have built the table just as we did, and from others who took the ideas and adapted them in their own way. One craftsman in North Carolina even won a Best of Show award for his completed table. In the next issue (#24) we offered a chair to go with the dining room table, and now I've built a sideboard to complete the set.

The sideboard adheres to the Scandinavian styling of the original pieces, and the completed cabinet will provide more than enough room for all your fine china, crystal and linens.

Cutting Your Cabinet Stock

The sideboard is made up of two parts; the cabinet and the base. I recommend building the cabinet first, which will allow you to alter the size of the base if your cabinet ends up with slightly different dimensions than mine. Start by cutting the sides, top panel, bottom and dividers (pieces 1 through 4) from

your sheet of cherry plywood. Label your pieces and set aside the top panel for now, then make the jig shown in **Figure 1**. Layout the dadoes in the sides, divider and bottom, as shown in the **panel elevations** on page 8, clamp the jig alongside each layout line and rout the 1/4" wide x 1/4" deep dadoes.



Planning Ahead: The Sideboard Project

Building, sanding and finishing the Scandinavian Sideboard will take about 40 hours. This project requires extensive use of a table saw and router, and you'll also find a drill press, hand drill and band saw or jig saw helpful. Although no special tools are needed for veneering the doors, you'll want to use non-flammable contact cement in a well ventilated room. The recommended finish is four coats of Nordic Oil.

- 1 sheet of 3/4" cherry plywood
- 1 sheet of 1/4" birch plywood
- 1/4 sheet of 3/4" Medium density fiberboard or Baltic birch plywood
- 42 board feet of 3/4" cherry
- 2 board feet of 1 1/4" cherry
- 24 board feet of 1/2" poplar
- 11 square feet of cherry veneer



Now rip plenty of banding (pieces 5) for the project and glue a strip to the front edge of each plywood panel (except for the top). The banding will cover all the dado joints, giving the cabinet a clean, streamlined appearance. Once the glue dries, use a chisel to clean off any glue squeeze out from the dados, then plane and scrape the banding flush with the surfaces of the plywood (See Figure 2). You may be tempted to use a belt sander here, but I'll warn you that it's a risky choice —on more than one occasion I've sanded through the thin veneer and had to start over.

Wrap up this first stage of the project by cutting notches at the top corners of the two dividers, as shown in the **divider elevation** on page 8. I used a jig saw equipped with a fine toothed blade and set the saw at a slow speed to get a very smooth cut.

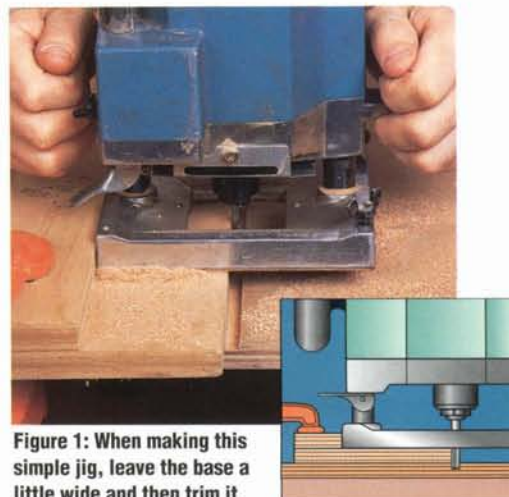


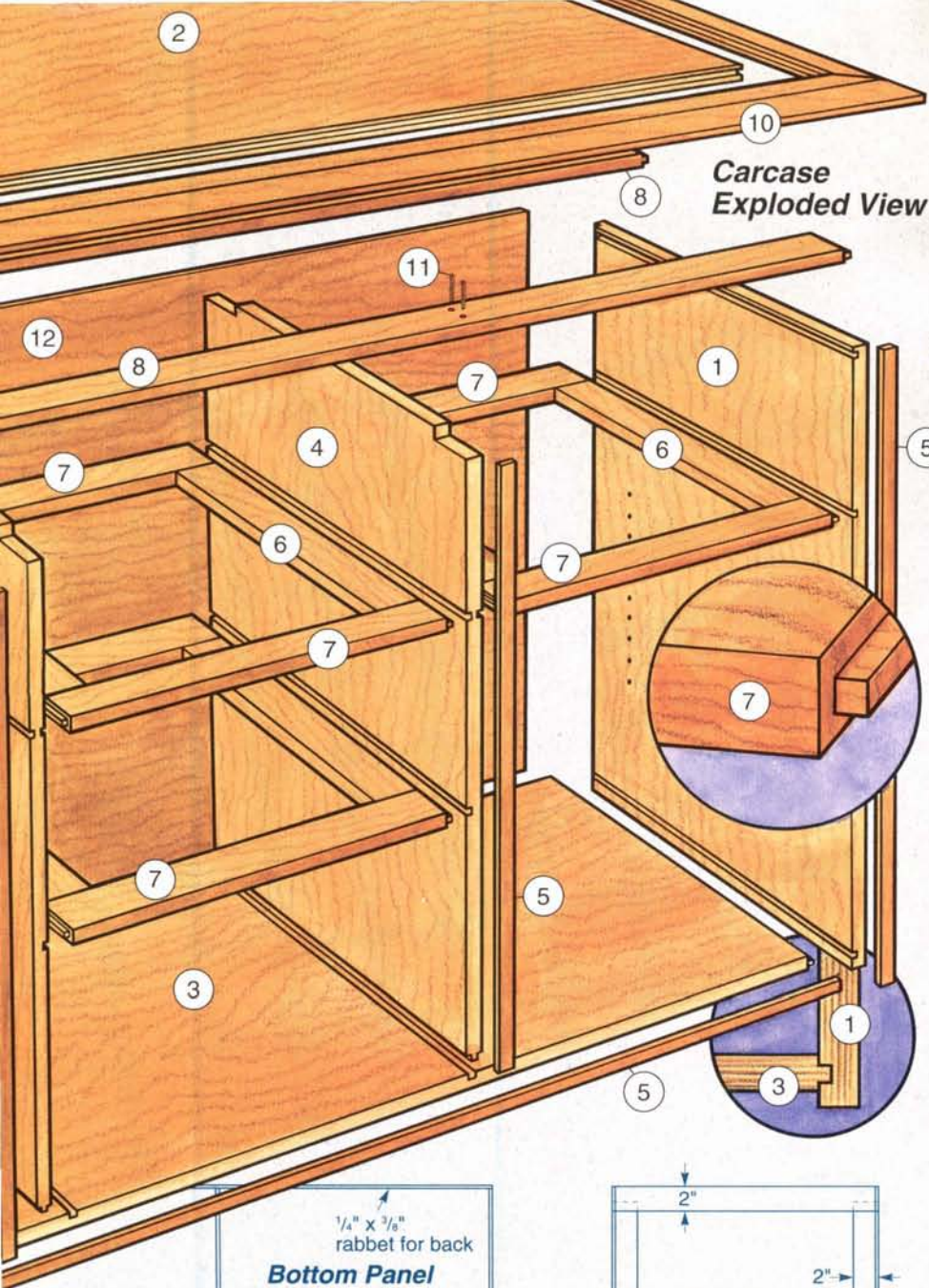
Figure 1: When making this simple jig, leave the base a little wide and then trim it with a 1/4" bit. Now you can clamp the jig so the freshly cut edge aligns with each dado layout line.

Panel Reinforcements

Each drawer opening is defined by a web frame (pieces 6 and 7), and the top is supported by two subtop rails (pieces 8). These frames and rails join the plywood panels with tongue and groove joints to give the cabinet great rigidity. I also use this joint to connect the plywood panels to each other. To cut all the tongues as uniformly as possible, the solid stock for the web frames and the subtop rails has to be the same thickness as the

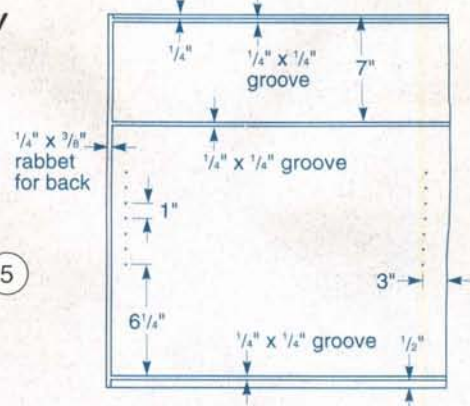
The sideboard design picks up many of the details featured in the table and chairs from issues 23 and 24. The use of sapwood highlights, beveled top edging and curved rails are just three of the common elements.



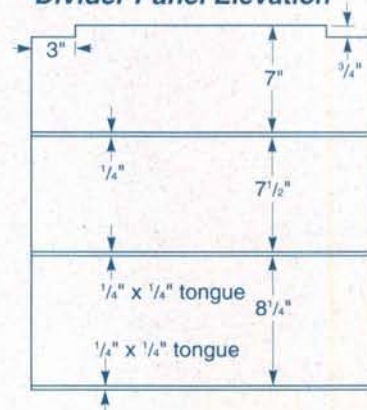


**Carcase
Exploded View**

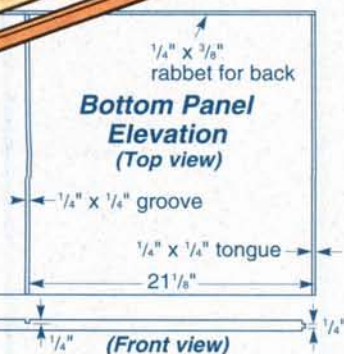
Side Panel Elevation



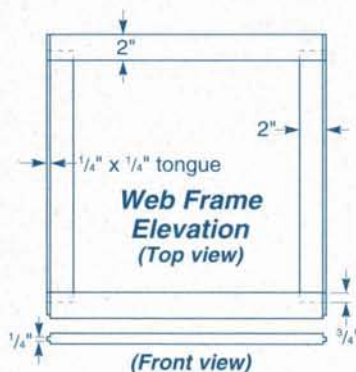
Divider Panel Elevation



**Bottom Panel
Elevation
(Top view)**



**Web Frame
Elevation
(Top view)**



Sideboard Hardware Kit

A hardware kit is available for this project that includes two pairs of 100° Blum hinges, two magnetic touch latches, two sets of 20" Accuride drawer slides, brass shelf supports, #8-1/4" screws and #4-5/8" screws.

Item #64931 (use order form).....\$57.95

MATERIAL LIST

	T x W x L		T x W x L
1 Sides (2)	3/4" x 21 1/4" x 24 1/4"	8 Subtop Rails (2)	3/4" x 3" x 63 3/4"
2 Top (1)	3/4" x 21" x 63 3/4"	9 Shelf Supports (8)	1/4" dia. posts
3 Bottom (1)	3/4" x 21 1/4" x 64"	10 Top Edging (3)	3/4" x 2" x 72"
4 Dividers (2)	3/4" x 21 1/2" x 23 1/2"	11 Screws (100)	#8-1 1/4"
5 Banding (6)	1/4" x 3/4" x 96"	12 Back (1)	1/4" x 23 3/8" x 64"
6 Web Frame Rails (8)	3/4" x 2" x 19 1/4"	13 Adjustable shelves (2)	3/4" x 20 1/4" x 20 1/2"
7 Web Frame Stiles (8)	3/4" x 2" x 21 1/8"	14 Screws (50)	#4-5/8"



Figure 2: Scribble pencil lines alongside the banding, then when you begin planing through the lines you'll know it's time to switch to a scraper.

plywood. Since plywood is usually a little under 3/4" thick, plane the lumber for the frames and subtop rails to match it. If you don't have a way to plane the solid stock, take care throughout the project to adjust each set-up to get consistently snug fitting joints with both materials.

Now rip and crosscut the hardwood stock to size and layout the stile mortises for the web frames, as shown in the **web frame elevation** at left. Rout the mortises with a 1/4" straight bit chucked in your router table (See **Figure 3**), making a number of 1/8" deep passes to reach the full 13/16" depth. Be sure to draw a stop line on the fence so you know when to end the cuts. Finish up by squaring the ends of the mortises with a chisel.

After completing the mortises, set up your table saw for cutting tenons on the ends of the web frame rails and the subtop rails. Install a 1/4" dado blade and raise it 1/4", and clamp a set-up block to the saw's fence. Using the miter gauge for support, first cut the 1/4" long tenons on the subtop rails, then reset the fence and make three passes to cut the 3/4" long tenons on the web frame rails (See **Figure 4**).

Glue the web frames together, double and triple checking each one for squareness as you go. An out of



Figure 3: To rout the stile mortises, chuck a 1/4" straight bit in your router table and draw a line on the fence that shows where to stop the cuts.

square frame will make the final carcass assembly very difficult, and make fitting doors and drawers a nightmare.

Allow the glue to dry, then sand the joints flush. As I already mentioned, the web frames and the subtop rails meet the sides and dividers with tongue and groove joints, and the bottom panel is attached to the sides and dividers with the same joint. To cut the tongues, switch to a 1/4" dado blade and clamp a wood auxiliary face to your table saw fence. Raise the blade a hair under 1/4" and set the fence so it just grazes the blade. Now cut tongues on pieces of scrap hardwood and plywood and check their fit in a dado. Once you've made any necessary set-up adjustments, cut all the tongues for a snug fit—remember to readjust your blade height if your stock varies in thickness. While



Figure 4: Clamping a set-up block to the fence for aligning the tenon cheek cuts will reduce the chance of a kickback.

you're at it, cut the 1/4" x 3/8" rabbets along the back edge of the sides and bottom for installing the back.

Complete the preliminary construction steps for the cabinet by cutting 1/4" x 1/4" notches at the front corner of each tongue. The notches will allow the front edges of these pieces to slide in flush with the rest of the carcass assembly.

Assembling the Cabinet

I found that a helper made a big difference while putting the carcass together. Begin by organizing all the parts in

some sort of order so you can join them efficiently, then spread glue in the grooves in one side panel, one divider and the bottom. Join these pieces together along with a web frame, then add the second divider and two more web frames. Wrap up the assembly by installing the last web frame, the subtop rails and the other side panel. Use bar clamps and cambered bearers to spread out the clamping pressure along the entire length of each joint (See **Figure 5**), making sure to check the cabinet for squareness as you go. Drill countersunk pilot holes and screw the subtop rails to the dividers, then use a scrap piece of pegboard as a guide for drilling holes in the sides and dividers for the adjustable shelf supports (pieces 9), as shown in the panel elevations.

Making the Top

You've already cut the plywood top to size, so now you can prepare it for joining the edging (pieces 10). Use your router and a 1/4" slot cutting bit with the appropriately sized bearing to plough a 1/4" deep groove into all four edges of the panel—be sure you center the slots on the edges.

Next, rip stock to width for the edging, letting the pieces run a few inches long for the time being. After you've ripped enough stock, install a 1/4" dado blade in your table saw and raise the blade 1/4" to form the tongues, as shown in **Figure 6** on page 10. Clamp a wood face to the fence and slide the fence right next to the blade. Now form a tongue on a piece of scrap wood and test its fit in the grooves of the plywood top, then form the tongues on the edging.

For the final step in shaping the edging rip a 22½° bevel on the top face of each piece. Now you can return the blade to 0°, angle the table saw's miter gauge 45° and miter the edging to length. Glue the edging to the top panel and use a hand plane and scraper to level the joints flush.

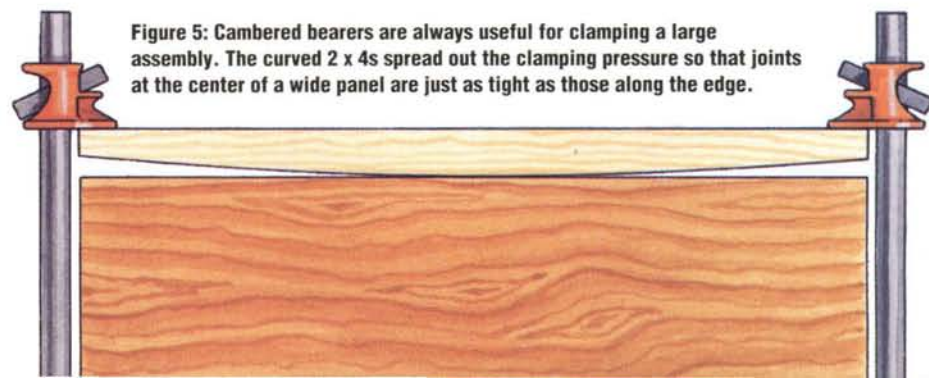


Figure 5: Cambered bearers are always useful for clamping a large assembly. The curved 2 x 4s spread out the clamping pressure so that joints at the center of a wide panel are just as tight as those along the edge.

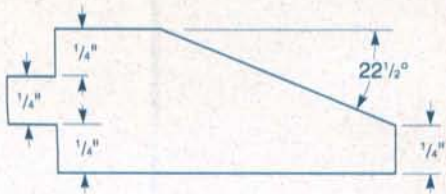


Figure 6: To make the edging, form tongues with a 1/4" dado blade and rip a bevel on the top surfaces. Miter the pieces to length when you're done.

Position the completed top on the carcase and you'll get a good sense of where your project is heading. As long as you've got the pieces in place, drill countersunk pilot holes through the subtop rails for the hold down screws.

Wrap up this stage of the cabinet construction by cutting the back and adjustable shelves to size (pieces 12 and 13). Glue banding to the front edge of each shelf and secure the back to the cabinet with screws (pieces 14).

Building the Base

Unlike the cabinet, the base is made entirely of solid wood. Get the base construction under way by cutting 1 3/4" thick stock for the legs (pieces 15)

and 3/4" thick lumber for the front and back rails, and the upper and lower side rails (pieces 16, 17 and 18). If you can find an interestingly grained piece for the front rail it will add a nice touch to the project.

With the pieces cut to size you can turn your attention to the mortise and tenon joinery. First layout the leg mortises, as shown in the **base exploded view** below, and plough out the waste with your plunge router using the router's fence attachment and a 1/4" straight bit. Set the depth of cut for 13/16", but take shallow passes to reach that full depth. Square the ends of the mortises with a 1/4" chisel.

Now set up your table saw with a 3/4" dado blade and cut tenons on the ends of all the base rails, as shown below in the exploded view and **base joint elevation**. You may need an out-board support for cutting tenons on the long front and back rails.

Cut the edge shoulders with a hand saw, then fit the tenons into the leg

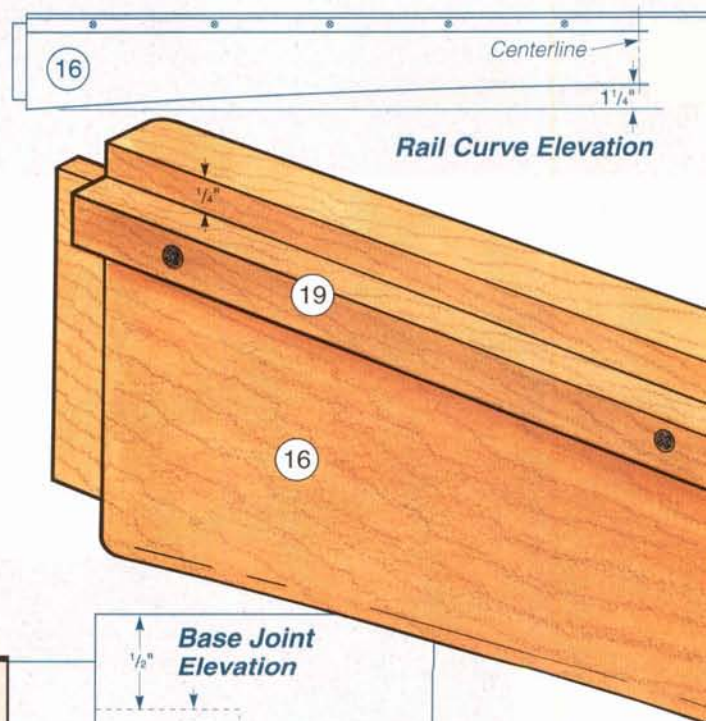
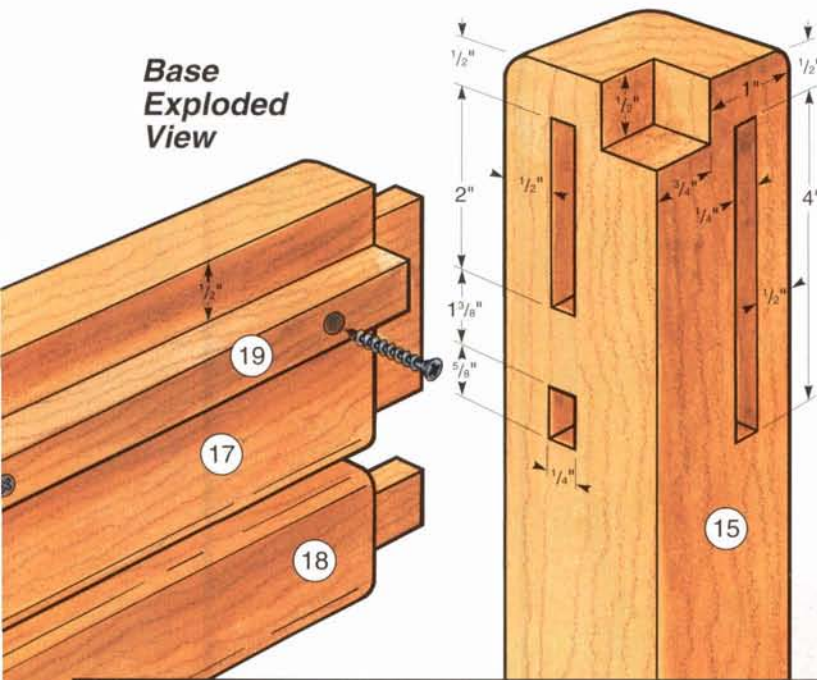
mortises. If you like the way everything fits together, take the base apart and layout the long curves on the front and back rails using the **rail curve elevation** below. Cut the curves with a jig saw or band saw.

To seat the cabinet in the base, the top inside corner of each leg must be notched. Layout the notches and cut them with a hand saw and chisel — work carefully here when chopping with the grain or you may split a leg.

Many of the edges on the base are eased with a router using a 3/8" roundover bit. Rout all the rail edges except those that make contact with the cabinet, and on the legs rout the top outside edges and the front corner.

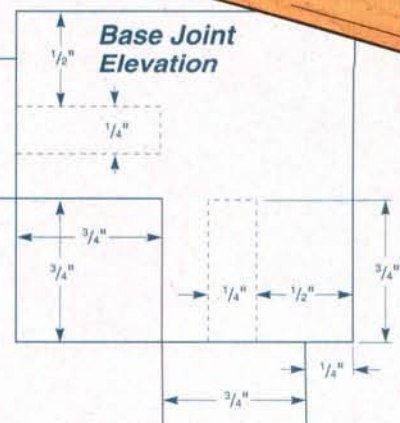
Sand the parts for the base and glue them together, cleaning up any squeeze out after the glue sets to a rubbery consistency. Next, cut the cleats (pieces 19) and screw them to the inside of the upper side rails, the front rail and the back rail, as shown in the base exploded view.

Base Exploded View



MATERIAL LIST

	T x W x L
15 Legs (4)	1 3/4" x 1 3/4" x 15 1/2"
16 Front and Back Rail (1)	3/4" x 5" x 64 1/2"
17 Upper Side Rails (2)	3/4" x 3" x 21 3/4"
18 Lower Side Rails (2)	3/4" x 1 5/8" x 21 3/4"
19 Cleats (3)	3/4" x 1" x 72"



How to Veneer the Doors

Veneering the Doors

Because this sideboard is designed to go with the table and chairs, I wanted to pick up many of the same details. Especially important was matching the sapwood in the splat of the chair. To get this effect I covered the cupboard doors with veneer containing a sapwood edge.

Cut plywood to size for the door substrates (pieces 20) and band the edges with 1/4" thick solid stock, as shown in the **door exploded view**. Next, cut eight oversized pieces of veneer bearing sapwood along at least one edge (pieces 21). Now joint the sapwood edges and follow the steps in the box at right to join the veneer and bond it to the plywood.

Blum hinges (pieces 22) are perfect for mounting these doors in the cabinet. They're adjustable in three directions, so you can center the doors perfectly in the openings, and they're hidden when the doors are closed. Drill holes in the back of each door for the hinge cups (as shown at right), then secure the mounting plates in the cabinet. Slide the hinge arms onto the mounting plates and make adjustments to center the doors in the openings.

Magnetic touch latches (pieces 23) provide an ideal complement to the hinges on this project. They eliminate the need for door handles to preserve the contemporary styling of the piece. Install the latches, then move on to building the drawers.

Constructing the Drawers

On high quality furniture like this sideboard, dovetails are the only way to go when joining the drawer boxes. Cut the box fronts, backs and sides (pieces 24 through 29) to size from 1/2" thick poplar and cut the dovetail joints (I routed them with the help of a Leigh jig). Once the dovetails are cut, plough 1/4" x 1/4" grooves 1/4" up from the bottom edge of each box wall

When veneering with contact cement, use a very stable substrate like MDF or Baltic birch plywood

and, to keep the substrate balanced, lay the veneer perpendicular to any grain of the plywood surfaces.



Step 1: Joint the edges and hold them together with masking tape, then flip the veneer over and apply veneer tape to the seam.



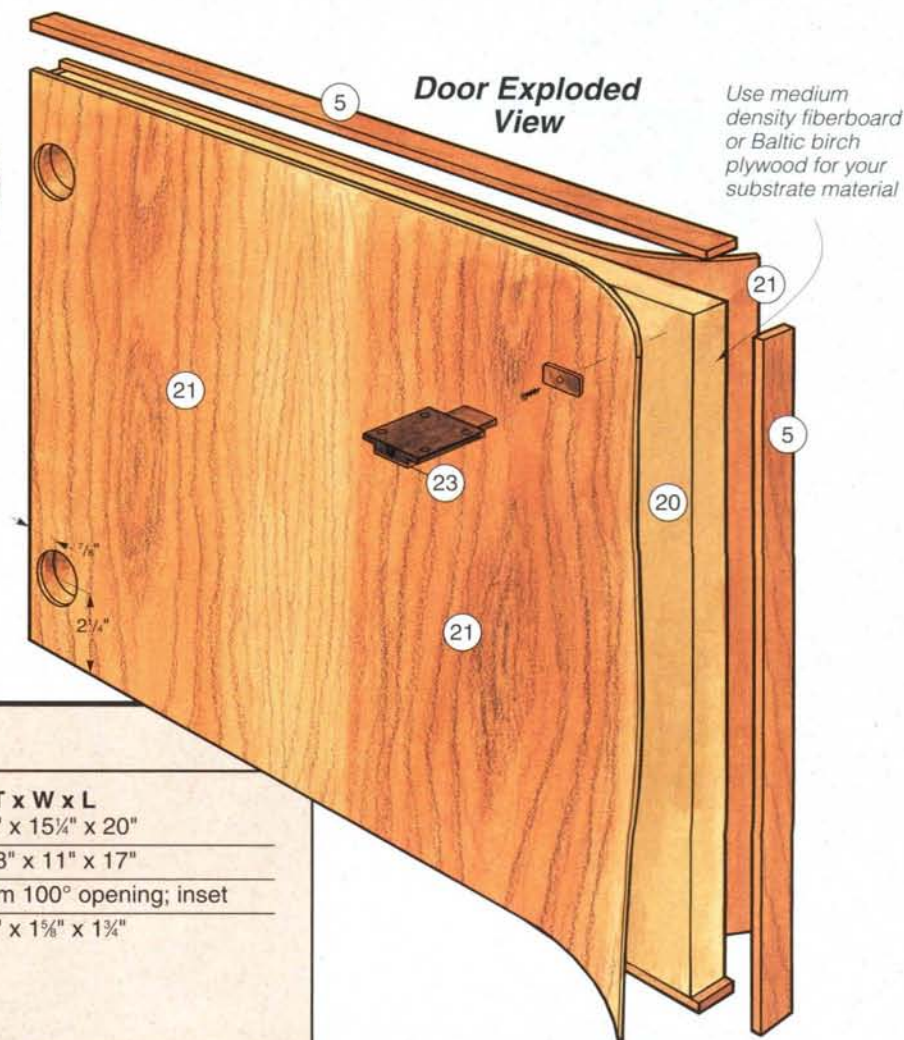
Step 3: Apply contact cement to both the veneer and the substrate and let it dry. Use stickers to position the veneer over the substrate.



Step 2: Remove the masking tape and spread white glue on the seam, then unfold the veneer and place it under pressure while the joint dries.



Step 4: Carefully pull out the stickers and lay the veneer on the substrate, then tamp the surface with a hammer and scrap wood block.



MATERIAL LIST

	T x W x L
20 Door Substrates (2)	3/4" x 15 1/4" x 20"
21 Veneer (8)	1/28" x 11" x 17"
22 Hinges (4)	Blum 100° opening; inset
23 Touch Latches (2)	1/2" x 1 5/8" x 1 3/4"

How to Shape the Drawer Handles

Make the sculpted drawer handles in pairs out of 3/4" x 3 3/4" x 22" cherry stock. For a safe operation, keep



Step 1: Draw the pattern for a pair of handles on 3/4" stock and, adjusting the blade height for each cut, rip the waste from the pull areas.



Step 2: Tilt the blade 45° and cut a shallow V on the top surface of the stock. These cuts begin to form the drop on the front edge of each handle.

the support bridges intact at the center and outside edges as you shape the handle pulls.

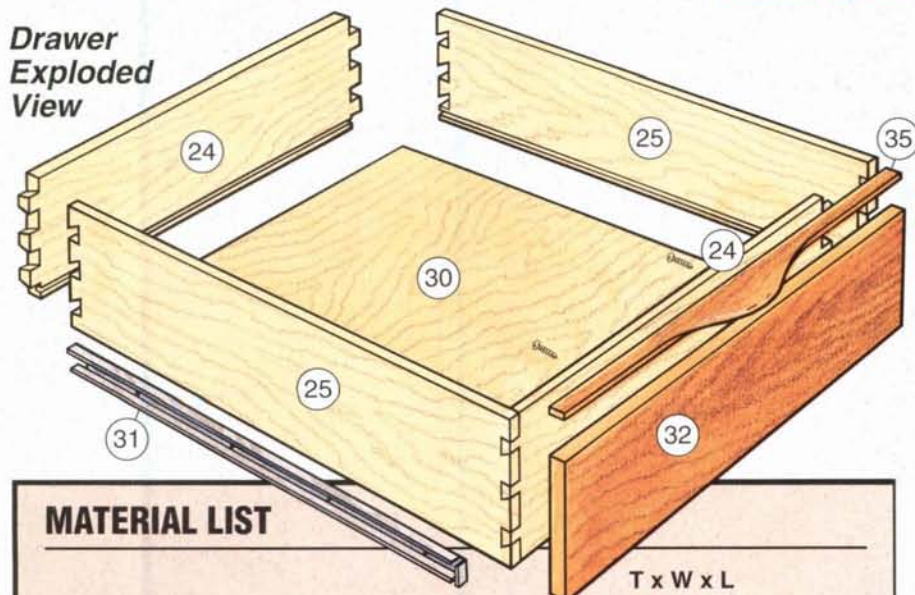


Step 3: Once the shaping is completed rip off the outside bridges, leaving perfect surfaces for gluing the handles to the drawer faces.



Step 4: Split the handles apart (above), then bandsaw the top profiles (right).

Drawer Exploded View



MATERIAL LIST

	T x W x L
24 Top Drawer Fronts and Backs (6)	1/2" x 5 5/8" x 19 1/2"
25 Top Drawer Sides (6)	1/2" x 5 5/8" x 21"
26 Middle Drawer Front and Back (2)	1/2" x 6 3/8" x 19 1/2"
27 Middle Drawer Sides (2)	1/2" x 6 3/8" x 21"
28 Lower Drawer Front and Back (2)	1/2" x 7 7/8" x 19 1/2"
29 Lower Drawer Sides (2)	1/2" x 7 7/8" x 21"
30 Drawer Bottoms (5)	1/4" x 20 1/2" x 19"
31 Drawer Slides (5)	Accuride #3832A —20"
32 Top Drawer Faces (3)	3/4" x 5 9/16" x 20 1/2"
33 Middle Drawer Face (1)	3/4" x 6 9/16" x 20 1/2"
34 Lower Drawer Face (1)	3/4" x 7 9/16" x 20 1/2"
35 Handles (5)	3/4" x 1 1/2" x 20 1/2"

for holding the bottom panels (pieces 30), as shown in the **drawer exploded view** at left. Cut the bottoms to size and glue the boxes together.

After sanding the joints flush, layout the drawer slide positions on the drawer boxes and in the cabinet. Install the slides (pieces 31) and slip the drawers into place. Now cut the drawer faces to size (pieces 32, 33 and 34) and position them on the boxes so they're flush with the bottom of each opening. Drill counter-sunk pilot holes through the box fronts and secure the faces with screws (pieces 11).

Fashion the handles (pieces 35) with a table saw, as shown in the box at left. You'll find the end and top profiles for the handles on the **full size pattern** insert between pages 12 and 13. Glue the handles to the top edge of each drawer face and blend the handles into the faces with sandpaper after the glue dries.

Finishing Your Sideboard

Remove the back and all the hardware from the cabinet, and separate the cabinet from the base. Sand all the parts of the project to 220 grit, making sure to ease any sharp corners and blend in the roundovers. Wipe down the project with a tack cloth to clear away the dust, then rub on four coats of Nordic Oil. Sand lightly between each coat and continue cleaning off the dust each time with the tack cloth. Four coats should do the job, but you can add more if you like a higher gloss.

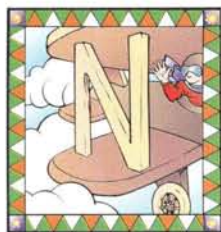
Let the last coat of finish dry for several days, then rub on a coat of paste wax to protect the finish from water spots. Buffing the wax out will produce a beautiful satin sheen that matches the table and chairs.

I know it's going to take a couple of months, but I can't wait to hear from readers who decided to build the sideboard. In my house the completed table, chairs and sideboard look fantastic, and I'm sure they will make an equally big impression on you and your family. And who knows, if there's enough interest maybe I'll find another excuse to build a piece of furniture in this style. ■

Biplane Shelf and Coat Rack

Get started on this project Friday night and you'll be taking your first solo flight by Sunday afternoon.

By Richard Starr



Nothing I've ever tried before has made me quite as obsessive as learning to fly. Just ask my wife and friends. Like a day-dreaming grade schooler, I've been ending up with a lot of airplane doodles in my notebooks lately. In fact, I have to confess that this weekend biplane project actually got its start as a doodle in my woodworking sketchpad.

This is an easy project, but it does offer a few challenges, especially to anyone who doesn't have access to a lathe. With a little ingenuity, I managed to make all the round pieces for the airplane using common hand

tools and a router. I sweated a little from the extra work involved, but it sure was satisfying to make do with the tools I had on hand.

Get started by gluing some 1/2" thick ash between two 2" thick walnut boards to make the fuselage block (pieces 1 and 2). Later, after the glue dries and you trim the ends square, draw a semi-circle for the cockpit on the side of the block, as shown in the **cockpit detail** on the **Full Size Pattern** between pages 12 and 13. Bandsaw the waste from the cockpit and center a 1/4" hole in the dip for the post that supports the pilot's head (pieces 3 and 4). Now cut out the **fuselage end view** from the insert and trace the shape onto the ends of the block. Trim off as much waste as you can with your table saw, then plane the fuselage to shape by hand, as shown in **Figure 1** (see page 14).

This may sound like it's going to be a time consuming job, but it really takes just five or ten minutes.

Like the fuselage, I made the engine cowl (piece 5) without a lathe. In this case I used a router and a simple template fashioned from scrap plywood. Transfer the full size pattern of the **cowl routing jig** to 1/2" plywood, then cut the inside circle of the template with a jig saw or coping saw, keeping the cut smooth and round. Once the circle is removed, shape the template's octagonal hub with a band saw.

Now cut an oversized piece of cherry stock for the cowl and use a compass to draw two concentric circles on its face—the larger circle should measure 5 1/2" in diameter and the smaller circle 4 1/8" in diameter. Screw the template hub to the center point of the circles and nail down the rest of the template so it aligns with the 4 1/8" circle on the cowl stock, as shown in



It sure looks like a lathe is required for building this project, but the author managed to make all the round pieces with a router and standard hand tools.



Figure 1: After trimming most of the waste off your laminated block with a table saw, complete the shaping of the fuselage with a hand plane.

Figure 2 below. Be sure to drive the nails at the corners of the set-up, where the holes can be cut away later on. Now rout the waste from the cowl using a 1/2" diameter pattern routing bit with a 1" long cutting length. Rout about 1/8" deep on each pass, hogging out the waste without allowing the bit to contact the template (the bit will cut the template until you get deeper into the wood). On the last pass, after you reach the full 3/4" depth, follow the template with the bit's bearing. After completely routing the recess, remove the template and rout the inside rim of the cowl with a 3/8" roundover bit.

Complete the cowl by bandsawing along the outside circle you drew earlier, then, after sanding the edge smooth, use the roundover bit to rout both outside rims. Now drill counter-sunk pilot holes in the cowl at four cylinder locations and screw (pieces 6) the cowl to the fuselage.

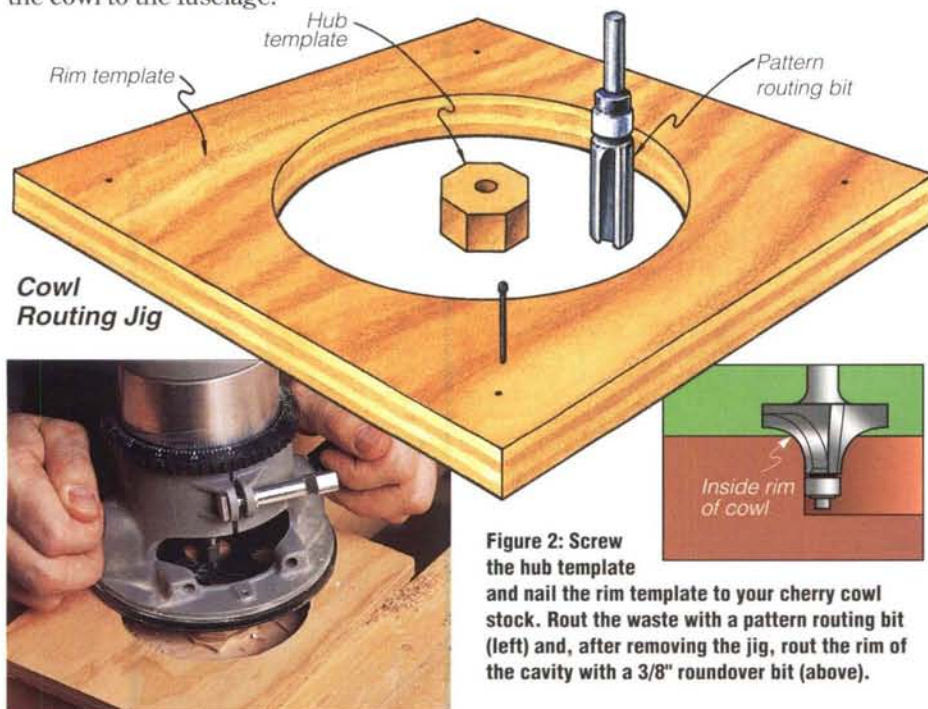


Figure 2: Screw the hub template and nail the rim template to your cherry cowl stock. Rout the waste with a pattern routing bit (left) and, after removing the jig, rout the rim of the cavity with a 3/8" roundover bit (above).

Engine cylinders (pieces 7) are called jugs by those of us in the trade, and using walnut for the jugs on this plane provides a nice contrast to the cherry cowl. Cut eight pieces from a dowel rod and sand one end of each piece to match the curve on the inside of the cowl rim. I used my belt sander clamped in a vise to form the curves. Once they fit, glue the cylinders into the cowl, covering the four screws.



Figure 3: Bandsaw the propeller from a piece of 1/2" thick walnut and then use a spokeshave, a file and a whittling knife to bring the blades to final shape.

Shaping the propeller (piece 8) is great fun if you choose a wood like walnut that's easy to carve. Trace the full size pattern of the propeller onto your stock and drill the 1/4" center hole. Next, bandsaw the prop to shape and carve the blades with a sharp spokeshave set for a very fine cut (**See Figure 3**). Notice that the



Figure 4: Shape your spinner into a cone by chucking the assembly in your drill and holding it against a belt sander while both tools are running

blades tilt at an angle and become thinner as you move away from the center (see the **propeller detail** at right). When the blades become too delicate to hold in a vise, grip the prop in one hand and use a whittling knife and a file to fine tune its shape, then finish up with sandpaper.

Now cut a 1" square for the spinner (piece 9) and connect the diagonally opposite corners with pencil lines. At the crossing point, drill a 1/2" deep hole with a 1/4" bit and glue a shaft (piece 10) into the hole. Let the glue set, then chuck the shaft in an electric drill and, with the drill running at a slow speed, shape the spinner into a cone by holding it against a running belt sander (**See Figure 4**).

Prepare for Takeoff

Cut stock for the wings, landing gear and peg board (pieces 11, 12, 13 and 14), then cut out the full size patterns and layout their shapes and drilling locations. Drill all the holes and bandsaw the pieces to shape, then rout the edges with the 3/8" roundover bit (avoid rounding over the backs of the wings and the tops of the landing gear and peg board).

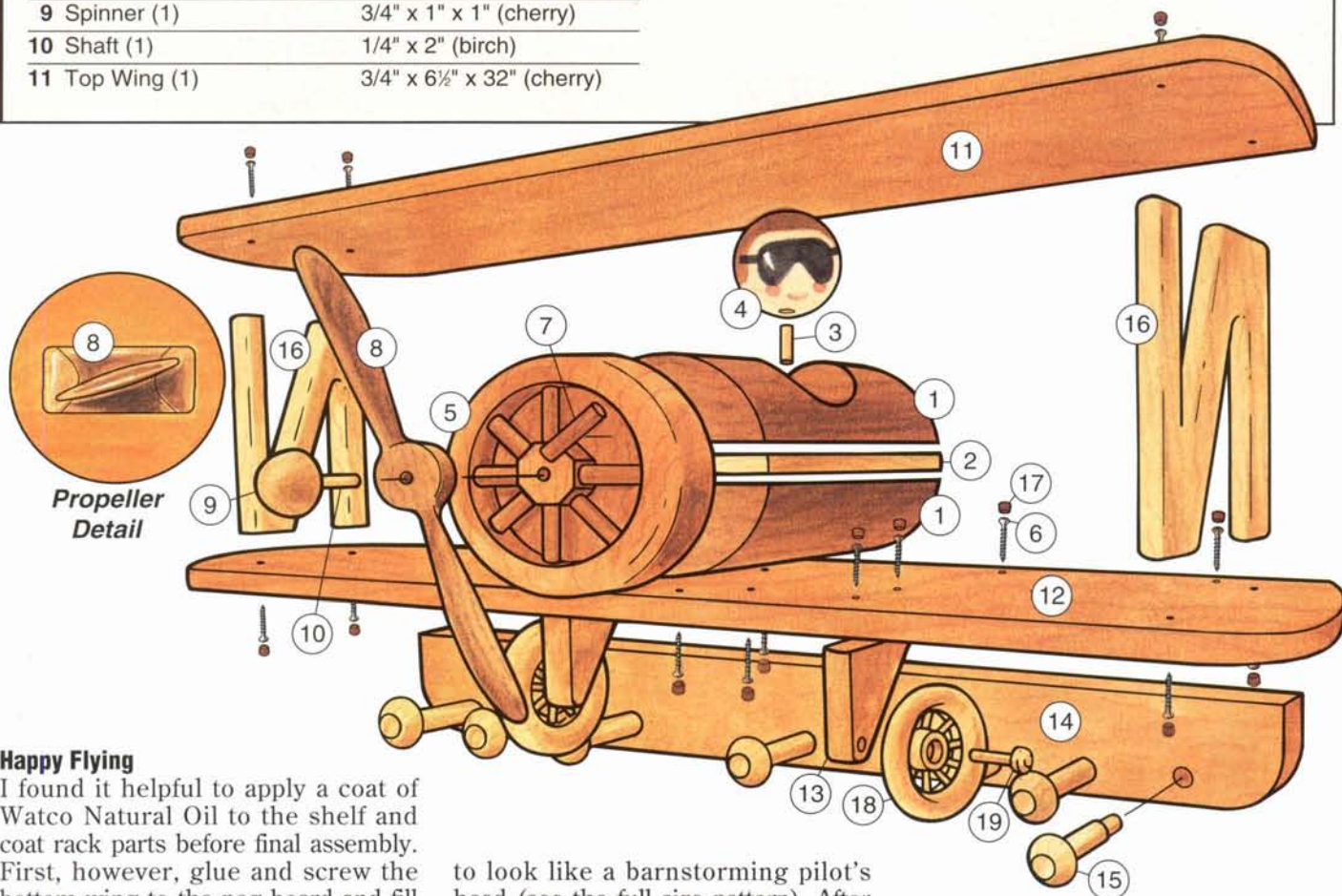
To maintain the childlike character of my project, I used toy train smokestacks for coat rack pegs (pieces 15). The diameters of the posts on these pegs, however, are inconsistent, so I recommend you clamp your belt sander in a vise again and sand the last 3/4" of each post to fit into the 1/2" holes in the peg board. Glue the pegs in when you get a good fit.

Now cut out the full size pattern of the struts (pieces 16) and trace it onto some 3/4" thick ash. Bandsaw the struts to shape and rout the edges (but not the ends) with a 3/8" roundover bit, then mock up the wing and strut assembly. With everything clamped in place, extend the pilot holes.

MATERIAL LIST

	T x W x L
1 Fuselage (2)	2" x 4 1/4" x 6 1/2" (walnut)
2 Fuselage Stripe (1)	1/2" x 4 1/4" x 6 1/2" (ash)
3 Post (1)	1/4" diameter x 1 1/2" (birch)
4 Pilot's Head (1)	3" diameter ball (maple)
5 Engine Cowl (1)	1 3/4" x 5 1/2" x 5 1/2" (cherry)
6 Screws (20)	#8-1 1/2" (flat head)
7 Engine Cylinders (8)	1/2" x 1 1/8" (walnut)
8 Propeller (1)	1/2" x 1 1/2" x 14" (walnut)
9 Spinner (1)	3/4" x 1" x 1" (cherry)
10 Shaft (1)	1/4" x 2" (birch)
11 Top Wing (1)	3/4" x 6 1/2" x 32" (cherry)

	T x W x L
12 Bottom Wing (1)	3/4" x 6 1/2" x 32" (cherry)
13 Landing Gear (2)	3/4" x 2 3/8" x 3" (cherry)
14 Peg Board (1)	3/4" x 3 1/8" x 28 3/4" (cherry)
15 Pegs (7)	1 1/4" x 2 1/4" (maple)
16 Struts (2)	3/4" x 5 5/8" x 7 7/8" (ash)
17 Plugs (20)	3/8" diameter (cherry)
18 Wheels (2)	2 3/4" diameter (maple)
19 Axles (2)	7/32" x 1 1/8" (maple)



Happy Flying

I found it helpful to apply a coat of Watco Natural Oil to the shelf and coat rack parts before final assembly. First, however, glue and screw the bottom wing to the peg board and fill the counterbores with plugs (pieces 17). Sand the plugs flush and apply the oil. When the finish dries, screw the landing gear and fuselage to the bottom wing. Add the struts and the top wing (check the exploded view above to orient the struts), and install the wheels and axles (pieces 18 and 19), making sure that the wheels turn freely. Next, bore a 1/4" hole at the center of the engine cowl and glue the spinner with the propeller into the hole (the propeller should turn freely too). Fill all the remaining counterbores with plugs and sand them flush, then apply several more coats of Watco to complete the finishing. For the crowning touch, paint a wood ball

to look like a barnstorming pilot's head (see the full size pattern). After the paint dries, drill a 1/4" hole in the ball, glue the mounting post into place and slip the pilot into the cockpit.

You can use screws and plugs or keyhole fasteners to mount the project to your wall, but keep in mind that whichever method you choose, success rests with hitting the studs in that wall. Laying out the fasteners or pilot holes carefully will ensure a solid installation.

I can't tell you how many chuckles I've heard since the biplane shelf and coat rack went airborne in my entryway. As one fellow wing jockey put it when she saw the project for the first time, "it has personality—like a lot of the pilots I know."

Richard Starr is a contributing editor for Today's Woodworker magazine and a woodworking instructor in Hanover, New Hampshire.

Biplane Hardware Kit

Includes a 3" maple ball, 7 toy train smokestacks (coat pegs), a 1/4" x 4" birch dowel, 2 wheels and axles and plenty of screws and plugs.

Item #64790 (use order form).....\$12.95

NEW: Complete Wood and Hardware Kit

Includes the hardware items listed above plus all the cherry, walnut and ash needed to build this project.

Item #65078 (use order form).....\$79.95

An Old World Cherry Tea Table

Antique collectors will be the first to appreciate the humble heritage of this classic reproduction.

By Chris Inman



ou may never serve high tea in the afternoon, but that doesn't mean you won't find a use for this classic table. As a matter of fact, if you look through many of today's leading decorating magazines you'll find that tea tables are as popular as ever.

The most elaborate tea tables were produced in Philadelphia during the mid-1700s. These Chippendale tables had richly carved legs and pillars, and elaborately detailed piecrust tops—unlike their restrained Shaker counterparts of the same era. Generally speaking, round tops were favored, although rectangular topped tables were also common. Some of these tea tables featured tilting tops that made them easier to store near a wall when not in use. Tables of this type were often called snap tables due to the distinctive sound the catches made when the top was let down. Since tilting tables were designed to save space, they were usually pulled out for serving tea in the afternoon, then put away for the rest of the day. Tables with fixed tops were used for displaying fine tea services.

Our tea table is a reproduction. The original was probably designed by a rural colonial craftsman who simplified the styles he saw in the city. The bevels and scallop on each leg, the lack of carving on the pillar and the overall sparseness of the design are clues to this humble heritage.

Turning the Pillar

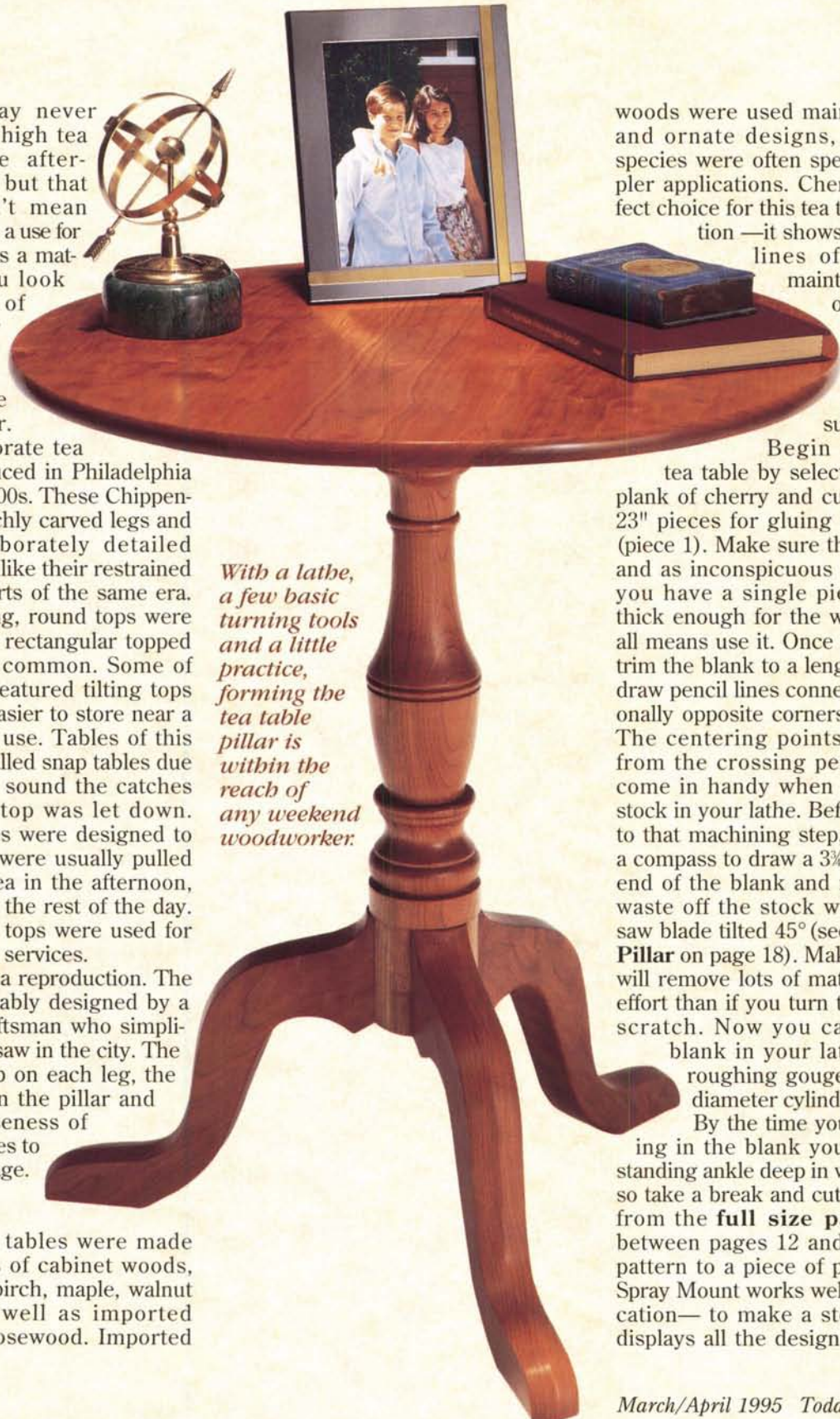
Historically, tea tables were made with many kinds of cabinet woods, including native birch, maple, walnut and cherry, as well as imported mahogany and rosewood. Imported

With a lathe, a few basic turning tools and a little practice, forming the tea table pillar is within the reach of any weekend woodworker.

woods were used mainly for formal and ornate designs, while native species were often specified for simpler applications. Cherry is the perfect choice for this tea table reproduction—it shows off the simple lines of the design, maintains the flavor of the period and comfortably fits into both casual and formal surroundings.

Begin making your tea table by selecting a 2" thick plank of cherry and cutting two 4" x 23" pieces for gluing into the pillar (piece 1). Make sure the joint is tight and as inconspicuous as possible. If you have a single piece of cherry thick enough for the whole pillar, by all means use it. Once the glue dries, trim the blank to a length of 22½" and draw pencil lines connecting the diagonally opposite corners on each end. The centering points that you get from the crossing pencil lines will come in handy when mounting the stock in your lathe. Before moving on to that machining step, however, use a compass to draw a 3¼" circle on one end of the blank and rip the corner waste off the stock with your table saw blade tilted 45° (see **Turning the Pillar** on page 18). Making these cuts will remove lots of material with less effort than if you turn the blank from scratch. Now you can mount the blank in your lathe and use a roughing gouge to turn a 3¼" diameter cylinder.

By the time you finish roughing in the blank you'll already be standing ankle deep in wood shavings, so take a break and cut out the **pillar** from the **full size pattern** insert between pages 12 and 13. Glue the pattern to a piece of plywood—3M Spray Mount works well for this application—to make a storyboard that displays all the design details of the



Tea tables could be found in most eighteenth century homes, and often tables with differing designs were positioned in the same room. Because the custom was to cover these tables with lace or cloth, carving was generally limited to the legs and lower pillar areas that could still be seen below the fabric.



pillar. Use the storyboard to layout the high and low spots of the pillar on the blank and turn the profile to shape. To accurately size the pillar tenon first turn it slightly oversize and test its fit in a 1½" hole drilled in scrap wood. Then, if need be, remount the pillar on the lathe and shave the tenon down until you have a perfect slip fit in the test hole. Complete the turning by sanding it in the direction of the grain with 220 grit paper—for safety, make sure you unplug the motor.

Routing the Dovetail Grooves

The three sliding dovetail grooves in the pillar base are routed 120° apart with the help of a jig. Build the **dovetail groove routing jig** shown below to fit snugly around your pillar (the interior jig box dimensions should match the largest diameter and length of your pillar).

Now mark the groove locations using the **dovetail groove layout** found on the insert. Install your turning in the jig, making sure the pivot screws enter the pillar at the indents left by the lathe's drive and tail centers. Align one groove layout with the centering mark on the jig, then drill a pilot hole and drive the stabilizing screw.

Before routing the dovetail grooves rout a shoulder at the opening of each joint, as shown in the **dovetail groove elevation** below. Chuck a 5/8" straight bit in your router and adjust the depth of cut to 1/4". This set-up will result in a 1¾" wide shoulder. (If the diameter of your base is not exactly 3", adjust the cutting depth so you still end up with 1¾" wide shoulders.) Screw a stop to the jig to prevent the bit from cutting into the base shoulder, then rout away the waste for the groove shoulders (See Figure 1).

Once you've completed the shoulders you can rout the grooves. Given that dovetail bits are not very robust,

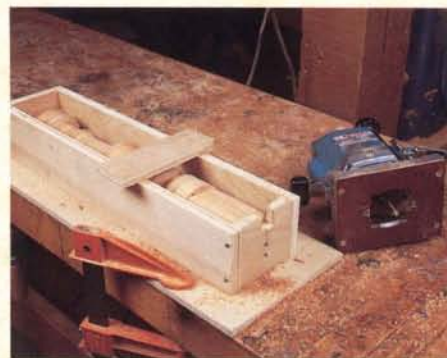


Figure 1: Before routing the dovetail grooves, use a 5/8" straight bit set for a 1/4" deep cut and rout shoulders for each joint location.

make the first pass in the groove with the 5/8" straight bit. Mount a fence to your router's base, center the bit on a groove location and make one 1/2" deep pass to establish the center of each groove. Now switch to a 1/2" diameter, 14° dovetail bit and set the cutting depth to 1/2". Adjust the fence and rout the grooves to their full 1" width (See Figure 2), making a pass along each wall with the same fence

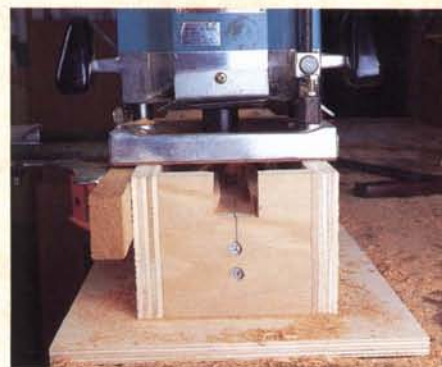
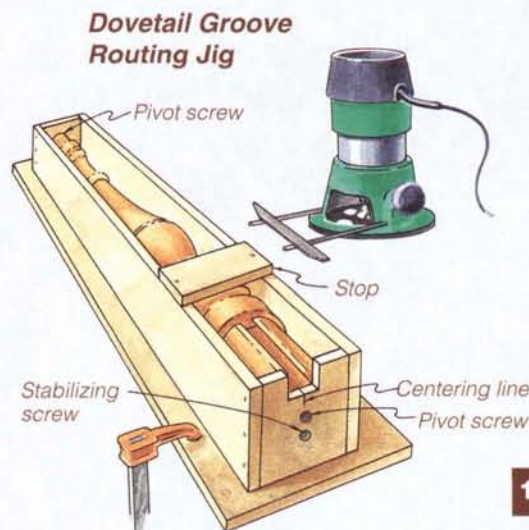
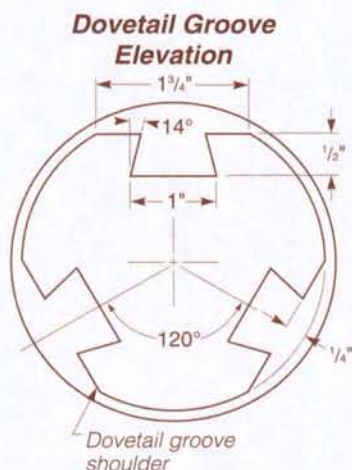
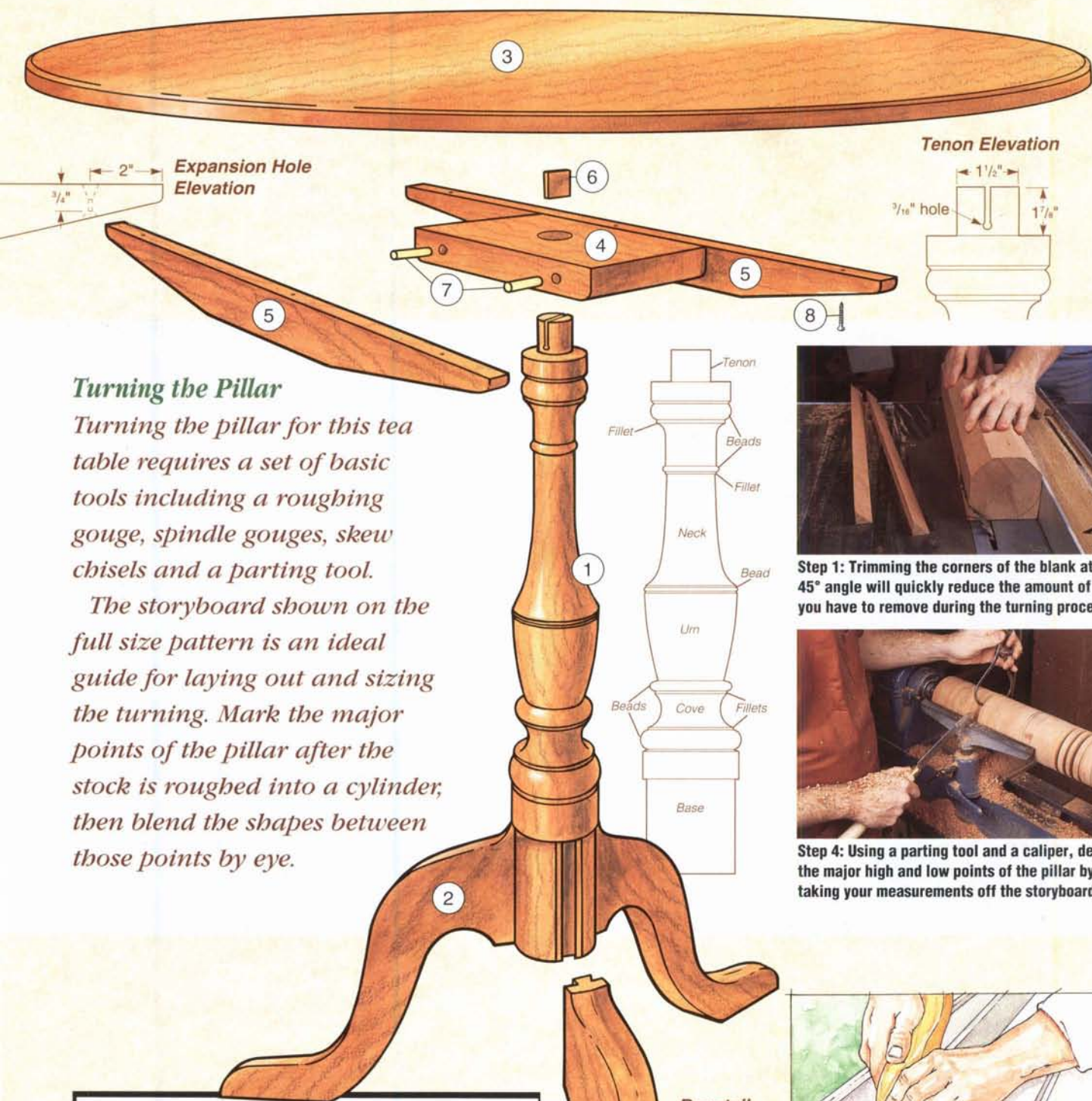


Figure 2: With the router fence riding against the jig, center the first cut, then adjust the fence 1/4" closer to the bit and rout each groove wall again.



Snug fitting joints are the key to this table's stability. If your joints are a little sloppy, try slipping veneer next to the tails to fill the gaps.





Turning the Pillar

Turning the pillar for this tea table requires a set of basic tools including a roughing gouge, spindle gouges, skew chisels and a parting tool.

The storyboard shown on the full size pattern is an ideal guide for laying out and sizing the turning. Mark the major points of the pillar after the stock is roughed into a cylinder, then blend the shapes between those points by eye.



Step 1: Trimming the corners of the blank at a 45° angle will quickly reduce the amount of wood you have to remove during the turning process.



Step 4: Using a parting tool and a caliper, define the major high and low points of the pillar by taking your measurements off the storyboard.

MATERIAL LIST

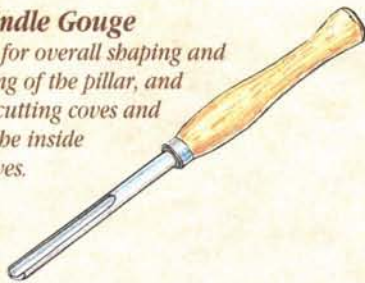
	T x W x L
1 Pillar (1)	3 3/4" x 3 3/4" x 23"
2 Legs (3)	1 1/2" x 6" x 18"
3 Top (1)	3/4" x 24" x 24"
4 Block (1)	1 3/4" x 5" x 8"
5 Braces (2)	3/4" x 2" x 21"
6 Wedge (1)	3/16" x 1 1/2" x 2"
7 Connecting Pins (4)	3/8" x 1" oak dowels
8 Screws (6)	#10-1 1/4"



Figure 3: Cut the dovetail shoulders (right), then tilt the blade exactly 14° and cut the cheeks (above).

Spindle Gouge

Use for overall shaping and sizing of the pillar, and for cutting coves and all the inside curves.



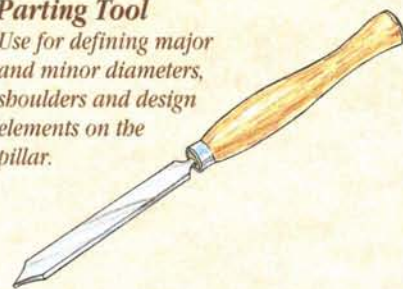
Skew Chisel

Use for cutting beads and other outside curves, and for final planing wherever possible.



Parting Tool

Use for defining major and minor diameters, shoulders and design elements on the pillar.



Step 2: Mount the blank in your lathe and, with the wood revolving at a slow speed, turn a 3/4" diameter cylinder using a large roughing gouge.



Step 3: Cut out the full size pillar pattern and glue it to a piece of plywood to make a storyboard, then lay out the turning details on the cylinder.



Step 5: Shape the inside curves with a set of spindle gouges, making the final passes with the bevels firmly contacting the wood for smooth cuts.



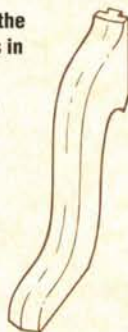
Step 6: Use your skew chisels to form the beads, base, tenon and urn, and to plane the flatter areas of the pillar to their finished size.



Figure 4: Taper each side of the legs by making three light passes over the jointer, each pass being a few inches longer than the one before.



Figure 5: To form the bevels, tilt the drill press 15° and keep your legs in contact with the most acutely angled point on the drum sander.



setting. This routing sequence ensures that the grooves are centered on the pillar. Finish up by using a chisel to pare the ends of the grooves flush with the base shoulder.

Making the Legs

The key to making strong legs (pieces 2) is having the wood grain running parallel with the narrowest part of each piece. Cut out the full size pattern of the leg (see insert) and position it on your 1 1/4" thick stock so the grain pattern of the wood follows the leg as much as possible. Trace each leg and cut them with your band saw, then sand the shaped edges smooth with a drum sander mounted in your drill press.

Now use your table saw and cut the dovetail on each leg (see the **dovetail elevation** at far left). You'll cut the shoulders with the fence clamped 1/2" from the blade and the blade height set at 7/16" (so it grazes the dovetail cheek), as shown in **Figure 3**. Be sure to cut some scrap wood first to test the set-up, then cut the shoulders on the legs. Next, tilt the blade exactly 14° and raise it to meet the shoulder cuts. Set your fence and cut a 1" wide dovetail on a scrap piece (See **Figure 3**). Clean out the corner of each shoulder with a chisel and test the fit of the tail in a groove. Continue cutting test tails until you get a perfect slip fit, then complete the tails on the legs.

The finished legs are thicker at the hip than at the toe. You can plane these tapers by hand or get a jump on the job using a jointer. Center a line down the top edge of each leg to use as a guide and set the depth of cut on your jointer at 1/32". Using a push paddle for safety, make the first pass on each side only as long as the foot, then make two more passes, each one a few inches longer than the pass before, to reach the knee (**See Figure 4**). Three passes on both sides of each leg should do it,



Figure 6: Surface the panel for the table top with a well-tuned and sharpened hand plane after the glue in the joints is thoroughly cured.



Figure 7: To rout the top round, make a trammel jig from 1/4" plywood and mount it to your router base. Use a 1/2" long wood screw for the pivot point.



Figure 8: Ease the edge of the top with your router and a 1/2" radius roundover bit, but only use the lower half of the cutting edges to form a partial roundover.

then you can blend the jointer marks with a hand plane or belt sander.

Now chuck a 3" diameter drum sander with a coarse sleeve in your drill press and form the bevels on the front edge of the legs. Depending on the style of your machine, tilt the drill press table or head 15° and sand the bevels on the legs until they meet the center line (See Figure 5). Always keep the point of contact between the legs and drum square with the tilting angle—if you slip to either side you'll lose the angle and end up sanding a nearly flat bevel. Sand the edge of

each leg except for the sharp curve in the hip area, which you can leave until after assembling the base. Once all the bevels reach the center lines, switch to a finer sanding sleeve and refine the curves.

The Top, Block and Braces

Glue-up a panel for the top (piece 3), preferably using an odd number of boards that look uniform in color and grain pattern, and balanced in width. Plane the panel after the glue dries (See Figure 6), then rout the top into a 24" diameter circle using a trammel jig like the one shown in Figure 7. Rout the edges with a 1/2" roundover bit (See Figure 8) and sand them smooth.

For the block (piece 4), cut some 1 3/4" thick stock and drill a 1 1/2" hole through its center. Use the 1/2" roundover bit to rout the bottom edge at each end of the block, routing with the full curve of the bit this time.

Cut out the full size pattern of the brace (see insert) and trace it onto your material. Drill a pair of 3/8" diameter holes in one side of each brace (pieces 5), as shown on the pattern, and bandsaw the pieces to shape. Next, slip dowel points (short steel dowels with a point on one end) into the holes, center the braces on the block, and press the braces against the block to transfer the hole locations. Drill 3/8" holes in the block at the indentations, then drill expansion holes into each brace for screwing the top to the base (see the **expansion hole elevation** on page 18).

The last step before assembling the table base is making a wedge (piece 6) for securing the block to the pillar. Slice the wedge off a piece of 1 1/2" thick scrap wood with your table saw's miter gauge tilted 5°.

Assembling the Base

Cut your pillar to its finished length by trimming off the waste at each end with a hand saw, then use the saw to cut a kerf in the tenon, as shown in the **tenon elevation** on page 18. Now drill a 3/16" relief hole at the bottom

of the kerf to help keep the pillar from splitting when you drive the wedge, and glue the block onto the tenon. Turn the block so its ends are parallel with the tenon kerf, then glue and tap the wedge firmly into place. Sand the tenon and wedge flush with the block after the glue sets.

Gluing the legs to the pillar shouldn't require any clamps if the joints fit properly. You may find, however, that old bicycle inner tubes make good clamps for this awkward glue-up if your joints are a little sloppy. Spread glue in the grooves and slide the leg tails into place, then wrap the assembly with the inner tubes if they're needed. After the glue dries, use a rasp and a carving gouge to refine the sharp curve at the top of each leg, then sand the entire table to 220 grit.

Now lay the top upside-down on your workbench and center the block on it—the grain of the block crosses the grain of the top. Cut connecting pins (pieces 7) and then press them into the block holes, and press the braces onto the pins. Next, using a scratch awl, mark the pilot hole locations for screwing the top to the braces. Remove the base assembly and drill the pilot holes, making sure you use a stop collar on the bit to eliminate any chance of drilling through the top.

After sanding the table one more time for good measure, finish the cherry with four coats of Nordic Oil or another brand of oil/varnish finish. Lightly sanding between each coat with 400 grit wet or dry paper will give you surfaces that are as smooth as silk. When you assemble the base with the top, leave the connecting pins unglued in case you ever need to repair the table.

Undoubtedly, your tea table is just as finely crafted as the originals were more than 200 years ago. It seems a shame that the custom then was to keep the tables covered with a piece of cloth. Luckily, fashions change, so put your table out where your craftsmanship will be appreciated. Just be sure to cover it at tea time. ■

The Phone Center

Spend a weekend in the shop and build this welcome addition to your home. Our full size patterns will guide you through the rough spots.

By David Larson



he truth is, I never really thought much about building a cabinet for the telephone and all its accessories until I realized how much use they get. At our home, one corner of the kitchen was always overflowing with phone books, calendars, notepads, pens and pencils and other phone related items. Needless to say, it wasn't the tidiest spot in the house.

Once I realized how practical and useful a phone center cabinet would be, I got busy at my drawing board. My design allows enough room to hide several large phone books and features a cork backing for pinning up notes.

Fortunately for me, since I don't have a lathe, the spindles in the gallery rail assembly are available ready-made, which is also true of the rail itself. As for making the clover cutouts, all that's needed are a couple of drill bits and a 1/4" radius cove bit for a router. I chose red oak and a medium brown stain to match the woodwork in my kitchen, but any species will work fine for this cabinet.

Getting Started

The first step on this project is gluing-up stock for the sides, shelves and bottom (pieces 1 through 4). You may find stock wide enough for these pieces, but any board that wide will have a definite tendency to cup. Therefore, I recommend gluing several narrower boards edge to edge for these panels. After the glue dries, remove the panels from the clamps, plane them flat and cut them to overall size. In addition, cut 3/4" oak to size for the top rail and apron (pieces 5 and 6) and do the same with 1/4" thick stock for the doors (pieces 7).



Next, cut out the **full size patterns** for the **shelves, top rail, apron and sides** (see insert between pages 12 and 13), and trace the patterns and all the joinery details onto your stock.

Cut a rabbet along the front edge of the bottom and a groove in the top edge of the apron for the door tracks, as shown in the **door detail** on page 23. Make the cuts using a 5/16" dado blade raised 1/4" and then raise the blade to 1/2" to cut matching tracks in the underside of the lower shelf.



Figure 1: To accommodate the plywood back panel, which is partly covered with cork, rout the rabbet in each side panel at two different widths.

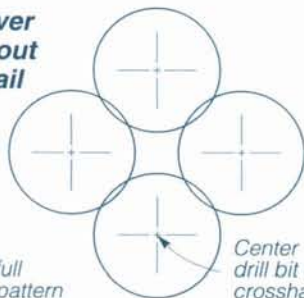
Switch to a router for cutting rabbets along the back edge of the sides, top rail, lower shelf and bottom, which will house the back assembly. These rabbets are unusual in that they are slightly deeper on the upper three quarters of the cabinet to accommodate the cork (see the full size pattern). Chuck a 1/4" straight bit in your router collet and mount the fence attachment to the base. Now, in two passes, rout 5/16" wide by 3/8" deep rabbets along the back edge of the top rail and sides, stopping the side cuts when you reach the lower shelf location (See **Figure 1**). Once you've completed the rabbets on the upper part of the cabinet, adjust the fence and rout 1/4" wide by 3/8" deep rabbets for the rest of the sides and back edge of the bottom. The last step in the rabbeting process

Tenon Detail



Figure 2: Cut tenons on the shelves, apron, top rail and bottom with a 1/2" dado blade, making sure to use a set-up block for safety.

Clover Cutout Detail



See full size pattern

Center drill bit on crosshairs



Figure 3: The best tool for boring the four holes that make up each clover cutout is a Forstner bit, although a spade bit will also do the job.

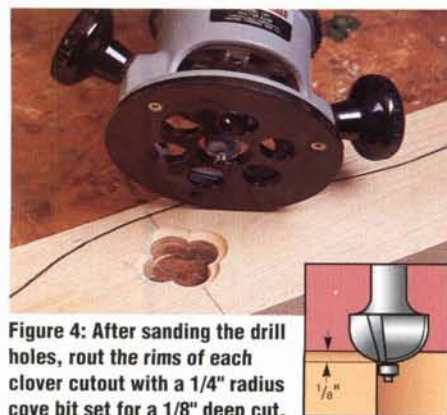


Figure 4: After sanding the drill holes, rout the rims of each clover cutout with a 1/4" radius cove bit set for a 1/8" deep cut.

is to adjust the fence and cut a 1/16" wide x 3/8" deep rabbet on the back edge of the lower shelf to house the bottom edge of the cork.

After cutting the rabbets you can use the same router set up to plough out the 1/2" deep mortises in the sides for the top rail and apron tenons. Once these are cut, remove the fence from the router and plough the remaining mortises in the sides with the help of a straightedge and clamps. Wrap up this part of the project by squaring the ends of all the rabbets, grooves and dadoes with a chisel.

To cut the tenons on the top rail, apron, shelves and bottom, install a 1/2" dado blade in your table saw and raise it 7/32". Clamp an auxiliary wood face to the fence to protect it from the blade, and cut a sample tongue on some scrap wood (See Figure 2). Providing the test joint is snug, cut your tenon cheeks, then turn the pieces on edge and cut the shoulders. Bear in mind that you'll have to adjust the blade height to cut the various shoulders.

Clover Cutouts and Gallery Rail

Shaping the clover cutouts in the top rail and sides requires a 1" drill bit, while the cutouts in the doors call for a 3/4" bit. Forstner bits drill the cleanest holes, although spade bits will work just fine. Drill the 1" holes for the larger clover cutouts first, as shown in Figure 3, then layout the clovers on the doors and drill them with the 3/4" bit. While you've got the 3/4" bit set up, go ahead and drill the hole in the lower shelf for the grommet (piece 8).

Sand the edges of the holes with a small drum sander chucked in your portable drill, then rout the rim of each cutout with a 1/4" radius cove bit (See Figure 4). Rout only the front side of the door cutouts.

It's a good thing that the manufacturer of the gallery spindles (pieces 9) turns the diameter of the top tenon to 1/4" and the bottom tenon to 5/16". This keeps fumblehanded people like me from mistakenly installing one or two spindles upside-down.

Cut the gallery rail (piece 10) to length and layout the holes for the spindle locations on this piece as well

as on the upper shelf (see the full size pattern). Now drill 5/16" diameter holes in the shelf and 1/4" diameter holes in the rail.

Bandsaw all the shaped pieces of the phone center and sand them thoroughly. Follow up by routing the shaped edges of the sides, shelves, apron and top rail with the cove bit, just as you did earlier on the rims of the clover cutouts.

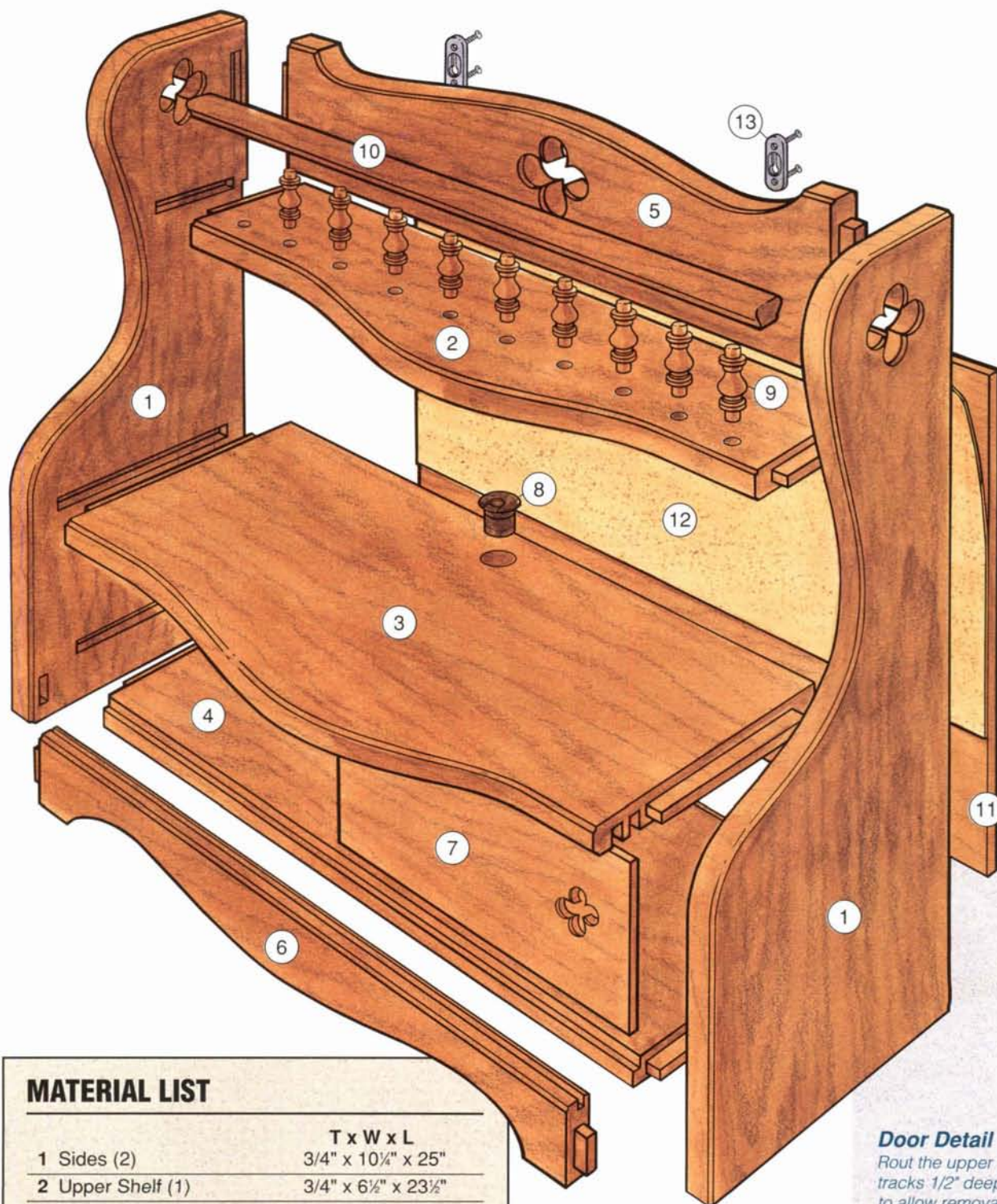
Finishing and Assembly

Spread glue in the dadoes and grooves of the side panels and assemble the cabinet. Once you have all the pieces together, check the project for squareness and glue the gallery spindles and rail into place. I made extra sure to use softwood pads under the clamp heads to protect the wood.

Clean up any glue squeeze out with a damp rag and keep the project in the clamps for several hours. Meanwhile, cut the back to size and apply the cork (pieces 11 and 12). The cork comes with an adhesive backing already on it, so just peel off the protective film and press the cork to the upper part of the plywood back. Trim off the excess cork with a utility knife.

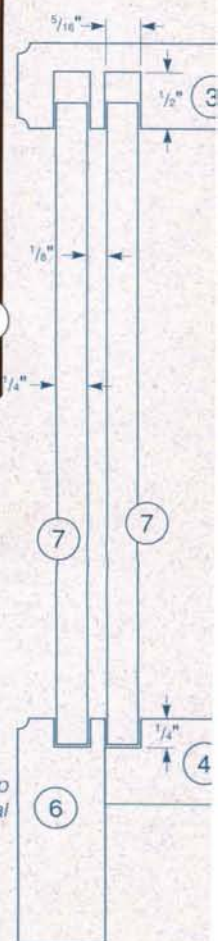
After removing the clamps from the cabinet, chuck a 5/8" straight bit in your router and plough shallow mortises in the back of the top rail for the keyhole fittings (pieces 13), making sure the fittings are spaced to match the stud spacing in your walls. Use a drill and a 3/8" bit to remove the waste in the catch area of the keyhole mortises, then switch to a finer bit and drill the pilot holes. Install the fittings with #6-1/2" screws.

I used Minwax Provincial oil stain followed by a coat of sealer and two coats of varnish to finish the phone center. Apply the varnish with a good quality brush, and be sure to sand lightly with 400 grit paper between coats. After the finish dries, secure the back assembly into the rabbets with #4-1/2" screws. When it comes time to hang the cabinet, drive round headed screws in the wall, making sure you hit the studs. Once the phone center is outfitted, you'll wonder how you went for so long without organizing your phone and its related paraphernalia under one roof. ■



MATERIAL LIST

	T x W x L
1 Sides (2)	3/4" x 10 1/4" x 25"
2 Upper Shelf (1)	3/4" x 6 1/2" x 23 1/2"
3 Lower Shelf (1)	3/4" x 10 1/4" x 23 1/2"
4 Bottom (1)	3/4" x 10 1/4" x 23 1/2"
5 Top Rail (1)	3/4" x 4 1/2" x 23 1/2"
6 Apron (1)	3/4" x 2" x 23 1/2"
7 Doors (2)	1/4" x 5 5/8" x 12"
8 Grommet (1)	1" diameter
9 Spindles (10)	5/8" x 1 1/4"
10 Gallery Rail (1)	3/8" x 3/4" x 23 1/2"
11 Back (1)	1/4" x 23 1/8" x 18 1/4"
12 Cork (1)	1/16" x 12" x 23 1/2"
13 Keyhole Fittings (2)	1/8" x 9/16" x 1 1/16"



Door Detail

Rout the upper tracks 1/2" deep to allow removal of the doors.

Phone Center Hardware Kit

A hardware kit is available for this project that includes a 1/16" x 12" x 24" sheet of self-adhesive cork, 10 spindles and 24" of gallery rail, a phone cord grommet and a pair of keyhole fittings.

Item #64758 (use order form).....\$12.95

FREE binder when you order six back issues or more!

19 Craftsman's toolbox, a swinging cradle, turned salt and pepper shakers and a simple bookcase. Item 79582\$3.95	20 A Queen Anne desk with cabriole legs, carved grizzly bear and a table lamp. Item 79665\$3.95	21 Adirondack Chair, easy to make deck set, scroll saw project and a sofa table. Item 79673\$3.95	22 Classic tavern mirror, a high chair for the ages, display case and a weekend bird feeder. Item 79681\$3.95	23 Contemporary dining room table, drill bit cabinet and three weekend gift projects. Item 79699\$3.95	24 Entertainment center, dining chair (for table in issue 23), serving tray and tree ornaments. Item 79707\$3.95
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37

Look for more back issues, Craftplans® and hardware kits on the order form between pages 12 and 13.



A clamping station, an early American dresser, a wedged tenon spice rack and a soup spoon.
Item 58784\$4.95

Complete Your Dining Room Set

Here's the first two pieces from our contemporary dining room. The sideboard that completes the set is featured on page 6 in this issue .



Dining Room Chair Plan

Once you build the table, you'll want chairs that match. Follow the step-by-step instructions in issue 24 to construct a beautiful set of chairs.

Item #79707 (Issue 24)\$3.95



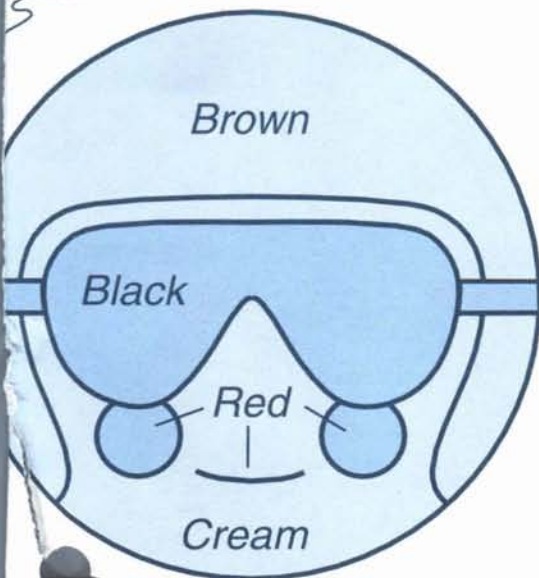
Trestle Table Plan and Kit

Includes one set of 38" equalizer wood slides, alignment pins, table locks and screws.

Item #79699 (Issue 23)\$3.95

Item #88197 (Hardware kit)\$59.95

edges
3/8"
dover bit.



4

Pilot's Head

Full-Size Patterns

- Open staples carefully, remove pattern and fold staples back in place.
- Use graphite paper (available at art supply stores) or cut and trace full size patterns onto your stock.
- Cut out the elevation drawings and pin them to your shop wall.



The Phone Center

Includes full size patterns of the clover cutouts, the sides, shelves, apron and top rail, along with drilling locations for the gallery rail spindles.

Biplane Shelf and Coat Rack

Full size patterns for the wings, peg board, struts, landing gear, propeller, fuselage and the cowl routing jig. You'll also find a painting pattern for the pilot's head.



Cherry Tea Table

Look for full size patterns of the pillar, legs and braces, and a template for laying out the center of each dovetail groove location.

Sideboard

Includes full size end and top views of the handle.



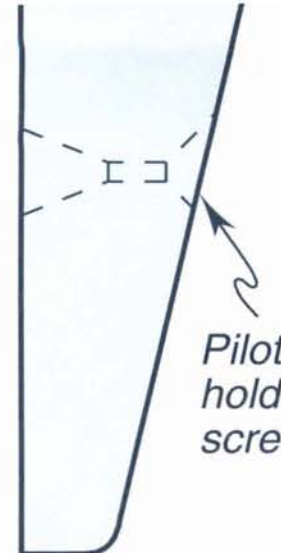
TODAY'S

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Pilot hole for
hold down
screw.

Drill hole for
post (piece 3)
that supports the
pilot's head.

2

Iselage
(Cockpit
Detail)

1



Allow extra stock
for turning.

11).

Ankle

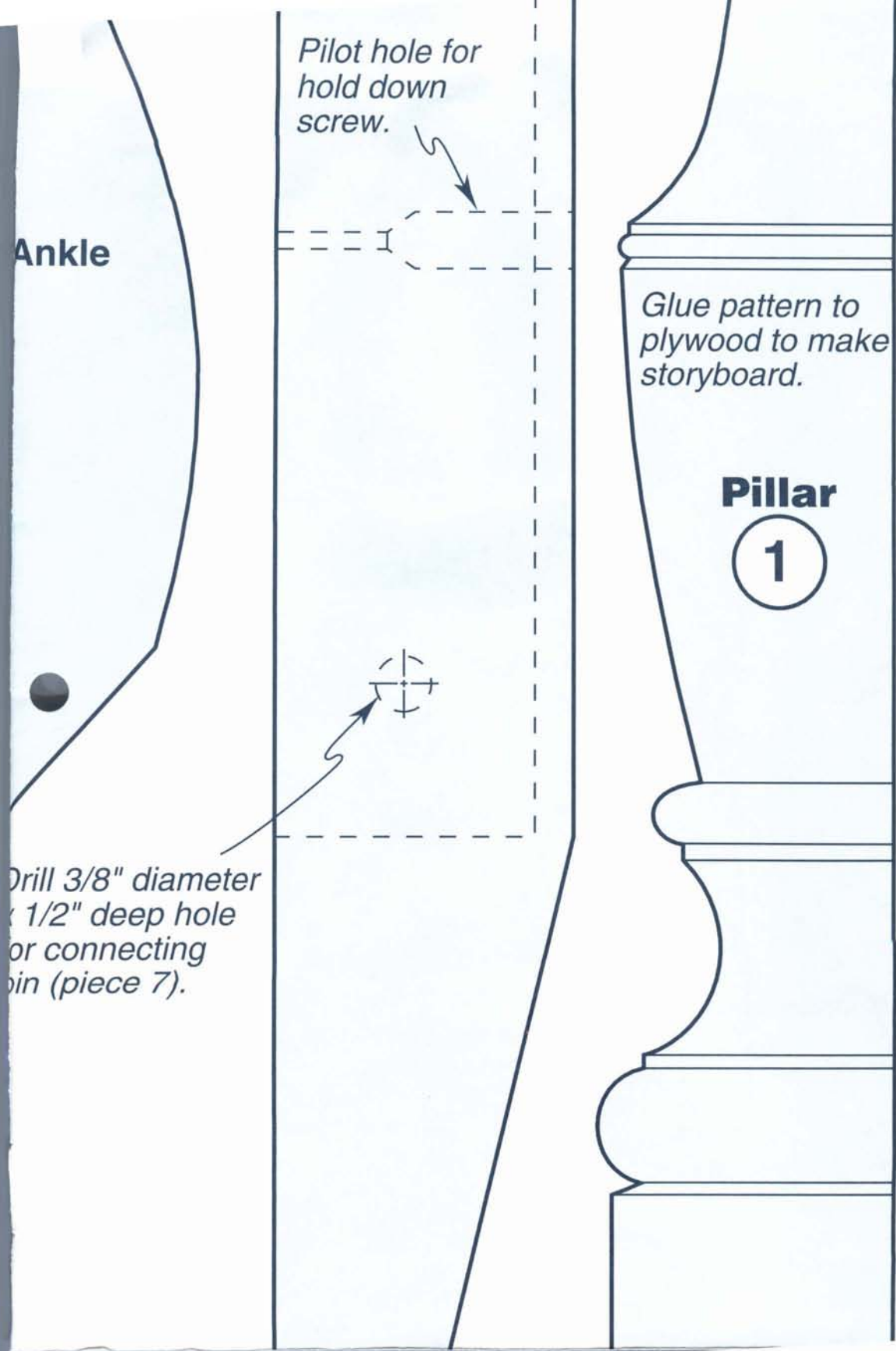
Pilot hole for
hold down
screw.

Glue pattern to
plywood to make
storyboard.

Pillar

1

Drill 3/8" diameter
& 1/2" deep hole
for connecting
pin (piece 7).



detail shoulder

Allow extra stock for turning.

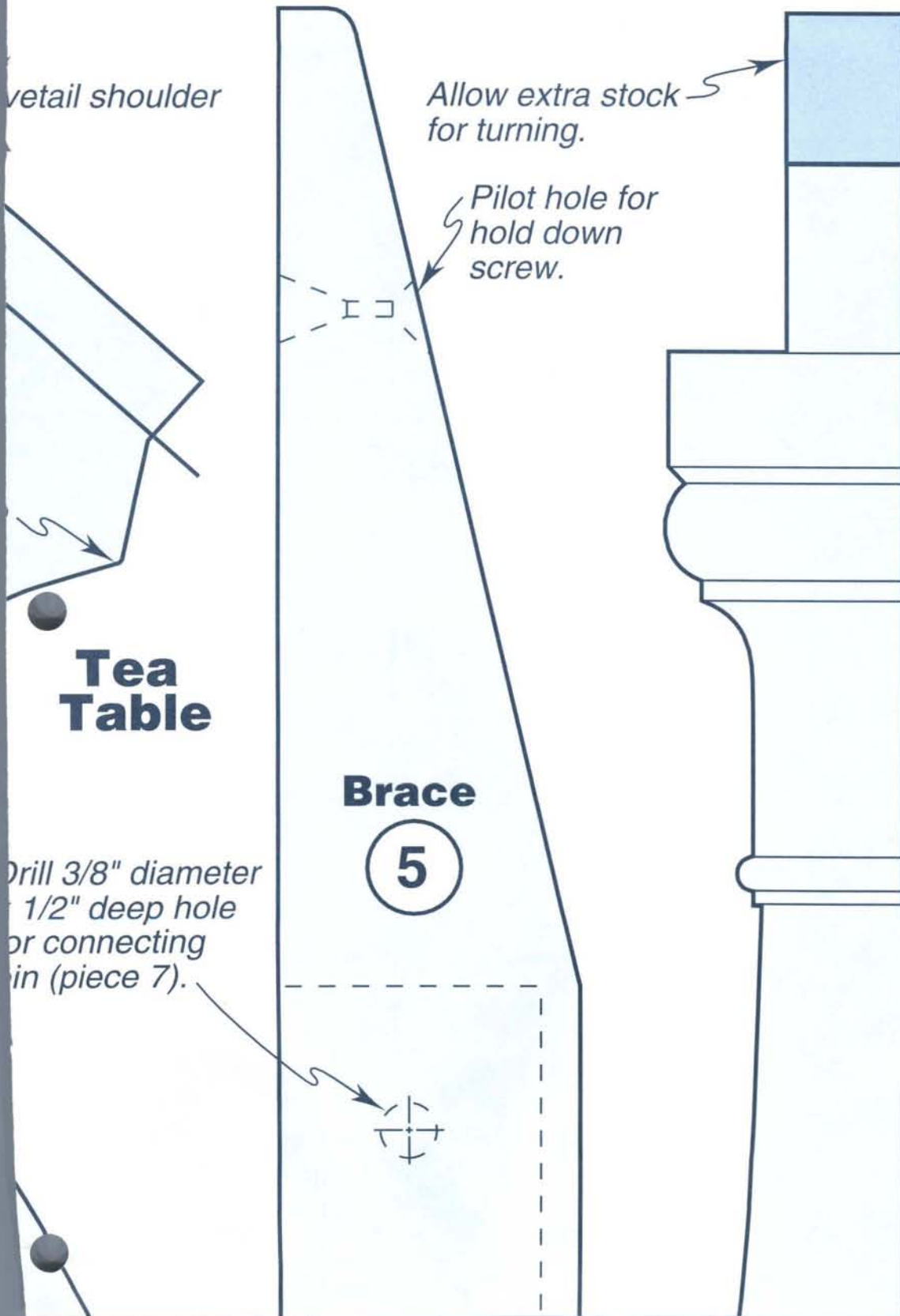
Pilot hole for hold down screw.

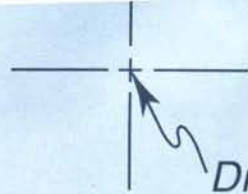
Tea Table

Brace

5

Drill 3/8" diameter
1/2" deep hole
for connecting
pin (piece 7).

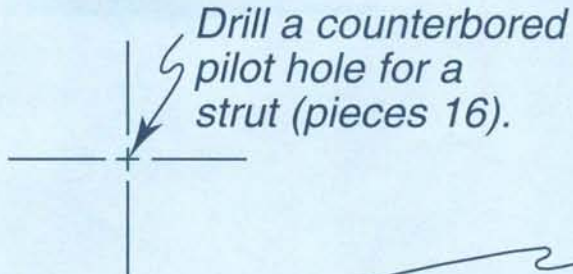




*Drill a counterbored
pilot hole for a
strut (pieces 16).*

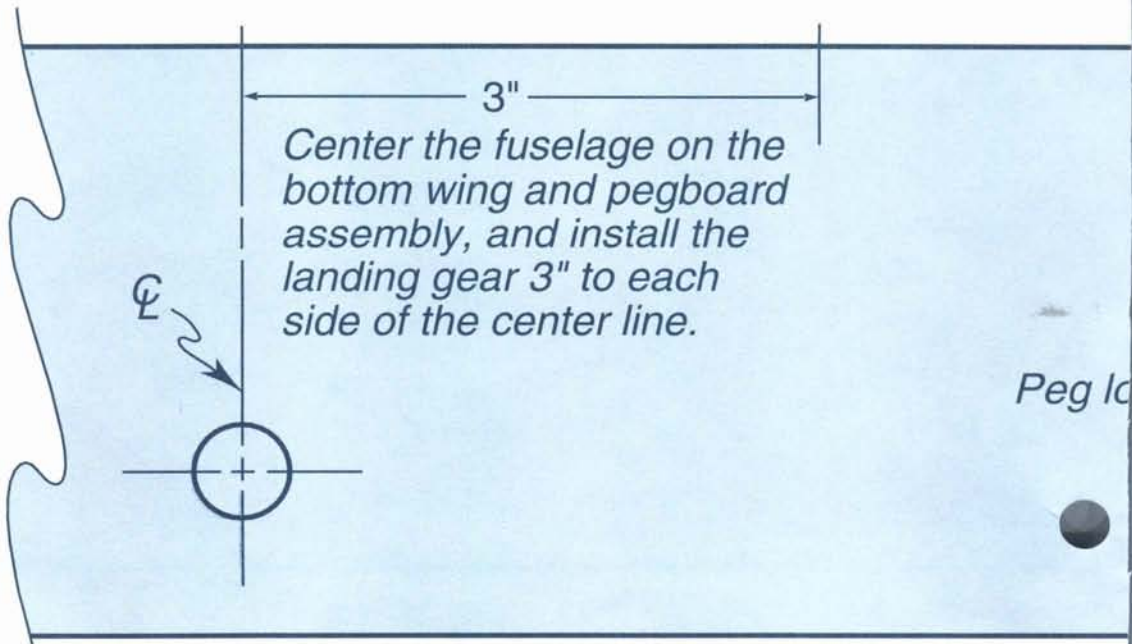
11 Top Wing

12 Bottom Wing



*Drill a counterbored
pilot hole for a
strut (pieces 16).*

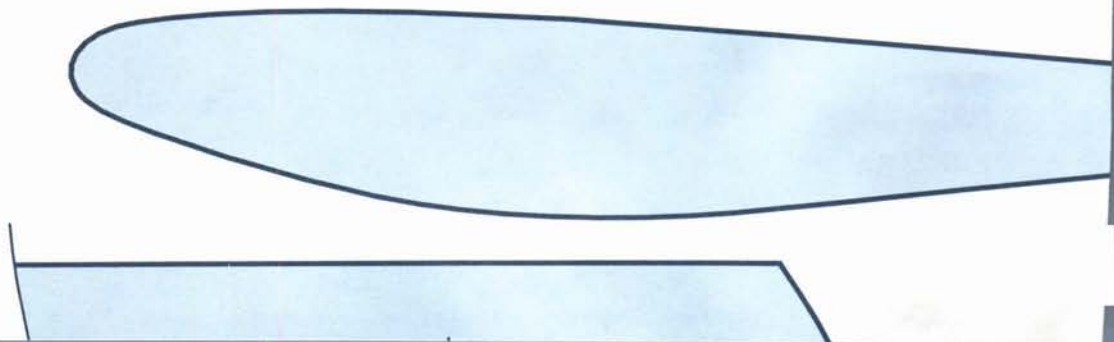
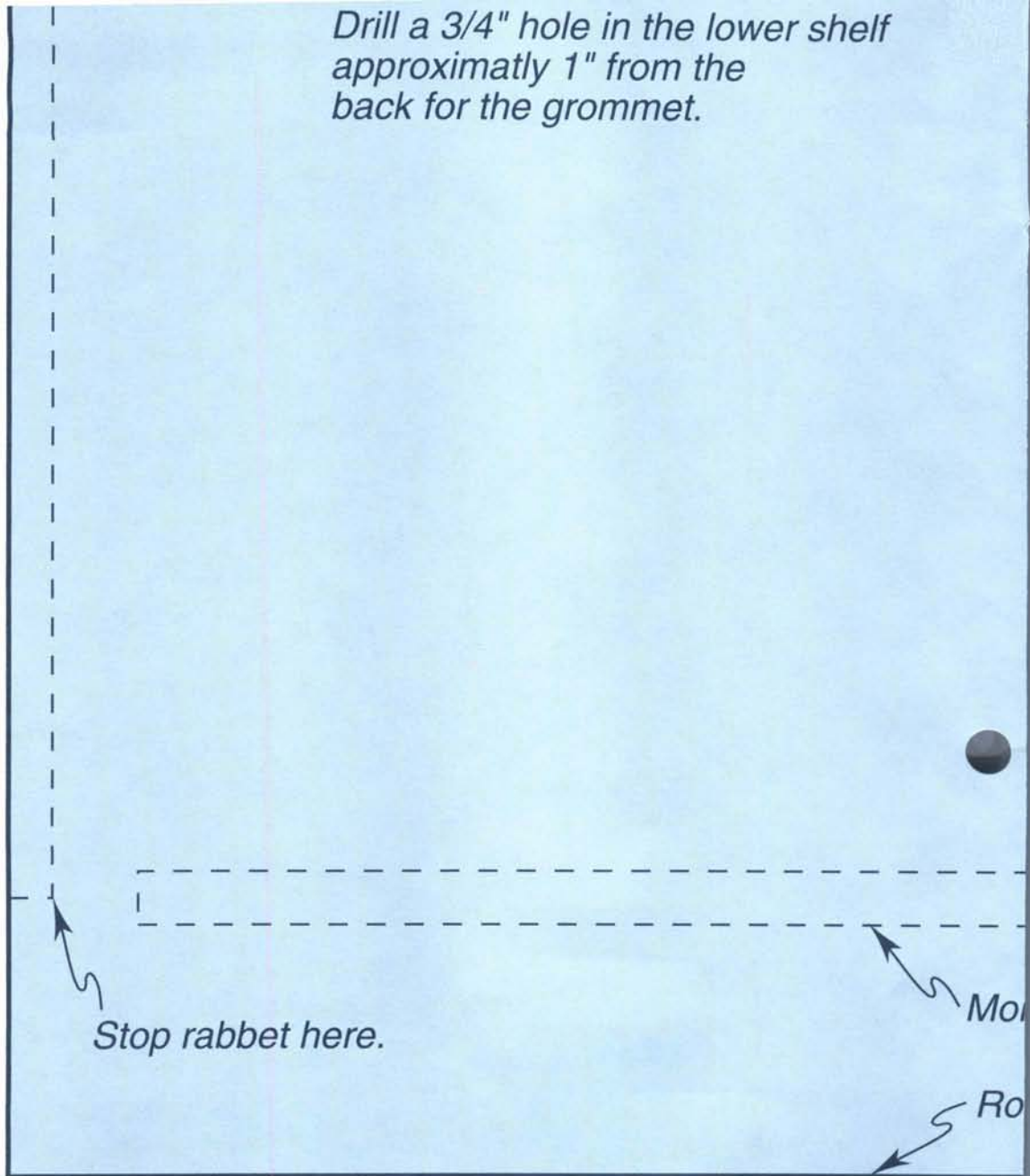
*Rout edges with
3/8" roundover bit.*



*Center the fuselage on the
bottom wing and pegboard
assembly, and install the
landing gear 3" to each
side of the center line.*

Peg lo

Drill a 3/4" hole in the lower shelf
approximatly 1" from the
back for the grommet.



5/16" hole
upper she
1/4" in gal

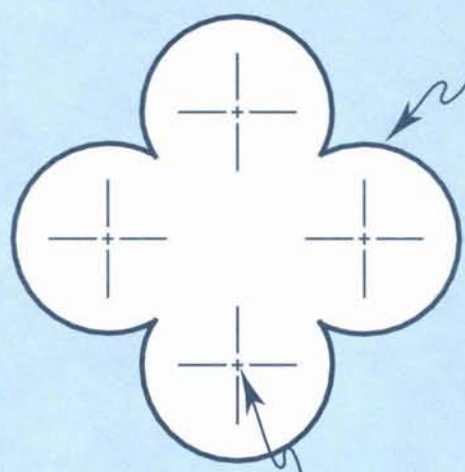
*Adjust router fence here to
accommodate the change in
thickness of the back assembly.*

Mortise for the low

Phon

Rout edge with cove bit.

Rout edge with cove bit.



Mortise for top rail (piece 5).

Center 1" drill bit on crosshairs.

Mortise for top shelf (piece 2).

Stop rabbet here.

Side
1

Ga
R

ne Center

allery
rail

10

Cut tenons to fit the mortises
in the sides (piece 1).

Follow this line for the
shelves (pieces 2 and 3).

Use this pattern to layout the
front edge on all four pieces
listed below.

2 Upper Shelf

3 Lower Shelf

5 Top Rail

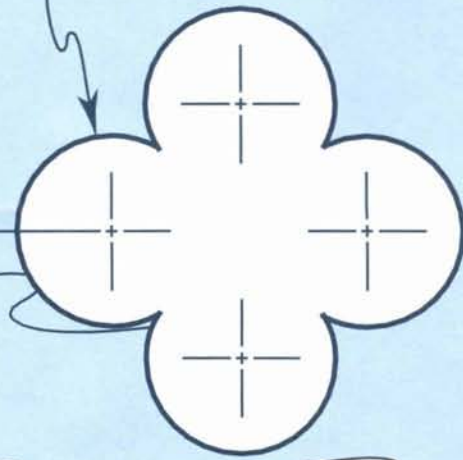
For
pre
rail
(p

Clov
fo

6

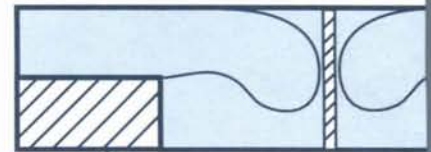
Apron

Clover cutout on top rail only (piece 5).



35

Hand (End V



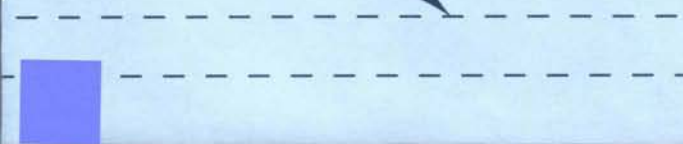
Keep support
bridges until
area is formed

es in
elf and
lery rail.



Rout edges with cove bit.

er shelf (piece 3).





Mortise for apron (piece 6).



Mortise for bottom (piece 4).

Round edges with cove bit.



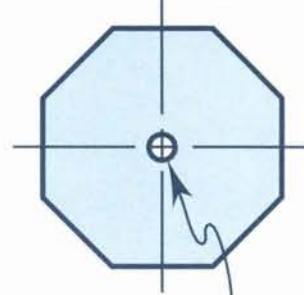
8

Propeller
(Top View)

Biplane Coat Rack

Cowl Routing Jig

Hub Template



*Screw to
cowl stock.*

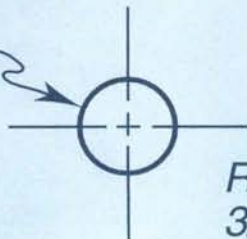
Rim Template

Peg Board

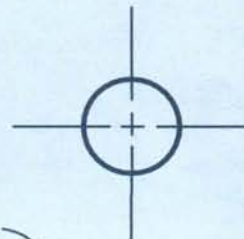
14

*Glue and screw this edge
to bottom wing (piece 12).*

Locations

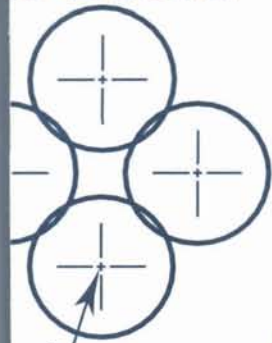


*Rout edges with
3/8" roundover bit.*

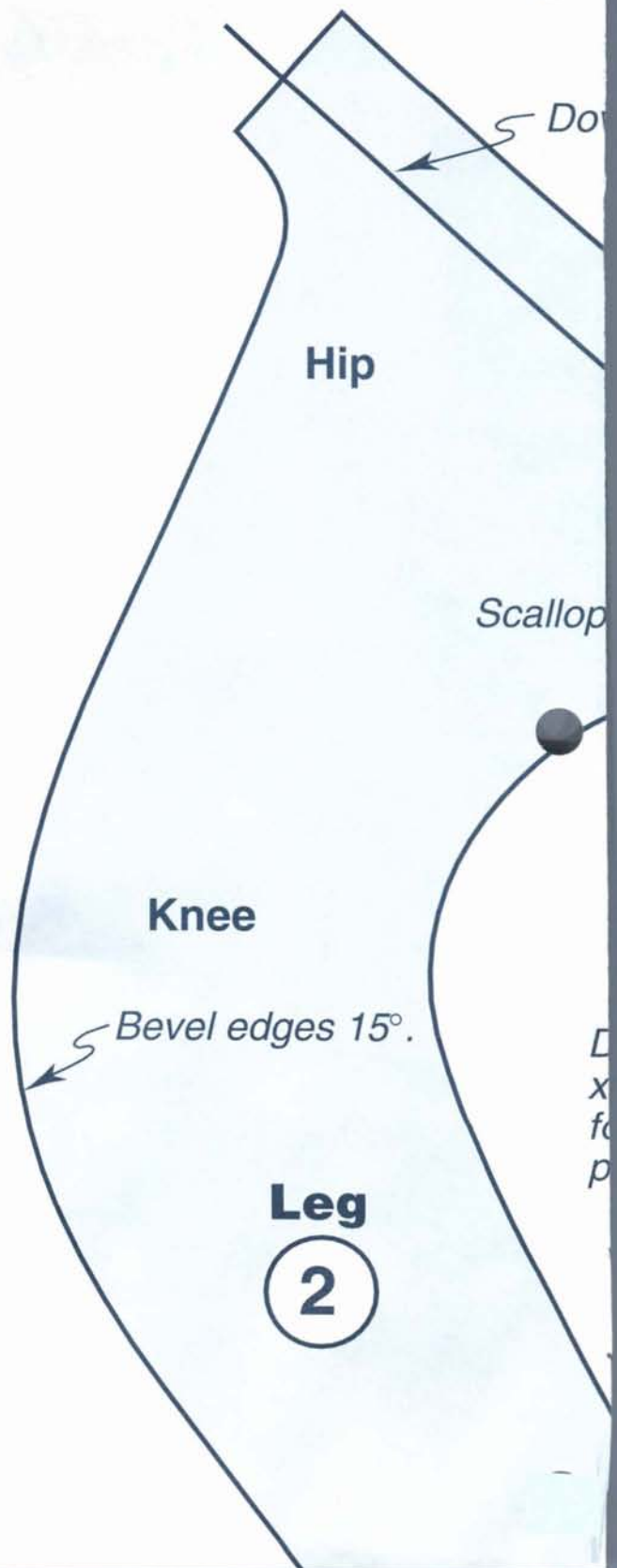


Follow this
profile for the top
rail and apron
(pieces 5 and 6).

Over Cutout for Doors



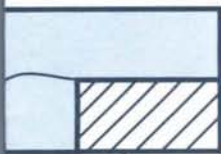
Center 3/4"
drill bit on
crosshairs.



Handle
(Top View)

35

Handle
(Side View)



Part
of grip
is
ed.

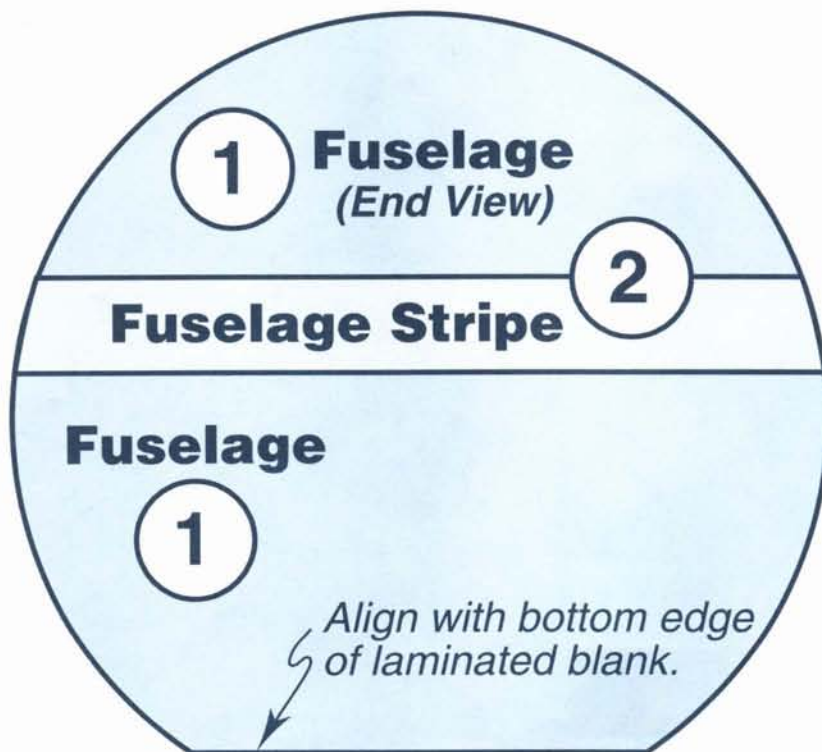
Sideboard

Foot

Use this 120° template
to layout the center of
each groove.



**Dovetail
Groove
Layout**



eller
(view)

Strut

16

*Screw to top
wing (piece*

*Nail template
to corners of
cowl stock.*



*Rout edge with 3/8"
roundover bit.*



13
**Landing
Gear**

*Screw to bottom
wing (piece 12).*

*Rout
with
round*

