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home furniture

SPRING 1995 NO. 2



On the cover: Flaring curves in figured veneer highlight this bureau, part of a bedroom suite by Dennis Saindon. p. 80.

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MORE MEASURED DRAWINGS AND DIMENSIONS

I had hoped that this new publication would provide me with enough construction details of at least a few of the pieces illustrated and written about that I could feel confident in attempting to duplicate them in my workshop. I'm sure I'm but one of many amateur woodworkers who are happy to build without apology furniture designed by such talented and trained professionals as those whose work appeared in this first issue, provided that enough construction detail and major dimensions were provided....

—Philip R. McCray, Catonsville, Md.

Home Furniture is exquisitely done. However, the one thing that is missing, which I think should be there, is measured drawings. While I have constructed at least two pieces of furniture from photographs, it sure is a lot easier if you have all the dimensions....

—David B. Goldstein, Seattle, Wash.

Publisher replies: We gave lots of thought to drawings and dimensions, and for many of the furniture pieces we included them. But ultimately the purpose of *Home Furniture* is to offer woodworkers and others interested in handmade furniture a storehouse of well-done pieces and design ideas. Our goal in doing this is to encourage craftsmen, amateur and professional alike, to develop their own designs or to adapt those of others. *Home Furniture* is not a "project" magazine, in the usual sense. It's our aim to offer information (and some inspiration)

on the "what-to-make" problem, rather than to provide instruction on the "how-to-do-it" question.

We are mindful that having a good sense of a piece's dimensions is important to understanding what makes it work functionally and visually, or not work. So we'll continue to provide drawings for some examples and overall dimensions (in the "Specifications" box) for all projects in future issues.

DON'T FORGET PERIOD FURNITURE

My interest is in period furniture. I realize that you have to achieve a balance, but don't forget those of us who love the beauty of older furniture (William and Mary, Queen Anne, Chippendale, etc.).

—G. L. Mayberry, Kingsport, Tenn.

MODERN PIECES GOT SHORT SHRIFT

I received my first issue of *Home Furniture* and . . . it is beautifully produced, edited and illustrated.

I have one major complaint. . . the lack of modern furniture covered. You did have perhaps 10% of modern furniture in your items displayed. The rest was . . . reproductions and takeoffs of 18th-century, Shaker, and especially Arts and Crafts furniture.

I hope you realize there is life beyond Stickley.

—Elliott J. Berman, Atlanta, Ga.

IS DESIGN THE SLAVE OF TOOLING AND SKILL?

The potential readers of *Home Furniture* probably know *how* to build a piece—or at least how to hire

home furniture

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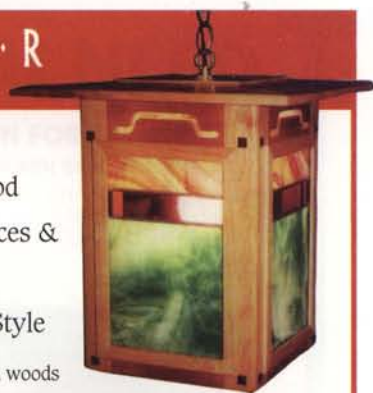
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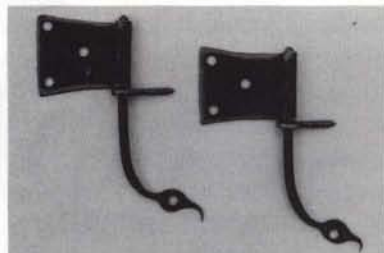
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someone to do the physical building. *What to build* and *why* remain important questions. An excellent topic for a future issue might address this issue: Why do I, for instance, build straightforward, rectilinear neo-Shaker pieces? How much of what I build is dictated by what I feel is safe, by what I know I do well, by the jigs, fixtures and machinery in my shop? In this vein, I suspect that advertisers affect how we design: For example, if one learns to use the Leigh dovetailing jig well (no mean feat!), that knowledge is sure to affect the overall appearance and quality of one's work.

—Hugh Foster, Manitowoc, Wis.

SCALING FURNITURE FROM PHOTOS: A BETTER WAY

While Philip Lowe in his article "Scaling Furniture from Photographs" (*Home Furniture*, Winter, 1994) gives a classic method for deriving detail dimensions when some overall dimensions are known, another method using modern tools works better and faster for me. It requires only two tools: a small calculator with a memory and a 100-to-an-inch rule (Pickett No. 33E is a useful

6 in. long and available at good stationery stores).

Let's say you want to establish detail dimensions of a table when you know its height. Simply hold the rule against the photo and determine from it how many hundredths of an inch the table is high, divide this figure by the actual height of the table and punch the resulting figure into your calculator's memory. Now you can measure all parts and details of the table on the same plane with the rule and derive dimensions in inches by dividing the measurements in hundredths by the number in the calculator's memory. Mathematicians call this method "establishing a conversion factor," and it's much simpler to do than it is to describe.

Using this method I measured the height of the New York table Lowe scaled (it's in Joseph Down's great book *American Furniture, Queen Anne and Chippendale Periods in the Winterthur Museum*, catalog no. 318) to be 310 hundredths of an inch. Dividing 310 by 28¾ (the actual height of the table in inches) gives you 10.782608, which I stored in the calculator's memory. Then I measured

the thickness of the tabletop with the rule to be 9.5 hundredths of an inch and divided 9.5 by 10.782608, yielding .88, or 7/8 in. So I think the top of the table is 7/8 in. rather than the 1 in. that Lowe scaled. A 1-in. thick top would have meant using horribly expensive and very wasteful 5/4 lumber. For a 7/8-in. thick top I would have used rough 4/4 lumber, much of which comes 1½ in. to 1⅞ in. thick, and planed it down to 7/8 in. I suspect that the unidentified 18th-century New York cabinetmaker did the same.

The larger the photograph the more accurate your dimensioning will be. This method works on perspective photos too, but adjustment should be made for very tall pieces because of distortion in the photographic process. Usually height must be added to the bottoms of tall pieces....

—William A. Pease, Lancaster, Pa.

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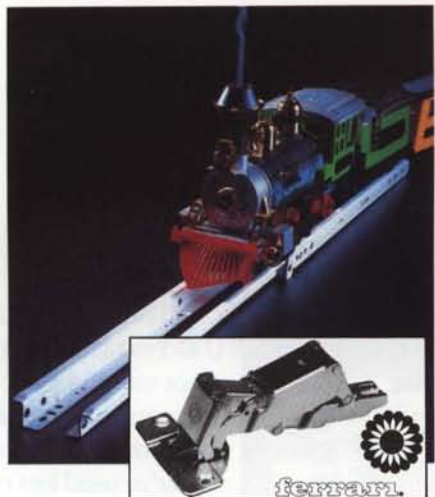
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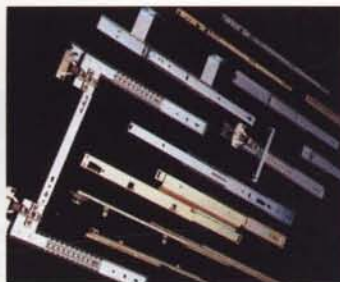
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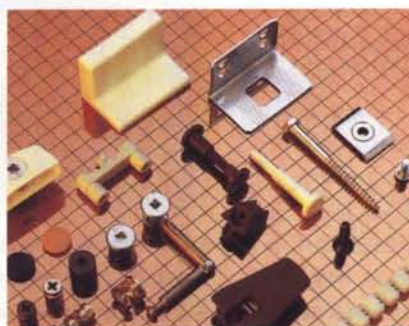
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CHOOSING MATERIALS FOR MAKING SCALE MODELS

My drawing skills aren't good, so I've been thinking about model-making as an alternative. What types of material are best for making models?

—D. Windsor, Queens, N. Y.

James Schriber replies: Even if you have trouble drafting, it's still a good idea to make a two-dimensional drawing before you start making a model. Basic front, side and top views of an object are relatively easy to draw and will help you transfer the dimensions of the piece you are designing to a three-dimensional object.

The materials you use depend on the kind of model you are making. For straightforward, rectilinear pieces, clear pine works well. There's no need to buy it; just make a habit of saving clear scraps that you cut into small sticks. Balsa also is a popular material,



but most people don't have it lying around the shop. If you don't have balsa, you don't need to buy it. Pine works fine.

Scale models show proportion, detail. The models shown here, made by James Schriber, show the variety of effects that can be achieved using pine scraps, paint and pressed paper. The 6-in. ruler in the foreground shows the scale.

For more sculptural pieces, you can use wire and clay. Art stores carry polymer clay that can be rough-shaped, hardened in the oven and then sanded or rasped to final shape. Shaping hardened clay, however, can be a difficult process that takes a lot of patience and practice. If you can, you're better off shaping pieces from pine.

Another good material for model making is 1/8-in. plywood, particularly if you are scaling your model to 1/8 in. = 1 in. Using this scale, 1/8-in. plywood becomes a 1-in. reference in your model. This is a good scale to work with because it is small enough to make your models manageable yet large enough to show detail.

Cardboard or Homasote can be glued up to various thicknesses and shaped to mimic upholstery or chair cushions. Homasote is an asphalt-treated insulation board usually used as sheathing for buildings. It is widely available in 4x8 sheets at building-supply outlets.

I've found that the best way to glue scale models is with yellow glue. I pour out a glob and let it sit for a while. When it gets thick and sticky, it dries quickly. The pieces of your model

will bond in a couple of seconds. Instant glue and hot melt are more expensive, and they usually do not work as well. If you've used lots of different materials in a model, it may help to stain or paint it to get a better idea of how it will look.

Models make great sales tools as well. They're cute and eye-opening, and you'll almost always see a smile on a client's face when you finish one.

(James Schriber builds custom furniture in New Milford, Conn.)

METHODS TO IMPROVE YOUR SKETCHING

I have trouble sketching out my ideas for clients. What are some simple methods for making rough sketches?

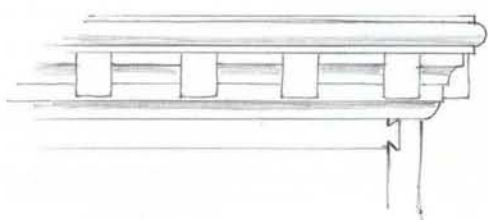
—A. Rogers, Los Angeles, Calif.

Marc Andrew Moses replies: My advice is to practice. Gaining confidence in your drawing skills and removing self-consciousness are important. Practice by drawing straight lines straight and circles round, and by making perpendicular lines. To make a freehand line straight, I was taught to place a dot where I wanted the line to end, then go to the beginning of the line

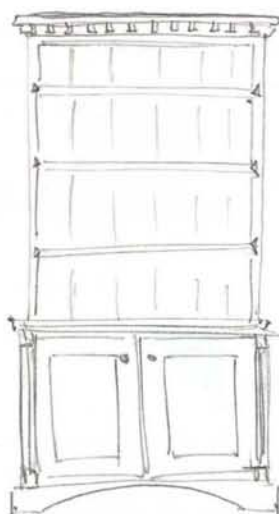
IMPROVING YOUR SKETCHING

QUICK SKETCH

Parallel lines made using dot method



FRONT VIEW



A sketch can give a rough idea of size, proportion and detailing.

FINAL SCALE DRAWING



and draw to the dot (drawing, above). This technique also can help with right angles.

Don't labor over every inch. When you know where the line is going, draw it quickly. If it doesn't

turn out just right, continue. Don't stop to erase and apologize. Also, don't stop to draw a Chippendale drawer pull on each drawer front; just draw a smiley mouth with two dimples on one drawer and proceed.

The client will know you intend to put pulls on all the drawers.

Rough scale can be accomplished by using grid paper, or by imagining a grid when you draw. For example, a 5-ft. dining table is twice as long as it is high. For a side view, draw the top and call it 5 ft. long. Then place dots at the bottoms of the legs (half as long as the top) and connect the dots. This might sound elementary, but you'll see many architects doing the same thing.

For arcs and radii, mimic a circle over the paper with your pencil, then draw in the part of the circle you want. The quarter-round will be just that, instead of a nondescript slash.

(Marc Andrew Moses is an architect and cabinetmaker in Kennebunk, Maine.)

THE MERITS OF FULL-SIZED DRAWINGS

What are the pros and cons of full-sized drawings as opposed to scale drawings?

—M. George, Boston, Mass.

Steven Thomas Bunn replies: A full-sized plan of a proposed piece of furniture is used for the same reason that boatbuilders draw or "loft" a boat's lines in actual

size on the shop floor—it lets you see the exact size of each component, how parts fit together, and how they will look in relation to the whole.

These things are often difficult to see with scaled-down plans. After all, the thickness of a line in a small drawing can represent more than 1/16 in. A full-sized drawing, for example, allows me to determine the ideal curve for a bowfront tabletop without forcing me to guess how it will eventually look. The curve I settle on is almost always different from the one I projected in the initial scaled drawings. The full-sized drawing, usually on a piece of plywood, then becomes a template for marking out the top and corresponding drawer fronts and dividers.

Full-sized drawings, however, are not always practical. They are large, cumbersome, and often unnecessary for simpler pieces. Sometimes it makes sense only to do full-sized drawings of tricky parts. For example, I generally don't make full-sized drawings for drawers, but I do lay out drawer dovetails in actual size.

(Steven Thomas Bunn designs and builds custom furniture in Bowdoinham, Maine.)

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• See Fine Woodworking, J/A, 1991, p. 59

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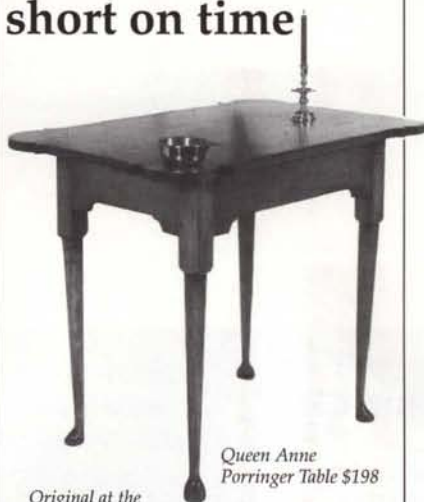


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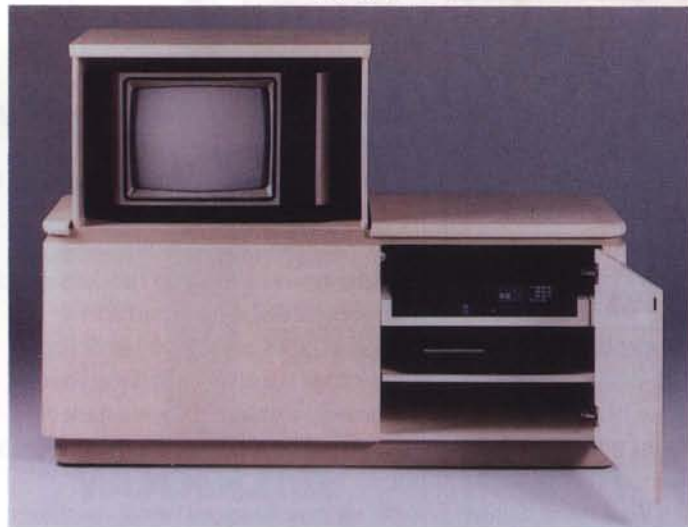
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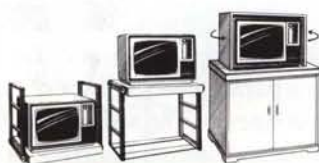


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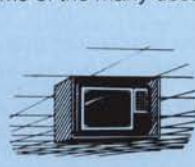
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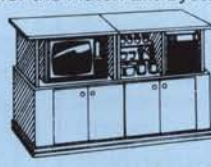
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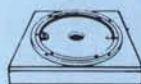
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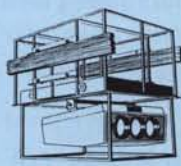
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the finish line

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AVOIDING A WEEPING FINISH

I've used a number of different kinds of oil finishes with the same pesky result. I apply the oil, let it sit for five or ten minutes and then wipe the surface dry with a clean, lint-free cloth. But within a half-hour or so, small amounts of the finish seem to weep from the pores of the wood. If the oil dries on the surface, it can ruin the finish. What am I doing wrong and how do I prevent this?

—Martin Edmunds, Minneapolis, Minn.

the excess off too quickly, oil may weep from the pores as it comes up to the ambient temperature. Try to keep the temperatures of the finish, the piece and the workroom as similar as possible.

Second, you may be witnessing bleeding, a common problem on wood with very large pores. To minimize the effects of bleeding, wait until the oil has soaked well into the wood and has thickened slightly before wiping. It will be a bit resistant to your cloth, but will still wipe off. Wait 30 minutes to an hour before wiping, checking the oil's viscosity every now and then by lightly rubbing your finger in the finish. Also, to make the finish more even, try to lift the excess oil out of the crevices. I've found that dabbing the crevices with a dry paintbrush works well. I wipe the excess oil off the paintbrush with a paper towel between dabs.

If oil dries on the surface, the finish isn't ruined—you'll just have to work a little harder for it. A thorough rubout with 600-grit paper followed by 4/0 steel wool gives good results.

Last, you may not be allowing enough time for each coat to dry. I allow 48 hours.

(Robert Nicoll works as the finisher in David Margonelli's shop in Edgcomb, Maine.)

A FINISH THAT WILL WITHSTAND FAMILY DINING

I want to make a family dining table that is likely to take a fair amount of abuse. What can I use for a really durable tabletop finish? I had considered one of those bar-top finishes, but they tend to be a bit on the glossy side. Is there something that

looks more understated but stands up to abuse?

—Peter Husted, Pleasant Valley, N. Y.

Andy Charron replies: Your initial instinct to use a bar-top finish is good. Bar-top varnishes contain a lower percentage of oils and a harder resin than other varnishes, making them extremely durable and resistant to water and household chemicals. Once these "short oil" varnishes (as opposed to "long oil" spar varnishes, which remain softer and more flexible) are fully dry, they are extremely scratch resistant. But they do tend to be glossy.

To remove the glossiness from a bar-top finish, you might try rubbing out the varnish when it is dry but not fully cured. Apply several thin coats of the varnish, allowing each to dry according to the manufacturer's recommendations. Immediately after the last coat has dried, begin rubbing with a soft cloth. I use a thoroughly dampened soft cotton cloth and rubbing compound. I start with a medium rubbing compound and finish with a fine compound. You can get the compound through mail-order or at auto-supply stores. The sooner you begin rubbing after the varnish has dried, the easier it will be to rub out.

You will know that the varnish has not dried sufficiently if it becomes cloudy, begins to gum up, or streaks after you begin rubbing. If this happens, let the finish dry, sand out the damaged area, and apply another coat. It may be helpful to finish a scrap piece along with your tabletop to use as a test for dryness. You

Robert Nicoll replies: Three possible causes come to mind for the problem you describe. First, you may be applying oil that is cooler than the wood or the ambient temperature of your workroom. I've found that if you apply the oil when it is cool and wipe



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should be able to attain a soft gloss or satin sheen.

Rubbing a bar-top varnish to a softer shine is a bit tricky and takes a lot of elbow grease. As an alternative, you could use a rubbing varnish or polyurethane. Although these finishes don't dry as hard as bar-top varnishes, applying several very thin coats should provide ample protection for the average tabletop.

Polyurethane is easy to apply, requires no rubbing, dries quickly and is available in either gloss or satin. However, I wouldn't recommend using it if your table receives direct sunlight for long periods of time, since most polyurethanes won't stand up to prolonged UV exposure.

(Andy Charron owns and operates a small custom cabinet shop in Red Bank, N. J.)

FINISH FOR PORCH FURNITURE

I'm going to be building some Adirondack chairs and side tables for a screened porch. The furniture shouldn't get any direct sun or rain, but it's sure to suffer some exposure. What finish would be best?

—William Shellhaze, Medina, Ohio

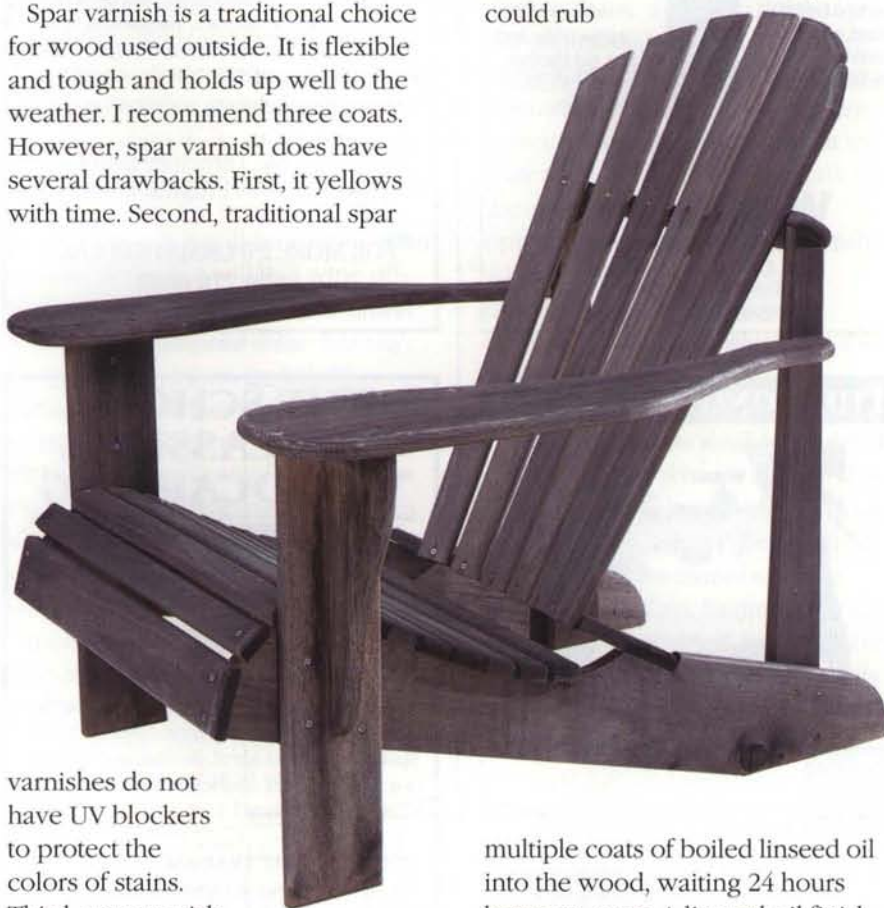
Rick Duncan replies: The sun's ultraviolet (UV) rays, whether direct or indirect, slowly and subtly fade the colors of stains and degrade the elasticity of finishes. Rainfall will expose your furniture to drastic shifts in humidity and induce rapid shrinking and swelling of the wood. So the finish you choose needs to be able to flex with the wood's movement, and preferably resist UV degradation.

If you want to stain the pieces you build, pick an exterior-grade stain. Exterior grades are formulated to hold their colors better under UV rays than interior-grade stains.

Spar varnish is a traditional choice for wood used outside. It is flexible and tough and holds up well to the weather. I recommend three coats. However, spar varnish does have several drawbacks. First, it yellows with time. Second, traditional spar

and won't yellow as much as spar varnishes. In addition, they're usually easier to strip than spar varnishes when the time comes for refinishing.

For the classic oiled finish, you could rub



varnishes do not have UV blockers to protect the colors of stains. Third, spar varnish generally comes only in a gloss finish. In addition, as the finish oils are lost to weathering, spar varnish will crack and is generally tough to strip for refinishing.

Your best choice probably is a spar urethane. These tough, brushable finishes come in satin or gloss. Like spar varnish, spar urethanes are flexible and provide good water-proofing. Most contain UV blockers

multiple coats of boiled linseed oil into the wood, waiting 24 hours between coats. A linseed-oil finish will flex with the dimensional changes of the wood, but it won't stop UV rays, moisture penetration or subsequent weather staining. If you do use boiled linseed oil, renew the finish with a thin coat every one to three years.

(Rick Duncan is co-owner of Heartwood Consulting, Inc., a company that specializes in finishing architectural millwork. He lives in Strongsville, Ohio.)

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A towering example of the cabinetmaker's art. Allan Breed made this copy of a John Goddard secretary after the 18th-century original was sold in 1989. Considered by many to represent the pinnacle of American cabinetmaking, the six-shell mahogany secretary stands 9½ ft. tall.

Remaking a Masterpiece

A one-man shop in Maine reproduces a \$12 million Newport secretary

BY ALLAN BREED

i was working on the patterns for a Federal era New Hampshire chest when the phone rang.

"Hi, Al, this is Debbie calling from Mr. Nicholson's office. Will you hold for a call from Mr. Nicholson?"

Of course I would hold for Ed Nicholson; he was a great customer. This was the stuff that self-employed cabinetmakers' dreams are made of, the classic patron-craftsman relationship. The patron asks if you can make this or that, and you always say yes.

"Al, I've been in touch with a party that is looking for someone to make a six-shell Newport secretary, and your name came up. What do you think it would cost to make an exact copy of one, say like the one in the Met?"

I pictured a desk with paneled doors above.

"Oh, gee, I don't know," I waffled, "maybe around six thousand."

"Six thousand!" This was not the cry of surprise when a price is thought to be too high, although I had heard that



Masterwork in progress. Breed spent four days measuring the Goddard original and then four and one-half months reproducing it in his crowded, small shop in York, Maine. Here, the secretary's upper case stands completed as Breed rubs out the finish on its doors.

one before from Ed. This was the exact opposite.

"Hold on a sec," I said, looking for a book with a color plate of the piece. Now I realized what we were talking about: the ultimate Newport secretary. It was 9½ ft. tall, and one of ten made in the revered cabinetmaking shop of Goddard and Townsend. "I guess six is a little low." I laughed, and so did he.

Ed told me that one of these secretaries, which had been in the same family since the 1760s, when it was made, was being sold. The auction house wanted to commission a precise reproduction to take its place.

"How about twelve thousand?" Ed asked.

"That sounds more like it, actually. Maybe fifteen,"

I said, somewhat tentatively.

"Are you comfortable with that?"

"How about eighteen, just to be on the safe side?"

Ed was laughing now. "I'll tell them eighteen and we'll see what happens."

When I'd been off the phone a while the importance of the job began to



In historical company. Breed's reproduction now stands where the original stood for some two centuries, in a Providence, R. I., house built by Nicholas Brown and occupied by his descendants until 1986. The sale of the original secretary paid for the restoration of the house, now the John Nicholas Brown Center for the Study of American Civilization.

sink in. This was one of the finest pieces made by John Goddard. In the mid- to late 1700s, the Goddard and Townsend families had been the most distinguished group of cabinetmakers in Rhode Island, where cabinetmaking was a fine art.

I have always believed in saying yes to a job first and figuring out how to do it later. My theory has always been that once you have the vocabulary of techniques for basic construction, making

any piece, regardless of its complexity, is really just a matter of combining many small operations. The fact that the secretary was regarded by many to be the supreme piece of American furniture didn't make it any more difficult to build. It did make it trickier to bid, though. My final price for copying the piece reached \$34,000.

A TRIP TO CHRISTIE'S

Several weeks after Ed Nicholson's phone call, on a cold and windy day in February 1989, I found myself in the foyer of Christie's auction house on Park Avenue in New York City. I had brought a fellow woodworker with me from Maine to help with the measuring of the piece. We were led upstairs to a small, windowless room where dozens of paintings, among them

works by Picasso and Cassat, leaned against and hung on the walls. Security cameras overlooked the scene. Against one wall two large forms swathed in bubble wrap sat on dollies. Here was the piece of furniture that the auction catalog would refer to as "The Magnificent Nicholas Brown Desk and Bookcase."

The secretary, by all accounts a masterpiece, was the last of four similar secretaries made for the four Brown brothers of Rhode Island. Of the four (and of the six others built for different families), this was the only one still outside museum walls, and it was likely to bring millions of dollars.

Did the piece live up to its reputation? I was prepared to tell my cohorts that I'd looked the piece over and found it wasn't all it had been made

JOHN GODDARD ORIGINAL



BREED'S REPRODUCTION



Matching a masterpiece line for line. To make his reproduction of the John Goddard original, Breed documented every nuance of Goddard's work. Even flaws and peculiarities in the original, like the upside-down lock in the upper drawer, were recorded and reproduced.

out to be. I was wrong. The piece was more impressive than I had imagined.

As we unwrapped the two cases, the crisp lines of the carving on the shells appeared. It was the work of a meticulous craftsman: no careless slips, not a waver in the lines on the shells. It was extraordinary craftsmanship.

The maker was human, however, and did make a few mistakes, like planing a little too deeply on the upper door stiles and exposing the mortises for the rail tenons. Luckily, this flaw was about 8 ft. off the floor, so he was able to fill the holes with glue and sawdust instead of making two new doors.

The ornamentation on the piece was not complex when compared to a piece by Philadelphia's best carvers, but it was developed fully and neatly. Inside the desk section, even the drawer bottoms and sides were mahogany, dovetailed with minute and precise joints. It was a showoff piece, and the maker obviously had a customer who was willing to pay for this type of work.

MEASURING A MASTERPIECE

We began measuring and recording the piece using sticks held against the piece and marked with direct mea-

surements. We also took photographs and made templates, rubbings and sketches from various viewpoints.

As we worked we began to discover some of the peculiarities of the secretary. We found that one of the shells had come loose and been screwed back on, that a tapered dovetail batten had been added to correct a warped door and that the three flame finials at the top of the cabinet had varying numbers of flutes.

After two days of measuring and recording, the only thing I was unsure about was whether I had enough information to copy the shells. I knew a mold maker in Boston who could mold and cast anything from a building facade to a basket of fruit, and I considered having him cast some shells from the original to use as models for the carving. The idea appealed to me at first, but the thought of pouring liquid rubber over a fortune's worth of carving set off an alarm, and I decided to go with my templates, measurements and photos.

After returning to my shop, I drew up the secretary full scale, using a sheet of plywood as a drafting board. I returned to New York for another couple of days to correct the drawing. All of

the information had to be recorded before the sale, which was only a few weeks off. As I took some final rubbings of the brasses and rolled up my prints, a Remington sculpture was calmly knocked down in the next room for \$3 million. There was no telling what this piece of furniture might bring.

THE SELLING OF THE SECRETARY

The auction took place on a warm day in June, and my wife and I went down to New York City for the event. The auction hall was packed with spectators and the media. People milled around and looked over other lots to be auctioned at future dates, but everyone was thinking of Lot 100, The Magnificent Nicholas Brown Desk and Bookcase. It had its own catalog, complete with family histories, portraits, maps of Providence and glossy color closeups of the secretary.

The auctioneer opened by asking for a bid of \$2 million. After a second of silence, the booming voice of Ron Bourgeault called out "Five million!" Ron, a well-known New Hampshire auctioneer, was bidding for Ed Nicholson. Everyone turned to see Ron



Every blow of the mallet was guided by an image of the original. Drawings and patterns of the Goddard secretary filled his bench and the piece itself as Breed worked. Here, with the secretary nearly finished, Breed works on a Newport-style wall niche, under the watchful eye of a neighbor, Lucas Moore, 13.

standing with his arm outstretched and his hand opened wide to show five fingers, each representing a million dollars. Ron and another bidder, the latter representing tobacco heiress Doris Duke, bid the piece up to \$10 million. Then a new bidder, the firm of Israel Sack, offered \$11 million. Silence. The gavel came down. When the applause and the congratulations were over, the piece had been sold for \$12.1 million, including a buyer's premium—a new record price for a piece of furniture. The whole process had taken about a minute.

WHERE DO I GET GOOD ENOUGH WOOD?

Back in my shop in Maine, I began to worry about wood. In the 18th century, a craftsman could buy a log, have it sawn, and make a piece that was consistent in grain and color. These days I would be lucky to find two boards that were from a common tree.

At this point I happened to take a trip to Costa Rica on other business. As it turned out, the company I was visiting had a large supply of mahogany cut from managed land. The company had its own mill and stacked the wood in flitches as it was sawn from 3-ft. and 4-ft. dia. trees. My eyes widened and I chose enough boards from one tree to build the secretary. Perfect.

I soon discovered, though, that raw wood could not be shipped out of the country; it had to be made into something first. So I bought a couch and had it crated up with my mahogany. When the couch finally got to Maine, though, it came without the crate.

I called the docks in Newark, and was told that the crate was still kicking around, and if I really wanted it, they'd send it up. But when the crate arrived, it was in the form of boards strapped in a bundle, and they weren't the same ones I'd picked out in Costa Rica. I never figured out what happened to those beautiful boards, but I still have the couch in my living room to remind me of the trip.

After all my effort, I ended up buying wood from my usual supplier. I was able to find a few choice pieces of 12/4 mahogany and have it resawn into 6/4 planks, giving me enough to make the whole secretary.

REPRODUCING PERFECTION

Now came the making of the piece. Impressive as it appears, the secretary is essentially two boxes: the desk section and the bookcase that sits on top of it. Each one is a dovetailed case with either drawers or doors. The ornamentation is applied as a second layer to the outside of each case.



Delicate dividers made the desk interior a challenge to build. Breed followed the original in using mahogany for the drawer sides and bottoms in the desk interior and also, albeit reluctantly, in face-mounting the butt hinges for the small central door.

The desk section has applied feet, blocking on the drawer fronts, and blocking and carved shells on the lid. The desk interior is made up of 17 drawers, six pigeonholes and a central shell-carved door.

The upper case has three 5-ft. tall doors. The flanking doors are each comprised of a frame with blocks and shells attached to them. The center door, though, is one board with a shell and a long, hollowed block carved into it. The plank for the desk's lid, too, has a relieved center shell between its two applied shells. The design leaves no room for error, since a major mistake in carving the central shells would mean making a whole new door or lid. To avoid such a disaster I carved the four applied shells first so I'd have plenty of practice before attacking the lid plank and the center door.

At the very top of the piece is the pediment, with all of its moldings, blocking and carving glued onto a 1-in. mahogany board. Laid out in its various parts, the secretary becomes demystified, and thinking of the build-

Robert P. Enkin



Old home for a new secretary. Breed and his wife, Ellen, unload the upper cabinet, its finials removed for the trip, at the John Nicholas Brown house in Providence, where the original secretary stood.

ing process in this way kept me from feeling overwhelmed as I progressed.

The interior of the desk section was by far the most challenging part of the construction. The dividers between the pigeonholes and drawers are less than 1/4 in. thick. They would bend each other out of shape if they were fit

too tightly, but wouldn't have any strength if they were too loose. Hours of fitting, paring down and refitting were required. All of the dividers follow the alternately concave and convex profiles of their corresponding drawer fronts. In the end, the eye had to be the judge, so I was constantly gazing at the shadow lines trying to pick up any unevenness.

Carving the shells was the runner-up for difficulty. I think that when Goddard laid out the originals, he must have had a master pattern to go by. I came up with my own master patterns, which I carefully checked against the rubbings and templates I'd made from the carvings on the piece.

It's important to match the sweeps of your tools with those the original carver used. Carvings were usually tailored to the tools at hand, so one gouge might be used repeatedly to carve a particular motif. You can identify a good carver by how few tools and cuts he needed to achieve a desired effect.

DELIVERY

After four and one-half months of construction time, the piece was finally ready. The brasses had been cast from patterns that were taken from the originals, the top drawer lock was installed upside-down just like the old one, and the finials were even made with a mismatched number of flutes. My wife and I loaded the secretary into my truck and drove it down to Rhode Island to the John Nicholas Brown House.

The reproduction I made will never stand next to John Goddard's original, but it does occupy the same piece of floor that his did for so long. I'm happy to think that it may even stay there for as long as his did. ■

Allan Breed reproduces period furniture in his shop in York, Maine. He started buying and repairing antique furniture in his early teens and served an apprenticeship in conservation at the Boston Museum of Fine Arts during college. He is also a lecturer and consultant on American furniture.

Drawing and Using Four Basic Curves

Enliven furniture designs with ovolos, ogees, serpentines and ellipses

BY WILL NEPTUNE



*d*esigning furniture with curved shapes can be intimidating and troublesome, particularly for those who aren't used to drafting. Woodworkers often start out by building rectilinear projects, from plywood cabinets to Shaker tables. But more complex designs, which may involve combinations of curved surfaces, pose all sorts of new problems at the drafting stage.

In my work with period furniture, I find the same fundamental shapes cropping up all the time in different forms. The ovolo, ogee, serpentine and ellipse are four common ones. These shapes are found in contemporary furniture as well. Together, they form a foundation for understanding the range of effects possible using basic geometry. These four shapes may be drawn easily using nothing more than a straightedge and compass, or

A lexicon of curves. This New York style Federal card table was built by Jim Price at the North Bennet Street School in Boston. Its many curves include a serpentine front, ovolo corners, elliptical inlays in the apron pieces and, when closed, sides in the shape of ogees.

trammel points. All four curves can be easily adjusted to produce different effects or combined into complex shapes. They can be found in many furniture parts, from moldings to tabletops, in just about any furniture style.

When drafting these curves, I consider the visual effect I'm after, just as I would drawing freehand curves. The pieces of furniture shown here are

some examples of how curves drawn from simple geometrical shapes can have stunning results.

The most basic shape for drawing curved surfaces is the circle. By using portions of a circle, or arcs, you can make a variety of curves, many of which can become so complex that it is difficult to discern in them the underlying pattern.

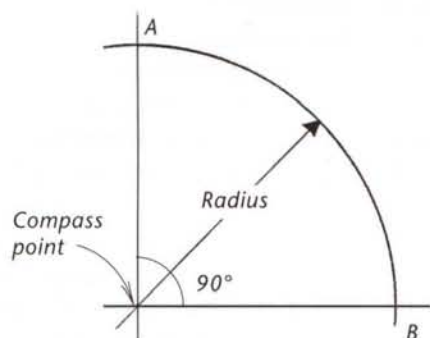
OVOLOS

A simple shape derived from the circle is an ovolo, seen in the corners of the New York-style Federal card table (photo, facing page) and commonly used in moldings. Ovolos are arcs of circles and can also be found in inlays, table rails and tabletops.

Ovolos often appear to be quarter-circles (90° arcs) but usually are flatter

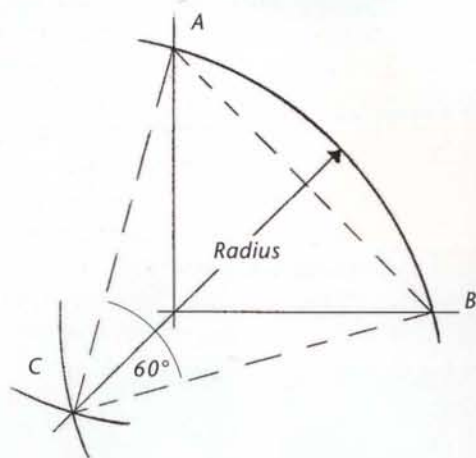
DRAWING OVOLOS

FIG. 1



A simple 90° ovolo is a quarter-circle.

FIG. 2



A 60° ovolo is based on an equilateral triangle. You can draw one by setting a compass at the distance between points A and B, then swinging an arc from point A and another arc from point B to locate Point C. Then swing an arc from Point C connecting A and B.

FIG. 3

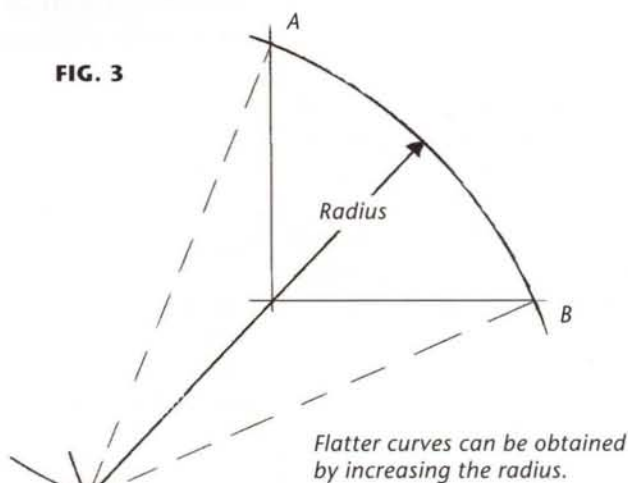
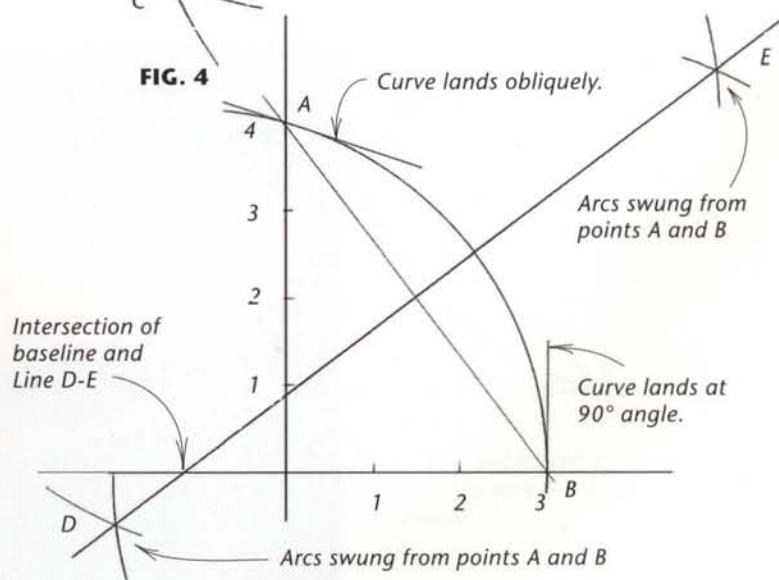


FIG. 4



This oblique ovolo was made by connecting points A and B and then bisecting that line with perpendicular Line D-E. Then, at the intersection of the baseline and Line D-E, an arc was swung with the compass set to Distance B-C. This ovolo fits in a rectangle, not a square.

curves. As shown in figures 1 and 2 on p. 25, an arc that is one-sixth of a circle (a 60° arc) appears softer than an arc that is a quarter-circle (a 90° arc). Another difference between these curves is seen in how they meet their end points. Quarter-circles look boxy, whereas the 60° arc is more subtle. The visual effect is caused by the way the curves “come in for a landing” at the end points. Curves can be made flatter (Fig. 3) by increasing the radius of the circle used to draw them.

An ovolo doesn't have to be symmetrical. In some instances you may want an asymmetric, or oblique, curve. Oblique curves (Fig. 4) are especially useful for a pediment or crown-molding profile, because the arc will not project out as far. They are also used in the shape of table aprons, where a curved rail meets a square leg. The end points of these curves, often mistaken for sections of ellipses, land differently. The upper part comes in at an angle, while the bottom is more perpendicular. The range of effects these simple arcs can achieve is surprising.

OGEES

Ogees, or S-curves, are made up of two parts: one convex, the other concave (see Fig. 5 on the facing page). Another way to think of ogees is to imagine a circle that is cut in half, with one half flipped over to form a continuous S-shaped curve. Ogees most commonly occur in a wide range of moldings. In period furniture, larger ogees can be found in Chippendale pediments (the top of a highboy or grandfather clock, for example).

Like ovolos, ogees can have various curvatures (Fig. 6), depending on the radius of the circles and on the degree of arc (60° vs. 90°, for example). And like ovolos, ogees may be symmetrical or asymmetrical. Asymmetrical ogees are easy to create. Instead of dividing the centerline into two equal parts, as you would for a symmetrical ogee, you could split it into two unequal parts and use arcs of different radii on either side (figures 7 and 8).

In asymmetrical ogees, the curves appear to decelerate. Even though these curves are not symmetrical, your

eyes accept them because there are no bumps or flat spots that upset what is called the “fairness” of the curve. A smooth transition is ensured by having the two curves share a common line.

You can repeat these exercises yourself (I strongly recommend it). While you are at it, try drawing a range of ogee curves in rectangles instead of squares. Just keep in mind that the curves need to flow into each other smoothly. This requires carefully positioning the compass. The point where the arcs meet (Point D in Fig. 8) must lie on a line connecting the compass points of the two arcs.

SERPENTINE CURVES

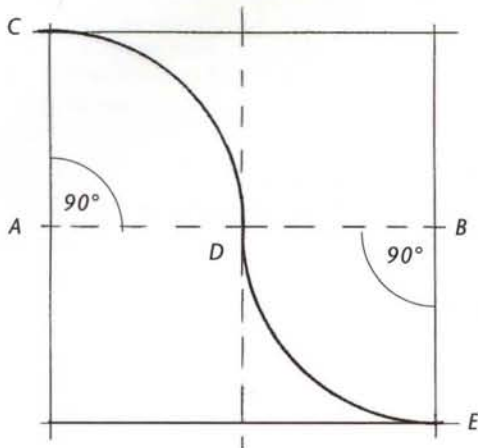
Just as an ogee is a combination of two arcs, a serpentine is a combination of two ogees, resulting in a line with a convex center flanked by two concave curves. Serpentine curves appear in various sizes on many different kinds of furniture. Chair and door rails, shelving, and stretchers on tables and chairs are just a few of the places where this flowing curve can be used. A classic

Back-to-back ogees make a serpentine.
When the top is flipped open, the ogee sides of the card table shown on p. 24 become a serpentine, illustrating the relationship between these curves.



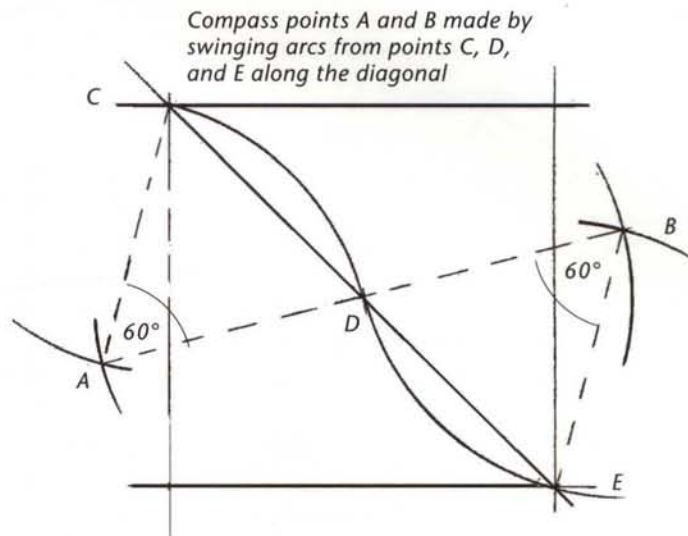
DRAWING OGEES

FIG. 5



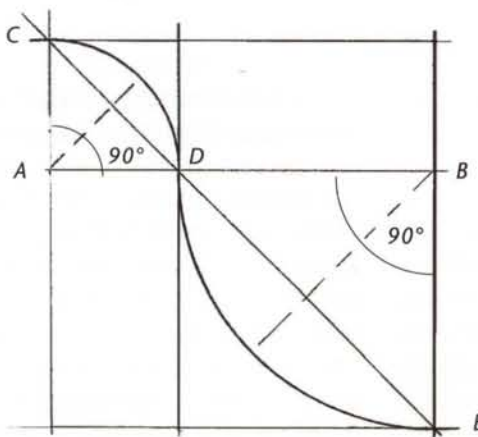
A simple ogee is composed of two quarter-circle arcs swung from points A and B. This ogee is symmetrical.

FIG. 6



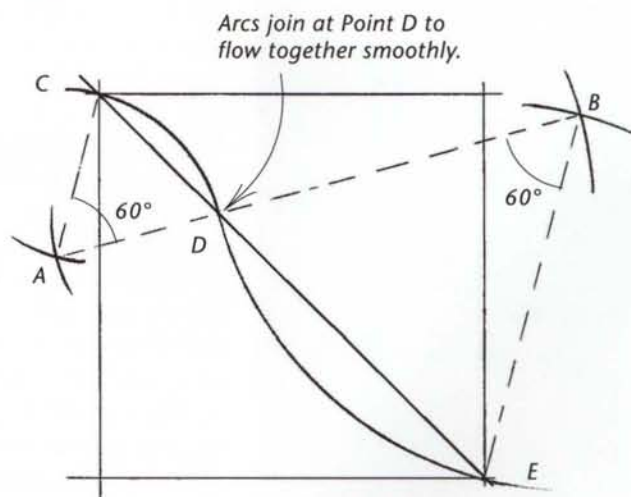
This ogee, formed by swinging arcs from points A and B, also is symmetrical, but gentler. Like the ovolo in Fig. 2, these arcs are based on equilateral triangles (drawn in broken lines).

FIG. 7



Line C-E is segmented into three equal parts. The two curves are still quarter-circles but the ogee is no longer symmetrical.

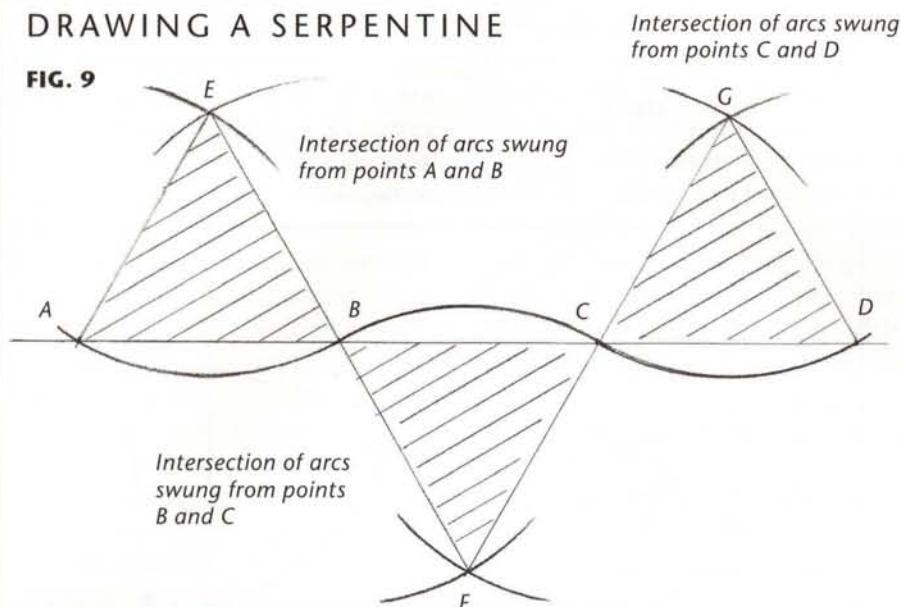
FIG. 8



This ogee is based on a diagonal line (C-E) segmented into thirds, but the arcs are flatter because the radii are longer.

DRAWING A SERPENTINE

FIG. 9



The baseline (A-D) is divided into three parts and the same 60° arc is used for all three curves. Compass points E, F and G are located by swinging arcs from points A, B, C and D with the compass set to Distance A-B. Longer radii can be used to make a flatter serpentine, and the line can be segmented differently, e.g., to make the convex shape at the center of the serpentine broader.



A serpentine side table. The gentle serpentine curves of this table, built by Lou Giorgio of Barrington, R. I., show the variety that can be achieved by manipulating arcs of a circle.

example is a serpentine chest of drawers. The Federal style card table illustrates the relationship between ogees and serpentes: When folded in half (photo, p. 24), the table has a serpentine front and sides in the shape of ogees. When the table is opened (photo, p. 26), the ogees on the sides join to form a serpentine—the same curve used for the front of the table.

You might be tempted to draw only an ogee and use this as a pattern to form the two halves of the serpentine, but this approach can be risky. Drawing half of the serpentine up to a centerline makes it hard to judge the look of the completed shape (often the middle bulge of the curve looks far too wide).

Like ovolos and ogees, serpentes can be varied in many ways. For example, the baseline (Line A-D in Fig. 9 above) can be divided into sections of unequal length to create a broader convex curve in the center. Further variation can be achieved by making each half of the serpentine out of three arcs rather than one or two. This way you can create curves that aren't constant, and can make a serpentine look as if it were drawn freehand.

ELLIPSES

Another common shape in furniture design is the ellipse. Visually, an ellipse is more dynamic than a circular curve because it does not move at a constant rate. An ellipse fits in a rectangle, as a circle fits in a square. The ellipse, or sections of ellipses, can be used to great effect in furniture design. For example, each of the rectangular surfaces making up the rails of the card table has an elliptical panel proportioned to fit. My half-elliptic hall table (photo, facing page) doesn't project from the wall as much as a half-round table (also called a "demilune") would.

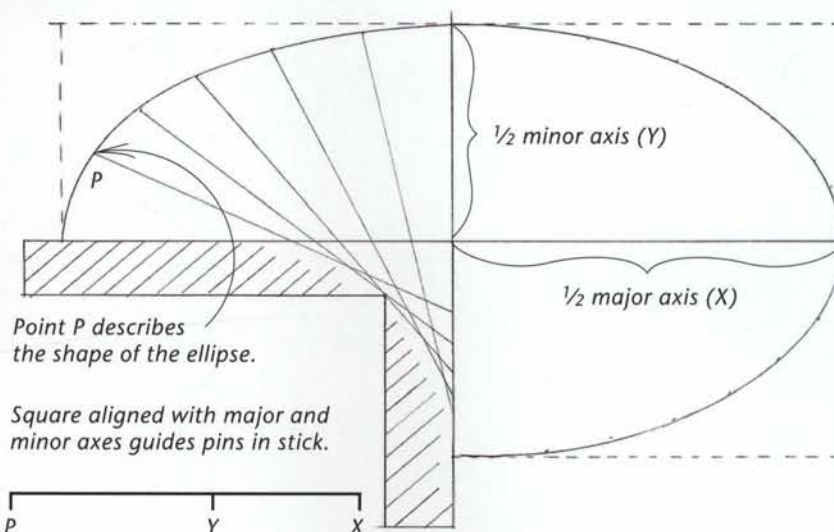
There are a number of methods for drafting ellipses, but I usually rely on a relatively simple method that calls for little more than a straightedge, a pencil and an ordinary carpenter's framing square (Fig. 10, facing page). Here's how to do it: First, draw two centerlines, one horizontal and one vertical. These lines, which are perpendicular to each other, will be the major and minor axes of the ellipse. On a straight-edge (this could be a strip of paper or a thin strip of wood) mark a point and label it P. Measure over from point P



Ellipses have dynamic curves. Author Will Neptune built this hall table with an elliptical top and apron. The curve is almost a semicircle but gets rounder toward the edges.

DRAWING AN ELLIPSE

FIG. 10



and mark one-half of the major axis (the longer line) and label it X. Do the same for one-half of the minor axis and label it Y. Now position the straightedge so that point Y lies on the major axis and point X on the minor axis. Slide the straightedge, keeping points X and Y on their respective axes. As you do so, Point P will describe one-quarter of the ellipse.

For a rough drawing you can mark just a few pencil points and sketch in the curve. For a more accurate drawing, mark points P, X and Y onto a thin strip of wood (about $\frac{3}{8}$ in. by $\frac{3}{4}$ in.). Drill holes and insert a small finish nail at points X and Y; at Point P, drill a hole for a pencil. Then clamp a square along the axes as shown and slide the stick with the pins held tightly against the square. The pencil will draw one-quarter of the ellipse. You can either repeat the procedure for each of the other quarters of the ellipse, or you can make a template. Concentrically smaller or larger ellipses can be drawn simply by moving Point P toward or away from points X and Y. ■

Will Neptune is an instructor at the North Bennet Street School in Boston.

Helpful Drafting Techniques

Graph paper can be a real help when you are trying to draw curves. It allows you to work quickly using just a ruler and compass.

When drawing a piece of furniture, start with a view that makes the most sense. For example, if you were drafting the Federal-style card table, the curved aprons and ovolos would not appear in their true size in front or side views, so a plan view would be best. If you are starting with a photograph, scale the dimensions and work from there. If not, first try sketching some shapes using a scale that will allow you to fit the whole drawing on one sheet of paper.

I think it is a good idea to draw a curved surface a few times, changing the proportions of its elements and the character of its curves. Be willing to change your mind. The drawing stage is the easiest point to alter something, so take advantage of it.

I like to sketch shapes to play with the lines. Sometimes I notice a

relationship I can enhance or develop. Often, if I'm not sure about what proportions to use, I'll prepare two drawings, each representing one extreme of my hunches. This method gives me something to work with and improve, instead of striving for perfection on the first try. — W. N.



With just a few simple drawing tools, Will Neptune works at his drafting table.



Shaker Built-In Furniture

Unadorned and elegant, these cabinets met the communal needs of a prudent religious order

BY TIM RIEMAN

Considered stark and old-fashioned in its own day, Shaker furniture—I mean the *real* stuff—now sells readily if dealers can lay their hands on it. Collectors lust after the furniture for its simplicity, its balanced proportions and its honest construction. But you'll need a wrecking bar and a strong back to acquire some of the finest Shaker pieces of all: the built-in cabinets that help give Shaker buildings their graceful architectural flavor.

In nearly endless variation, built-ins are found in each of the 19 Shaker communities that sprang up in New England, New York, Ohio and Kentucky in the late 18th and early 19th centuries. Cabinets like these were rarely found in "the world," as Shakers referred to everything beyond their

village gates. Built-ins were used to store everything from chamber pots to out-of-season clothing. And because these cabinets are just as much a part of a building as the roof shingles or window sash, you won't find built-ins in upscale antique stores.

The model for Shaker built-ins may well have been the 18th-century linen chest, a piece of furniture that stood on

bracket feet and usually combined a double door over three or four drawers. Built-ins became synonymous with Shaker furniture. In fact, some of the first Shaker pieces of any kind probably were the built-ins found in circa 1790 meetinghouses in Sabbath-day Lake, Maine, and Canterbury, New Hampshire. These simple one- and two-door cupboards were prototypes

Storage that's compact, efficient. This pine and butternut cabinet in a Hancock, Mass., Shaker retiring room (facing page) contains four cupboards and 10 drawers. It probably served several Shaker brothers or sisters.

It's part of the room's trim. Unlike other designers of their day, Shaker craftsmen incorporated cabinets into interior trim, as they did with this shallow dining-room cabinet in the Hancock community (right).





Too much space to waste. Even the space between two doors in a Pleasant Hill, Ky., dining room didn't go to waste. This built-in cupboard tapers from front to back so that the rear of the case meets the narrow chimney wall, visible as two lines of vertical trim at the top of the cabinet.

ers had set out to create their own heaven on earth.

New residences housed families of 20 to 100 members. Retiring rooms (or bedrooms) on opposite sides of wide hallways commonly housed five or six brothers or sisters. Dining rooms might seat 50 or more. Consequently, kitchens were more on the scale of restaurants than of homes of the day. The requirements for storage were proportionately greater, too. Built-ins helped meet these communal needs. Shakers had, in fact, created a new institutional basis on which they designed furniture.

But why so much emphasis on the built-in? After all, stand-alone furniture would have worked just as well. No one really knows. But themes that run through Shaker beliefs—simplicity, cleanliness, order, industry and perfection—may help explain their devotion to the built-in. Cleanliness may have been at the top of the list, as this piece of advice from church founder Mother Ann Lee suggests: "Clean your room well," she intoned, "for good spirits will not dwell where there is dirt. There is no dirt in heaven."

Built-in cabinetry helped Shakers comply with the edict and conserve floor space at the same time. Because the cabinets stretched from floor to ceiling, they didn't hide the dirt and dust that Shaker sisters worked so hard to eradicate.

REGIONAL DIFFERENCES

For all practical purposes, Shaker built-ins are identical to Shaker freestanding furniture. The obvious difference is

of the much more complex furniture that would follow.

Once Shakers saw the advantages of built-in furniture, they mined the idea for everything it was worth. They installed the cabinets in offices, hallways, dining rooms, bedrooms and kitchens. Immense built-in storage cabinets went into attics. Shakers also expanded and cultivated the form into complex arrangements of cupboards and drawers. No other craftsmen of the day incorporated cabinets into architectural structures so extensively.

FURNITURE TO SUIT A COMMUNAL LIFESTYLE

We remember the Shakers now mainly by the things they left behind, not by their religious tenets. So it's easy to forget that the great Shaker craftsmen were a celibate, hardworking bunch whose religious observances were so fervent that the Shakers often had hundreds of curious visitors. With the influx of new converts and the growth of Shaker communities, particularly in the early 19th century, scores of new buildings were constructed. The Shak-



that craftsmen often integrated built-ins with trim in the rooms where they were installed, making the cabinets part of the interior architecture. Inside, cabinet sides were usually wide, unfinished planks that supported drawer runners or shelves. Built-ins sometimes had no separate backs, making use instead of previously plastered or unfinished walls.

There probably are more similarities between built-ins from one Shaker community to the next than there are differences. The cabinets are free of the extraneous details that Shakers disliked so much, and the basic proportions of these cabinets seem much the same. But some of the detailing—like the style of door and drawer pulls—and the type of wood that was used showed regional variations.

At the Shaker community at Hancock, Massachusetts, for instance, builders tapered their drawer sides so they were $\frac{1}{16}$ in. thick on the bottom and $\frac{3}{8}$ in. thick on the top edge. The thicker bottom edge provided plenty of support for the drawer bottom, but

the thinner upper edge of the drawer side didn't look too bulky. Drawers are lipped, and graduated in a manner common to the Shakers but no one else. They are not graduated individually, so that each drawer or row of drawers is slightly narrower than the one below. Instead, they are graduated in groups. In one Hancock community built-in, for instance, the bottom two drawers are the same height, followed by four drawers slightly smaller and the last two even smaller. This style of grouping drawers in sets is found in many Shaker case pieces as well.

The location of the communities had a lot to do with the choice of woods used for the built-ins. At Hancock, for instance, pine and butternut were commonly available. The wood was often given a mustard-yellow or red wash. Built-ins throughout the main dwelling in Hancock have for the most part been refinished, but they originally showed a vibrant interplay of color.

Because so many Shaker communities sprang up in New England, lots of furniture, including built-in cabinetry,

Storage for the whole family. This magnificent set of pine built-ins at the Canterbury, N. H., community divides an attic space into several storage areas. Numbered plates attached to the drawers helped Shaker brothers and sisters keep track of the off-season clothing that probably was stored here.

is made of pine. But at the Pleasant Hill community in Kentucky, cherry and walnut were common choices for primary woods because local supplies were so plentiful.

CABINETMAKING ON A GRAND SCALE

Constructing built-ins at a new Shaker residence was no chore for the weak. The brothers who in 1830-31 put up the main brick dwelling at Hancock tackled a monumental furniture-making venture. The Church Family Dwelling was designed for about 100 brothers and sisters. It provided dining rooms, retiring rooms, a meeting room, and work and storage space. The building, now restored and open

Sized correctly for the room. An unwavering sense of proportion helped Shaker craftsmen design a small built-in cabinet (right) in the Pleasant Hill, Ky., infirmary so that it blends with the room.

Cabinets for more than storage. Inventive as well as industrious, Shakers looked for ways to make routine chores less time-consuming. This dining-room built-in (below) in the Hancock, Mass., community houses a dumbwaiter that delivered food from the kitchens one floor below.



to the public, shows a wide range of built-ins, but above all gives a good idea of how busy the carpenters must have been.

Without benefit of routers, belt sanders, biscuit joiners or yellow glue, craftsmen at the Hancock community turned out the work. According to Shaker Elder William Denning, they needed 100 large outside and closet doors, 245 cupboard doors and 369 drawers to complete the building. Built-ins covered a wide range: two units with 28 drawers and four doors in the first attic, numerous single cupboards of various sizes and proportions, tall, slender drawer units in the basement kitchens and even two double-door dumbwaiters used to

transfer food from the kitchen to the dining room above (photos, left).

LARGE BUILT-INS FOR CLOTHING

Not even the attic escaped the Shakers' unrelenting desire for order. In fact, some of the largest built-ins of all were attic installations, probably used to store off-season clothing. One of the best known is in an 1837 addition to a building in the Canterbury Shaker community. The third-floor built-ins are distinctive because they are virtually all that you can see in the 35-ft. long room (photo, p. 33). Two long sections include six large units of two doors and 12 drawers each, separated by closet doors.

The pine built-ins partition the room, creating a central hallway between them. Doors provide access to storage behind each unit where the Shakers could stow their winter coats and bedding on racks and pegboards. An ocher or mustard-yellow wash was used to color the pine and basswood casework. Neatly numbered drawer fronts helped the brothers and sisters keep track of their belongings. Small but complex moldings, bolder than those used by most Shaker craftsmen, divide the cupboard space from the drawers below.

Another large but quite different attic built-in is in a third-floor attic at Pleasant Hill (photo, right). This storage unit looks a lot more like stand-alone furniture than it does the standard Shaker built-in, even though it clearly was not meant to be movable. More closely than other built-ins at Pleasant Hill, this piece shows its Kentucky heritage. The selection of cherry frame-and-panel construction and the absence of a cupboard on top reflect a southern and (at the time) western heritage.

Freestanding cases of drawers from the region were typically of cherry and of a stout, almost over-built, frame-and-panel construction. Corner posts often were well over 2 in. square and were usually supported under the case with turned legs that ranged from simple to complex. True to form, corner posts on this built-in unit are 2½ in. square, with drawer dividers double-tenoned into the posts. Its drawers are finely dovetailed (detail photo, right), and drawer fronts are unlipped with square edges flush with the surrounding case. Finishes were simply varnish, perhaps over a minimal red wash.

This 45-drawer storage cabinet was built in three units, each about 10 ft. wide. The central cabinet went in first, since its top extends all the way through to walls on each side of the room. Interestingly, it appears that the built-in was not part of the original plan of the building because baseboards and pegboards seem to pre-



Built-in cabinets Kentucky style. An unusual, U-shaped cabinet in an attic at the Pleasant Hill, Ky., Shaker community houses 45 drawers in a massive cherry frame. The area is illuminated by a gabled skylight that spans the roof ridge.

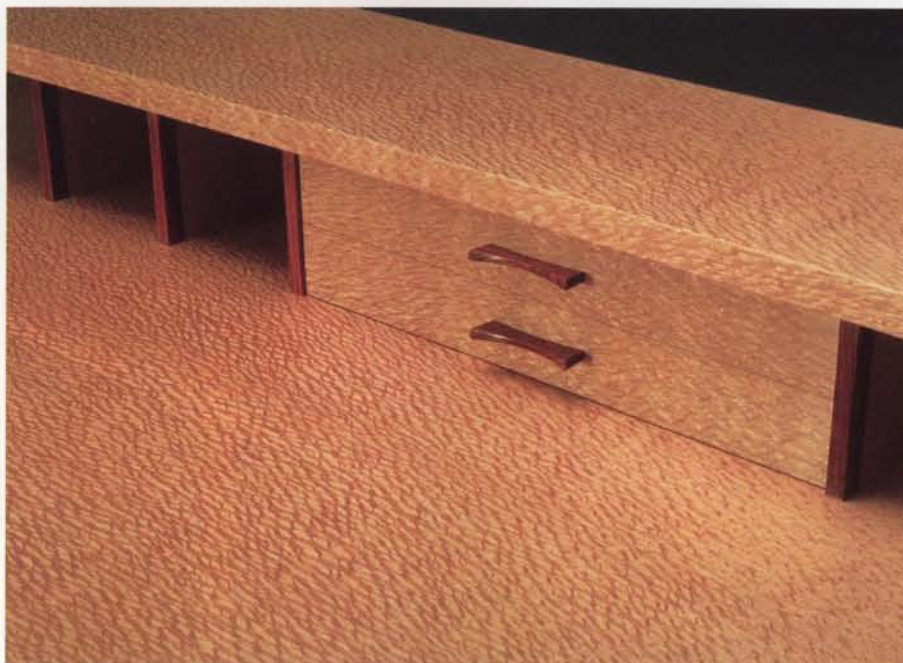
Let no drawer be out of place. Deeply grooved from a century and a half of wear, this drawer from the attic built-in at Pleasant Hill carries an identifying number. Corresponding numbers on the inside edges of the openings helped Shakers keep track of the 45 drawers in the unit.

date it. The built-in probably stored off-season clothing. It was located next to large walk-in storage rooms with plenty of pegboards. Skylights directly overhead provided the only light in the room. ■

Tim Rieman is a furniture maker who builds reproduction Shaker furniture. He is the co-author of The Complete Book of Shaker Furniture, published in 1993 by Harry N. Abrams, Inc.

Lacewood Writing Desk

BY CHARLES E. JOHNSON



Exotic woods offer a contrast. The only ornamentation on this writing desk is the contrast between the Australian lacewood and cocobolo accents.

this writing desk was commissioned by a client whose only requirements were that it be unique, functional and visually compatible with the furniture she already had.

I wanted a design with clean lines and a classic form. My sketches reminded me of some early Frank Lloyd Wright houses with long roof overhangs. The desk evolved into long rectangular shapes, although I used very delicate radii to soften the edges of the top, the legs and the apron. I kept the piece completely free of any mechanical hardware.

I selected the wood after completing the final sketches, choosing unusual materials that would contrast with each other. The top is veneer over high-strength Baltic birch plywood. The other parts are of solid wood. I refined the design during construction, partially in response to advice from fellow craftsmen. ■

SPECIFICATIONS

DIMENSIONS

29 in. wide, 63 in. long and 29 in. tall.

MATERIALS

Australian lacewood (veneer and solid wood), cocobolo drawer pulls and detailing, and maple drawer sides and runners.

FINISH

Urethane-based nitrocellulose lacquer.



Architectural training shades design.
Echoing houses designed by Frank Lloyd Wright, this desk has wide overhangs and a rectangular feel.

Slat-Back Armchair

BY GLENN A. CARLSON



A design derived from the Shakers. This four-slat armchair, based on Shaker chair designs of the late 19th century, is sized to suit 20th-century bodies and carrier shipping requirements.

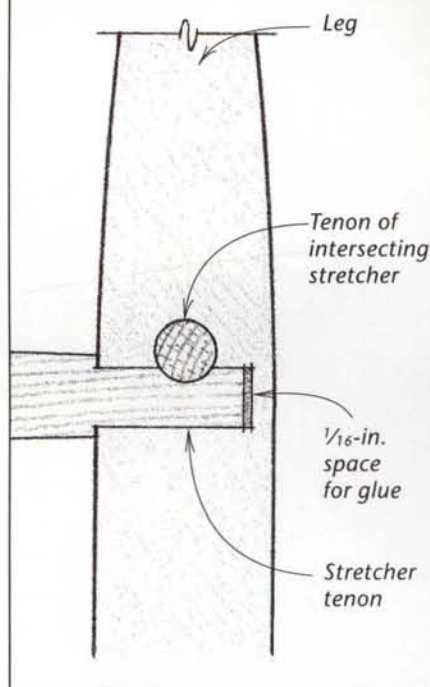
in the 1870s, Brother Robert Wagan began mass-producing chairs at the Shaker community in Mt. Lebanon, New York. His guidance brought uniformity and standardization to Shaker chairmaking. Although the lines of my chairs are unmistakably Shaker, they are not identical.

One difference is the number of slats, the horizontal members between the two back posts. Shaker chairs like this one originally would have had only three slats. My chairs have slightly higher backs and include four slats because that design looks more pleasing to my eye and because customers seem to prefer it. I have also added a little bit of height to the seat because people are physically larger now than they were 100 years ago and a higher seat height is more comfortable. The chairs fit in a box that just meets UPS shipping requirements—a 20th-century design constraint.

Back posts and slats are shaped by first steaming them in a homemade steam box and then bending them on fixtures fashioned after the ones the Shakers used. Stretchers connecting the four posts lock together mechanically inside the posts to make the chairs stronger and less liable to come apart. I use 100% cotton webbing in contrasting colors in the woven seat (see Sources, p. 100). Each seat requires about 45 yd. of the material.

While I do not work from the religious impulse that motivated the Shakers, I do strive to honor their aim for perfection, lack of ornamentation and simplicity of line. ■

INTERLOCKING STRETCHER TENONS



SPECIFICATIONS

DIMENSIONS

23 in. wide, 19 in. deep and 41 in. tall.

MATERIALS

Tiger maple and cotton webbing.

FINISH

Hand-rubbed tung oil with wax topcoat.



The webbing is authentic. Cotton webbing in contrasting colors is what a Shaker chairmaker would have used to weave a seat.

Piecrust Tea Table

BY DOUG MOOBERRY AND KEVIN ARNOLD



The top is not veneer. The single-board, solid-wood plank used for the tabletop was slated for the veneer mill, but fortuity intervened when the milling machine broke down. The crotch was sawn into planks instead.

*t*his tea table came about in an unusual way. A friend of ours was in Guatemala buying veneer when the veneer mill broke down. To keep the workers in the yard busy, the veneer crotches were cut into boards instead. Luckily, our friend realized what amazing boards these were—fine, broad-figured mahogany crotches 37 in. by 60 in. Better luck yet, he had some of these crotches shipped to us.

The boards were magnificent, but what project would do justice to them? One day, a customer came into the shop and said he might want a piecrust tea table. I replied, "I've got the most amazing wood!"

We started looking at which table to make. We didn't want to copy any one table, but rather to work in the high-style, Philadelphia Rococo of the 1760s to 1780s. We looked at every table that we could find from this era and region, from antique dealers to the Winterthur collection in Wilmington, Del. We looked in old *Antiques* magazines and every book we had or could borrow.

We wanted a cabriole leg and a well-defined ball-and-claw carving, with a strong transition between them—no weak-looking ankles. As for the leg foliage carving, we wanted to make it



our own, but still in 18th-century Philadelphia style. We looked at many examples of acanthus-leaf carvings and drew on several variations for our own design. The column and birdcage were based on photographs in Albert Sack's book, *The New Fine Points of Furniture* (Crown, 1993), and books from the Winterthur collection.

For the piecrust layout, we decided upon eight flat segments with repeating curved sections in between. Some of the tea tables from this period have carved flowers on the edge, but we decided ours would not.

We finally settled on the design and made samples of all the carvings. We fussed, fiddled, and criticized the samples. We made numerous changes, moving the talons back in the ball-and-claw foot, making the ball rounder, and tinkering with subtle details to add life to the carvings.

We were all a little nervous when the work began on one of those amazing mahogany boards. Perhaps the anxiety ensured our success. ■

Details were studiously researched. The proportions of the piecrust table (above left), and all the carvings were agreed on after poring over books and looking at originals of the same style and era. The birdcage (above right) lets the top spin as well as hinge into a vertical position.

Remaking the Philadelphia style. Carvings of the ball-and-claw feet (right), the acanthus leaves, the base detailing and the piecrust top are faithful to the regional style, yet give the table originality.



SPECIFICATIONS

DIMENSIONS

30 in. high; top, 36 in. in dia.

MATERIALS

Mahogany, brass hardware.

FINISH

Shellac and paste wax.



Canted sides make the chest look less massive. The most unusual structural feature of the chest is that the sides are canted inward slightly from top to bottom, following the 2° taper of the legs.

Blanket Chest in Bubinga

BY HUNTER WEBB

much of the pleasure of designing and building this blanket chest came from working with the materials: solid bubinga for the legs and frame pieces, rotary-cut bubinga veneer for the panels, and Corian, a synthetic surfacing material, for the trim. The challenge was to use these very different materials together in a way that would enhance the strengths of each.

I chose bubinga for the solid members of the chest because I love its figure and its heft, and I chose veneer to match. The 36-in. wide sheets of veneer were eye-popping in their size as well as their color. On the top panel I was able to run the grain front to back without edge-gluing sheets.

I find Corian a fascinating material. Its patterning can be reminiscent of natural stone and yet some of its colors, like the deep blue I chose, definitely are not. I had made a blanket chest once before using panels of solid Corian. I liked the play of color and texture between the synthetic Corian and the natural wood, but all that Corian made the chest extremely heavy. And at about \$20 per sq. ft., Corian isn't cheap. So for this chest I used the Corian as an accent, trimming the panels.

I finished the piece with tung oil on the outside, where I wanted as little buildup on the wood as possible. The tung oil wiped right off the Corian. Inside the chest, where I wanted to avoid the lingering smell of tung oil and appearance wasn't as critical, I used a polyurethane lacquer. ■



A long way from the drawing board. In the author's original drawing the blanket chest had Corian discs for feet. A series of mockups of different legs and rails led to the final design of plain tapered legs.

SPECIFICATIONS

DIMENSIONS

36 in. long, 24 in. wide and 24 in. high.

MATERIALS

Solid bubinga, bubinga veneer and Corian.

FINISH

Tung oil and polyurethane lacquer.

Cupboard and Display Cabinet

BY RICHARD NAINGGOLAN



i built this piece as a display and storage cabinet for our small living room. The only way to satisfy these dual requirements, I found, was to design two separate pieces and marry them into a whole. The result resembles an American-style hutch. Arch details give it a Gothic look.

I faced some limitations in the design. Because of the room's size, I had to resist the temptation to embark on a project of too grand a scale. And although I wanted to use French or English walnut, those woods were too expensive. Instead, I opted for a locally available substitute, imbuya, which is available from a supplier near my home in Surrey, England. (Imbuya is also known as Brazilian walnut, which, despite its name, is not a true walnut.)

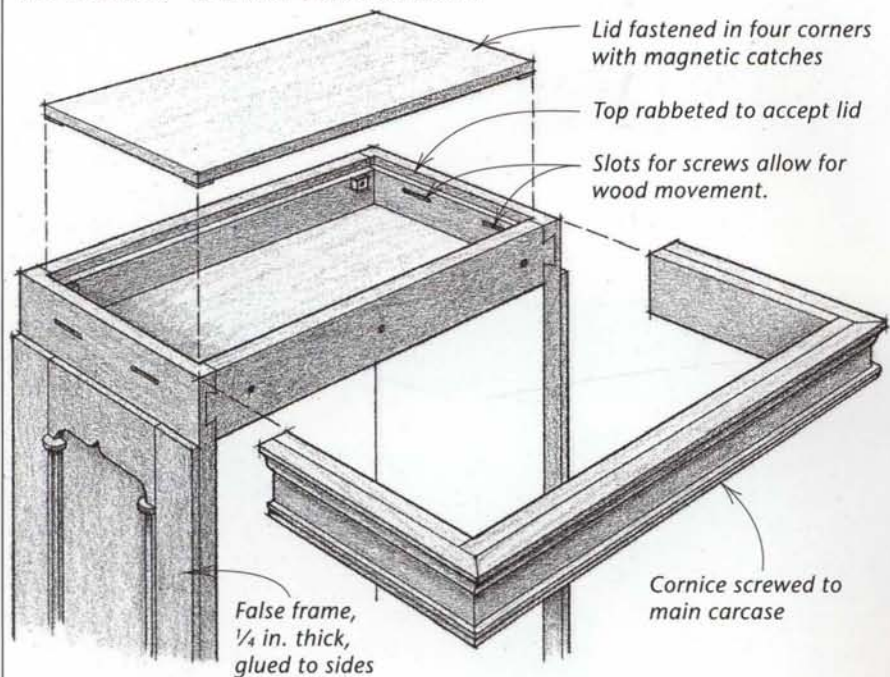
This cabinet doubles as a bookcase. For added strength, I made the top cabinet out of solid wood and glued $\frac{1}{4}$ -in. thick frames onto the sides so that it would look like frame-and-panel construction. The grain is vertical in the top and bottom rails of this decorative frame so the pieces expand and contract with the rest of the cabinet. I used conventional frame-and-panel construction for the lower carcass and all the doors.

The back of the case is made of tongue-and-groove imbuya fixed in a slotted frame but left unglued to allow for wood movement. The back of the bottom cupboard, however, is not visible and is therefore made of plywood to keep the cost down.

The adjustable shelves in the upper cabinet are 9 in. deep and $\frac{7}{8}$ in. thick to take the weight of books, but I molded the edge for a more refined appearance. The pull-out shelf can be used to

A hutch with Gothic features. The arched door detail, duplicated on the sides of the cabinet, and the curved base were inspired by Gothic architecture.

HIDDEN COMPARTMENT



SPECIFICATIONS

DIMENSIONS

73 in. high, 32 in. wide and 16 in. deep.

MATERIALS

Imbuaya, satinwood, and brass hardware with antique bronze finish.

FINISH

Liberon Finishing Oil.



Inlaid shelf adds function. A pull-out shelf with satinwood inlays (above) can be used to hold books while browsing.

hold books while browsing or as a resting place for cups and glasses.

The cornice conceals a hidden compartment that extends across the width of the piece. Access to this compartment is from the top. It is covered by a lid held in place by magnetic catches.

Satinwood inlays decorate the drawer fronts and the pull-out shelf. I liked the natural color and figure of the imbuaya, which darkens with time, so I left the piece unstained. ■

Top mimics frame and panel. The upper cupboard (right) is made of solid wood with a decorative frame attached.





Sofa Table in Figured Maple

BY LOU GIORGIO

not all my designing is done at the drawing board. With this table, for instance, I hadn't planned on using turned legs. But when I dry-assembled the piece and saw how it looked with square legs, I was disappointed. I sketched a couple of alternative legs, picked one and turned it in pine. Then I took apart the table and turned the legs to the shape you see here.

Another challenge in designing this table was finding a way to add the full-width shelf. If I had used a solid wood panel and attached it directly to the

legs, it would have driven the legs in and out as it expanded and contracted. I settled instead on a full framework of stretchers with a shelf surface of solid bird's-eye maple floating panels.

The center stretcher dividing the shelf wasn't required structurally. I used it as a visual device to break up the length of the shelf. It helped, too, because it's easier to match short pieces of bird's-eye maple than it is to find a long board with consistent color and figure along its length. ■

Stark contrasts are best used sparingly.

The author's sofa table is a restrained composition in figured maple: curly maple top, blistered maple drawer front and panels, bird's-eye maple frame and shelf. Ebony pulls, plugs and inlay add just a touch of contrast.

SPECIFICATIONS

DIMENSIONS

69 in. long, 14½ in. wide and 29 in. high.

MATERIALS

Maple, figured maple, ebony; oak and cedar drawer parts.

FINISH

Antique oil.

Audio Cabinet in Cherry and Wenge

BY DARRELL PEART

i proudly displayed my stereo gear on cinder blocks and pine planks when I was 18. As my woodworking skills improved, I built a monstrosity of a cabinet—it was the center of attention in my living room. Through its glass doors you could see all the meters, knobs and switches that go along with electronic components.

When I designed this stereo cabinet, I wanted to hide the electronic gadgetry. I had in mind a less conspicuous piece, something that would blend with the rest of my furniture, which is in the Arts and Crafts vein. I find the early 20th-century style simple and honest. I am fascinated by the use of exposed joinery as an integral part of the design.

This cabinet also displays the influence of contemporary furniture maker James Krenov. The rectangular cabinet, with the doors set inside the top and bottom case pieces and a separate leg structure to support the cabinet,

Gadgetry is hidden. The simple lines of this cabinet are influenced by the contemporary furniture maker James Krenov.





Base design separates components. The half-lapped structure doweled to the frame of the base (above) makes the cabinet appear to float above the legs.

Lots of storage and an easy-access back. The removable back panel includes vent slit and a round cutout for wires (above right). The two drawers are sized for cassettes and compact discs.



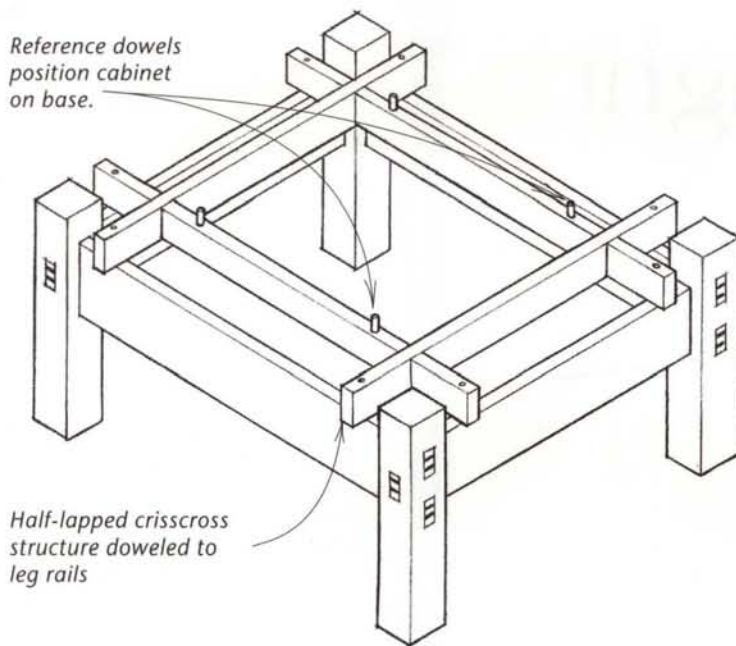
is certainly a Krenov touch. The exposed joinery is common both to Krenov and to the Arts and Crafts designers. The rails connecting the legs have a detail suggestive of the "cloud-lift" motif employed by Arts and Crafts designers Charles and Henry Greene.

With the exception of the drawer bottoms, the piece is made entirely of solid wood. The case is cherry with wenge pulls and tenon wedges. The base is wenge with padauk tenon wedges. The top is located on the base

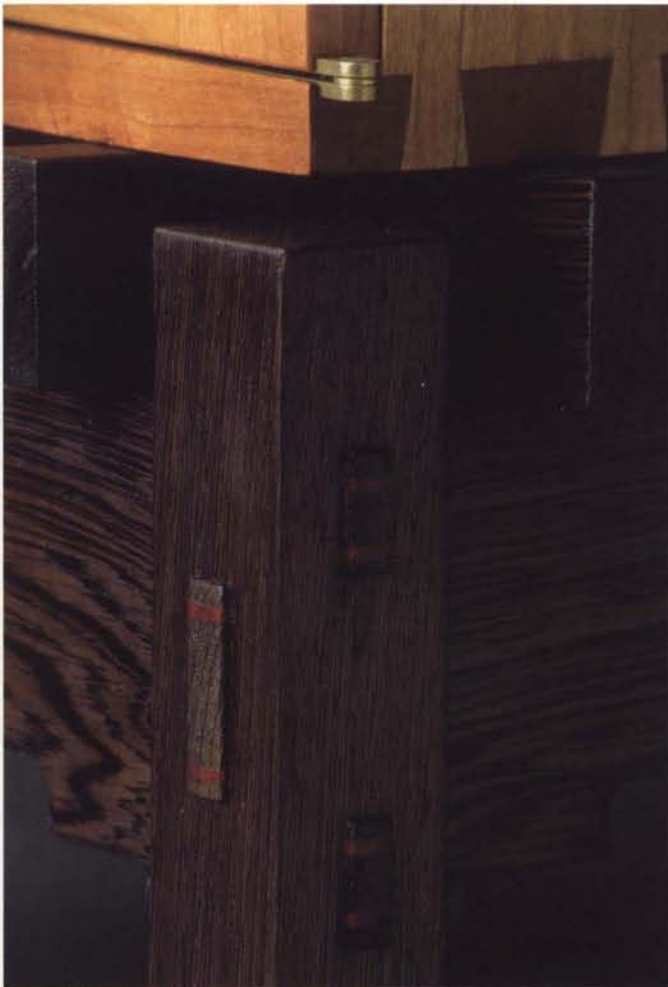
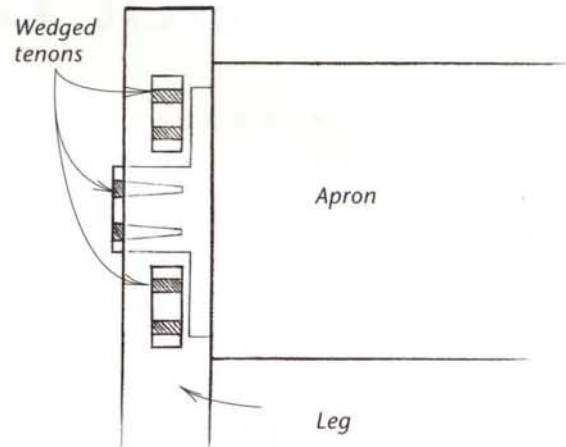
with four dowels, and the two parts can be taken apart easily.

The case and the drawers are dovetailed. The frame-and-panel doors and the crisscross section of the base are half-lapped. The remaining joinery is mortise and tenon. One of the drawers is sized for cassettes, the other for compact discs, and the back has a removable panel to provide easy access to the electronics. ■

BASE CONSTRUCTION



DETAIL OF LEG JOINERY



SPECIFICATIONS

DIMENSIONS

22 in. wide (at base), 48 $\frac{3}{4}$ in. high and 18 $\frac{3}{8}$ in. deep.

MATERIALS

Cherry, wenge and padauk.

FINISH

Daly's ProFin oil.

Visible joinery. Exposed tenons, highlighted with wedges of padauk (base) and wenge (upper cabinet), draw attention to the joinery.

Library Stair is Sturdy but Light

BY J. HARVEY BAKER



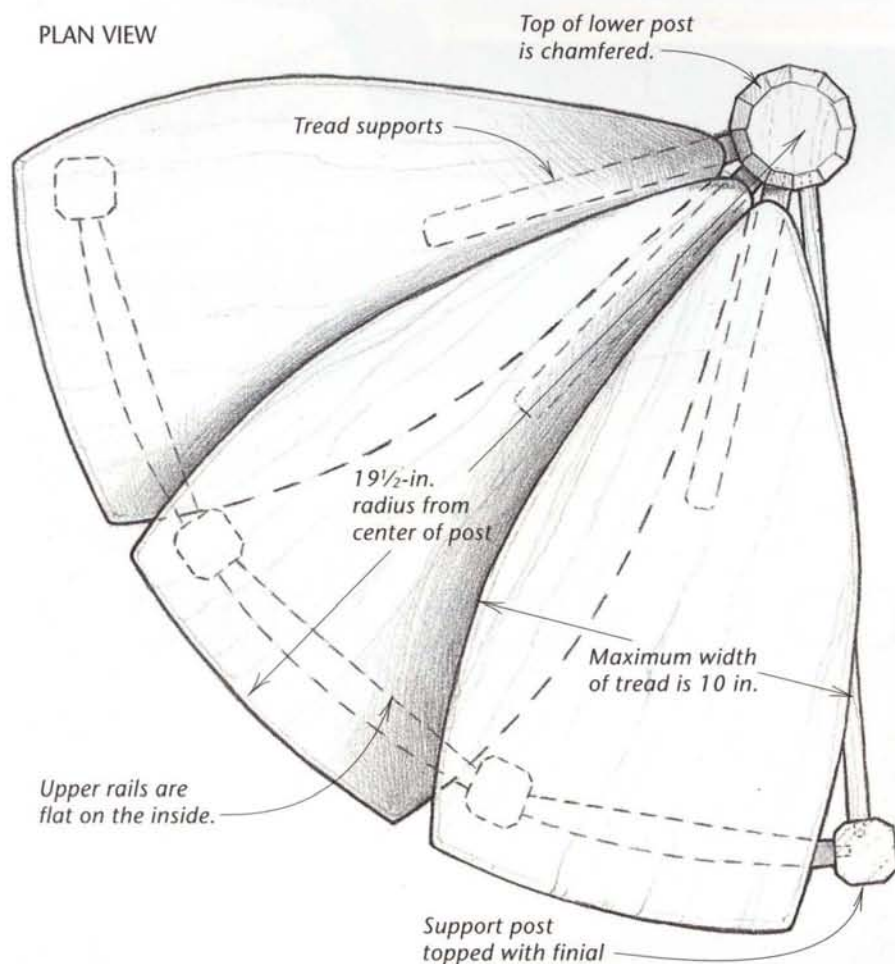
Hidden strength in post. A ½-in. dia. threaded rod joins the top and bottom pieces of the central post to add strength.

Elegance without ornamentation. This functional piece with simple detailing fits well in a contemporary setting.



STAIR-TREAD LAYOUT

PLAN VIEW



this library stair was designed for a client who wanted elegance without the Victorian ornamentation common to most commercially available stairs.

The stair is no heavier than a chair, with a comfortable rise and run and a sturdy handhold. I've also built a four-step version, but the proportions are not as visually pleasing as in the three-step stair shown here.

To get a tread orientation that I liked, I settled on a 12-sided central post with each facet a little larger than $\frac{3}{4}$ in. This configuration also allowed me to make each tread support $\frac{3}{4}$ in. thick to fit entirely on one face of the column.

The tread supports are mortised into the central post and recessed into the

bottoms of the stair treads. The remaining joinery in the base is mortise and tenon.

The central post is made of two pieces joined together with a length of $\frac{1}{2}$ -in. threaded rod that passes through the lower section and screws into a captured nut in the upper section of the column.

The ornamentation is modest, in keeping with the client's wishes. The central post and one supporting leg have turned finials. The rails and tread supports are beaded and the treads are just lightly rounded over. (For more information on the library stair, see *How They Did It*, p. 94.) ■

SPECIFICATIONS

DIMENSIONS

21 in. long, 21 in. wide and 54½ in. high.

MATERIALS

Walnut, steel rod.

FINISH

Waterlox transparent tung oil.



Art Deco Coffee Table

BY GLENN THOMPSON

the primary goal in designing this coffee table was to create a dramatic focal point with an Art Deco influence. The Art Deco style is apparent in the base. The legs are curved, rectilinear plates, and their simplicity focuses attention on the elliptical top. The black lacquer adds an oriental flavor common in Art Deco furniture.

When I designed this piece, I concentrated on four primary elements — the form, the material, the function, and the decoration. My usual method of design is to start out with a concept and perhaps a rough sketch, then use a computer drafting program to draw it. Then I add decoration and refine the concept. I usually print a full-scale drawing to help me visualize the piece and to use for patterns.

The computer-generated drawing of the table (see the facing page) illustrates the refinements that were intro-



Highly figured veneers. Pommel sapele and fiddleback makore are both African hardwoods. Pommel, meaning rounded or knob-like, accurately describes the figure of the sapele veneer, shown at left.

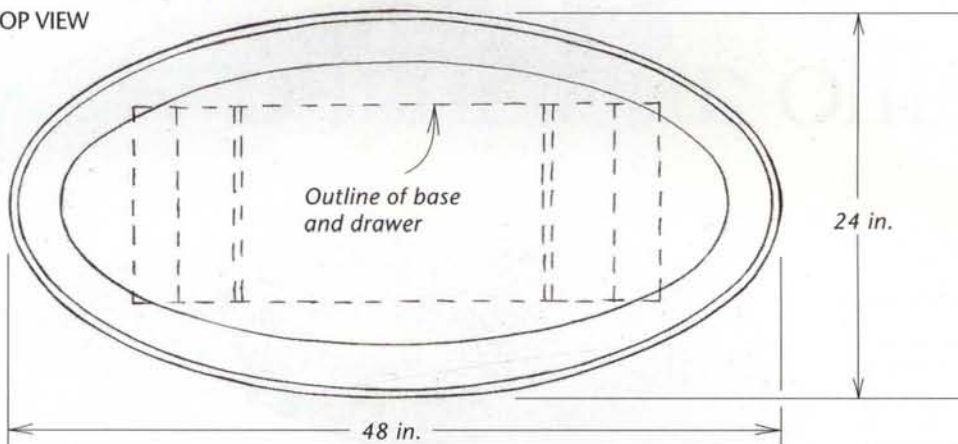
duced during the drafting process. I raised the center of curvature for the legs above the midpoint of the table height to lend a more graceful, flared look to the base. I added thin ebony inlay to the top to echo the theme of the black base.

I attached strips of wood to the legs to give the drawer housing a flat surface for easier fastening. To attach the top, I mortised strips of wood into the top inside of the legs and screwed the two sections together. The legs themselves are laminated with bending plywood.

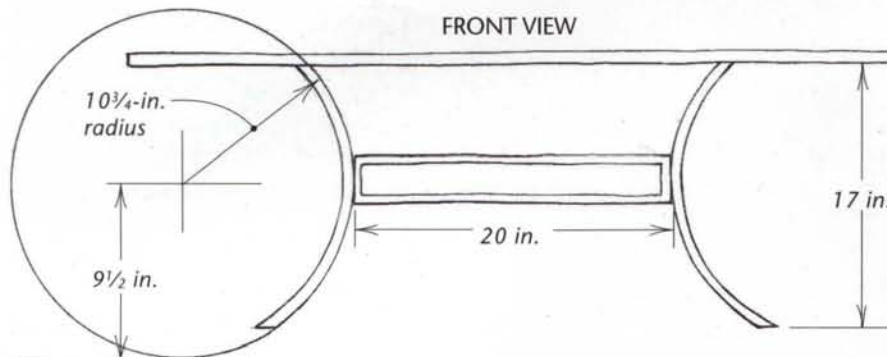
I selected fiddleback makore and pommel sapele veneers because of their figure. The pommel sapele (*pommel* means rounded or knob-like and refers to the figure) was available in large dimensions, and I used magnificent bookmatched sheets for the center of the table. The substrate is

ELLIPTICAL COFFEE TABLE

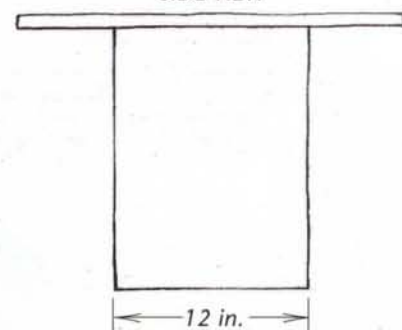
TOP VIEW



FRONT VIEW



SIDE VIEW



medium-density fiberboard, and the edge is solid sapele, with fiddleback makore as a dramatic cross band. I chose cherry for the inside of the drawer because its color is similar to that of makore. The flared legs provide the table with surprising strength. You can stand on the center to change a light bulb, if you wish. ■

SPECIFICATIONS

DIMENSIONS

48 in. long, 24 in. wide and 17 in. high.

MATERIALS

Pommel sapele and fiddleback makore veneers, sapele, ebony and cherry.

FINISH

Clear varnish (top and drawer) and water-reducible black lacquer (base).

Ellipse within an ellipse. This table was designed using a computer drafting program. Instead of drawing the elliptical shape of the tabletop and then placing the ebony inlays a uniform distance in from the edge, the author used a computer to draw separate ellipses for both the top and the inlays.



Blanket Chest in Tornillo and Snakewood

BY DAVID O. CROFCHECK



Wood is the only adornment. This chest incorporates a starkness and simplicity the maker sees in furniture from both the Southwest and Japan. Dovetails are cut on a router-table jig.

*d*esign ideas sometimes come from surprising sources. I usually look to nature or architecture for inspiration on how furniture might be shaped. When working with a client, I'm influenced by the individual's personality and taste. But this blanket-chest design came from a small box that I had made to test two new shop jigs. I liked the box so much that I decided to create a larger version.

Two prominent features of the chest are its gently contoured top and its off-90° sides. Both features were borrowed from the small box that I made earlier. The compound curves in the top of the chest were created with the aid of a jig I designed for my angle grinder (see *How They Did It*, p. 96). The sides of the chest are pitched in at 87° instead of 90° so the chest gets narrower at the top. That's just my preference in furniture design: I like alternatives to right angles.

I often mock up or partially assemble prototype pieces in order to make decisions for details such as inlay, joinery or even hardware. This helps me avoid cluttering up the look of the final piece with unnecessary embellishments. Remaining design details for this chest, such as the profile of the cutouts on the base, were finalized as the box was being made.



Wood selection also is important. Two woods are used in this piece, tornillo for the chest and snakewood as the darker accent band. Both are from Argentina. As the view and lighting of polished tornillo changes, grain highlights jump from dark to light to dark again, adding to the wood's deep, rich look and feel. Snakewood has a unique stripe pattern that runs perpendicular to the grain. The $\frac{1}{16}$ -in. thick inlay of snakewood running around the top of the chest is resawn and book-matched. No other ornamentation was necessary, and the final result evokes a sense of solidity. ■

SPECIFICATIONS

DIMENSIONS

48 in. long, 18 in. wide and 18 in. high.

MATERIALS

Tornillo and snakewood.

FINISH

Polyurethane.



A gently shaped top provides a comfortable seat that flips up for access to blanket storage (above left). The top is attached to the case with a piano hinge, and is held open by lid hardware visible at left.

The box that started it all. A small box the maker used to test two shop jigs (above) prompted the design of a full-size chest with similar detailing.

Wild Figure, Classic Shape

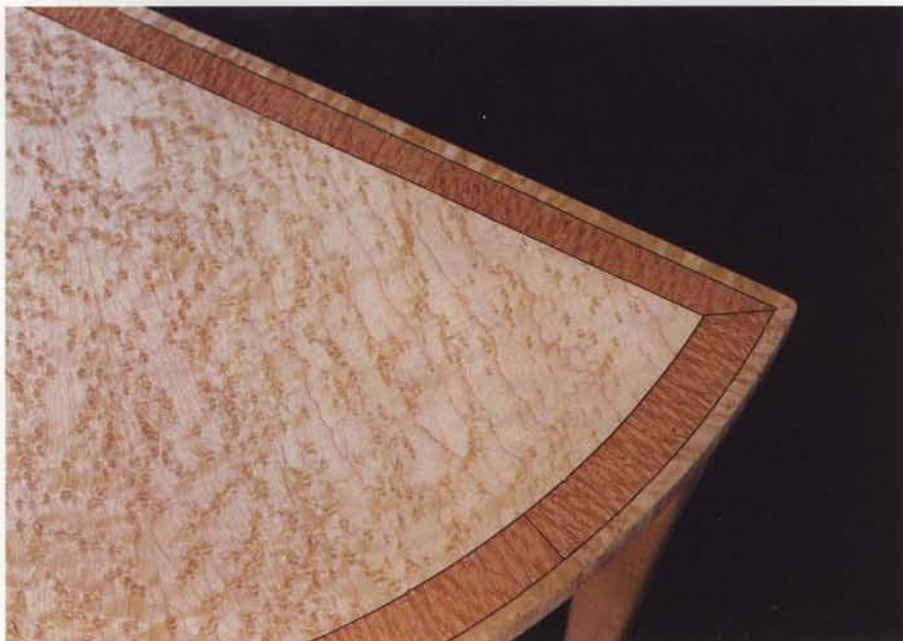
BY JIM MACDONALD

i see a lot of similarities between woodworking and music. When you first begin, there is discovery, theory and practice. If you stay at it long enough, you learn to create, to make something better than the sum total of your lessons should allow. I try to treat my furniture design process as improvisational, starting with the kernel of an idea and forging ahead. It's jazz.

My client wanted a 30-in. wide telephone table, either half-round or half-elliptical, that used bird's-eye maple and some kind of inlay. I had made several pieces for her before and I knew she preferred elegance to flamboyance. With its bowed front, tapered legs and veneer inlay, the table shows a strong Hepplewhite influence.

The table design also draws on a chance meeting with a very talented woodworker in Halifax, Nova Scotia, who introduced me to the concept of posture in furniture. The legs on the half-round table became a sort of tip-toed, tapered shape, still in keeping with the classical look of the rest of the piece, yet less stiff than the straight taper and spade foot that might commonly be found on a true Hepplewhite leg. The tapered legs are curly maple.

The top is bird's-eye maple over medium-density fiberboard with a simple, although difficult to execute,



border of lacewood and cocobolo veneers capped by solid bird's-eye edging. The patterns of the lacewood and cocobolo help contain the wildness of the figure in the bird's-eye maple. All of the inside and outside curves of the veneer and edging had to mate perfectly. I used a jig that I designed for my router (for more on the jig, see *How They Did It*, p. 96).

The table apron is made out of two layers of $\frac{3}{8}$ -in. bending plywood that are veneered with quilted maple and accented with a cherry cockbead. ■

A tribute to maple. Most of the top is of bird's eye maple veneer. Lacewood and a thin inlay of cocobolo surround the bird's eye, and the edging is of solid bird's-eye maple.



A table on tiptoe. Square and tapered on top, the legs of this half-round telephone table show the influence of 18th-century furniture designer George Hepplewhite—until they terminate in uncharacteristic sculpted feet.

Legs are half-lapped over aprons. Legs of solid curly maple are lapped over veneered apron pieces and attached with screws from behind.

SPECIFICATIONS

DIMENSIONS

30 in. wide, 15 in. deep and 30 in. high.

MATERIALS

Veneers of bird's-eye and quilted maple, lacewood and cocobolo; medium-density fiberboard, bending plywood and solid cherry and curly maple.

FINISH

Lacquer.





Built-In Display Cabinets

BY JON FISH



Glass cabinets provide space for display and a divider for the room. Simple architectural detailing makes the cabinets feel like part of the house.

i built these cabinets as part of the trim-carpentry contract for a new house. The cabinets weren't included in the original plans, and the design was an on-the-spot, joint effort involving the client, the general contractor and me. In fact, I did the drawing on a just-hung sheet of drywall as the three of us stood talking.

We started with two goals: to provide a place to display the client's collection of art glass and to give some definition to a dining area in the airy, open plan of the ground floor.

Our original sketch had pairs of wood-framed doors with glass panels on one wide face of each cabinet. But the client wanted the view of the art glass inside the cabinet to be as unobstructed as possible. So we moved the doors to the narrow end of the cabinets and made them of unframed pieces of glass.

This choice imposed a limitation on us, though. Because the displayed objects would be accessible only from the ends, the cabinets couldn't be wider than an arm's length. That suited us because we all felt it was important to retain the open feeling of the house; we didn't want to box in the dining area entirely with wider cabinets.

Another limiting factor was the width of the soffit, which was built before the cabinets were designed. Since that dimension was a given, the depth of the cabinets was a function of the soffit width minus the crown molding that would wrap around them at the top.

I gave the cabinets a built-in look by adopting the crown molding, baseboard and shoe molding used in the adjoining rooms and by painting the cabinets with the same off-white enamel used on the trim elsewhere in the room. ■



Access from the end frees both faces of the cabinet from distracting lines or hardware. Applied moldings add visual weight and interest to the basic birch-plywood box that forms the base of the cabinet.

SPECIFICATIONS

DIMENSIONS

Each cabinet 84 in. high, 38 in. wide and 16 in. deep.

MATERIALS

Birch plywood and solid birch, pine and poplar moldings.

FINISH

Off-white enamel paint.

Continuous-Arm Windsor Settee

BY DAVID WRIGHT



*t*he design of this continuous-arm settee, like nearly all the chairs I make, is based on an 18th-century Windsor. Structurally, I feel it would be hard to improve on the originals. These chairs are strong, light and flexible, and they hold up for hundreds of years. The modifications I make are in the shape of the parts.

The strength of a Windsor chair is derived not from the mass of its parts but from the way they work in combination. I take advantage of this fact and make all the parts thinner than in the originals. This modification gives the chair a delicacy that belies its strength.

I can make the parts extremely thin because I rive wood for my chairs straight from the log and work it green. When you rive a piece of wood, just as when you split a bolt of firewood, the split follows the grain. With no grain runout, even extremely slender parts have the strength of continuous grain running their entire length.

In the three main parts of a Windsor—the back, seat, and legs—the wood functions quite differently. I generally choose different woods to serve the separate functions. For the back, which is an elastic structure, I use oak

A more slender Windsor. In this continuous-arm settee, the author reduced the size of most members, making a strikingly sculptural chair with plenty of strength.

or hickory for their excellent bending properties and for their high tensile strength. For the seat, I need a wood that carves easily, so I often pick butternut or pine. And for the legs and stretchers, I usually select maple or cherry. Both are strong and have close grain that makes them well-suited for detailed turning.

When I'm carving the seat of a Windsor, I take out as much wood as I can. I scoop a good inch of material at the deepest part. I do it for comfort, but also because I want the seat to be sculptural. I try to give the lines of a seat a continuous motion, with one contour flowing into another.

I aim for a bold, crisp look when I turn the legs and stretchers of my chairs. Because this wood is riven, too, I can turn to a very thin diameter in places without worrying about structural failure.

SPECIFICATIONS

DIMENSIONS

50 in. long, 39 in. high and 21 in. deep.

MATERIALS

Red oak back, butternut seat, cherry legs and stretchers.

FINISH

Oil.



Spokeshaved spindles leave a trace of the craftsman's hand. The author shapes the spindles with a drawknife, then smooths them with a spokeshave, leaving a faceted surface (above) that contrasts with the sanded seat and turned legs.



Deep contours make a seat sittable. The maker's idea of the perfect chair seat (left) doesn't come from old Windsors: "I saw an old steel tractor seat and I said, 'That's exactly the way these have to be.'"

Trestle Coffee Table

BY RANDY SCHUKAR



Angled legs give this table its bearing.

As soon as he drew the end view of his table with the legs spreading rather than straight, the author achieved the sturdy grace he sought.

*i*m drawn to Japanese designs. I like their clean lines and elegant, organic appearance. When I designed this coffee table for my home, I tried to give it those same attributes.

Judging by our last coffee table, which served as a counter, desk and dinner table, I knew this one would have to be sturdy and serviceable, but I also wanted it to have a graceful air.

I began with the top, a rectangle of edge-glued oak boards. I wanted it fairly large. To keep it from looking too heavy, I beveled the underside edges, giving the top a much thinner appearance. In addition to lightening the top visually, the bevel adds another angle to a geometric piece. I used bevels, chamfers and tapers throughout the piece.

I knew the trestle frames at either end would be the most visible parts of the table, and this is where I spent the most effort trying different arrangements and details. At first I had the legs straight up and down. When I tried angling them outward, the table immediately took on a more rooted appear-



Continuity of detailing for a unified design.
The author used a variety of angles—chamfers, bevels, slants and tapers—to flavor the foursquare components of his table.

ance. Then I decided to taper the legs, making them slightly wider at the bottom than the top. This refinement also contributed to a solid, organic feel.

I added the second, lower stretcher just for looks. By itself, the shelf stretcher seemed too light when compared with the wide legs. The second stretcher improved the balance of mass between the legs and stretchers.

I wanted the shelf for stowing books, magazines and other clutter, but I did not want another visually heavy horizontal surface. So I built the shelf of slats and kept it fairly high off the floor. That way I got the airy feeling I was after and achieved a balance with the trestle frames..

SPECIFICATIONS

DIMENSIONS

40½ in. long, 19 in. wide and 17¾ in. high.

MATERIALS

Red oak, cherry buttons to fasten top.

FINISH

Watco Danish Oil.



A union of Morris and Stickley. The designer of this lounge chair borrowed from Arts and Crafts pioneers like William Morris and Gustav Stickley.

Arts and Crafts Style Lounge Chair

BY WESTLEY SPRUILL

When our apartment needed a lounge chair, I designed this piece to feel large and generous. But unlike a fully upholstered chair, this one does not take up much space or appear too massive for the room.

I like the clean, broad lines and subtle curves of the Arts and Crafts style, so I used chairs from that era as a model. The wide armrests give my chair an ample feel and provide a surface for resting things on, making a side table unnecessary.

The pattern for the inlays came about after some experiments with a router and various jigs. Although I borrowed this overall chair design from an earlier era, I wanted to use the inlays to give it my own stamp of individuality.

The cushions were one of the most challenging aspects of this design. I made a full-scale, cardboard mockup to make sure that the design would be comfortable. Then I had to make the cushions firm enough to provide support. I used polyester fill and foam, and I sewed the covers out of Indian cotton. The seat cushion rests on 3-in. wide canvas upholstery webbing, woven and nailed with upholstery tacks to cleats inside the four rails. The backrest is just a cushion resting on the back rail.

Because I made the chairs on a budget, the mahogany came from different sources and varied significantly in color. I had to use a combination of cherry and walnut stains to achieve a uniform color. ■

SPECIFICATIONS

DIMENSIONS

26¼ in. high, 35½ in. wide and 34½ in. deep. Seat height is 16 in.

MATERIALS

Mahogany, maple, canvas webbing, foam, polyester fill, and Indian cotton for upholstery.

FINISH

Walnut and cherry stain, natural and cherry-colored Watco Danish Finishing Oil.



Inlays are signature. Maple inlays add a visual dimension and personalize this historically inspired piece.

Cherry Frame for a Water Bed

BY VERNON E. BLACKADAR

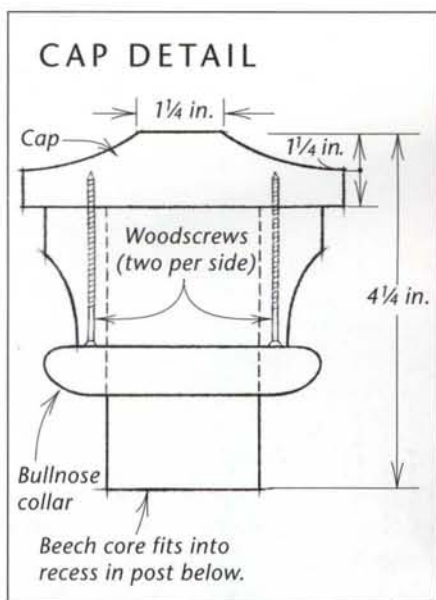
i made dressers, nightstands and a chest for my bedroom, all from plans in a magazine. But plans for a matching bed never showed up, so I designed one myself. The bed incorporates the raised panels, bullnose trim and chamfered corners of the dressers and nightstands, so it looks compatible, but the rest of the design doesn't really relate to these pieces.

The bed frame fits around a queen-sized water bed. The water bed itself is supported by its own steel frame. Because the cherry bed frame doesn't have to support any of that weight, I was able to make the bed rails from 1-in. stock.

My shop doesn't have a lathe, so I made square legs of a 2½-in. core of



Oversized frame for a water bed. This cherry bed conceals the steel frame for a queen-sized water bed. The steel carries the weight of the bed.



Frame-and-panel design matches bedroom. The maker came up with the design for this bed incorporating frame-and-panel and trim details from furniture he had already made.

A 1 1/2-in. deep compartment in one of the posts is concealed beneath the cap piece and its bullnose trim.

beech wrapped in 1/2-in. cherry. I chose beech because I thought it would be dimensionally stable, and gluing up the leg assemblies saved material. If I had used solid cherry, I would have needed 16/4 stock to end up with the 3 1/2-in. square finished leg. Fluting was done on a sliding jig for the drill press. Cherry for the rails and stiles of the frame is 3/4 in. thick.

An unexpected feature is a hidden compartment, a 1 1/2-in. deep pocket in the beech core of one of the posts. The beech core of the removable top slips down inside the cherry facing of the lower post section. The joint is hidden by the bullnose cherry collar. With some ingenious thinking, the post top could even have a lock on it. ■

SPECIFICATIONS

DIMENSIONS

65 1/2 in. wide, 53 1/4 in. high (headboard) and 27 3/8 in. high (footboard), and 91 1/8 in. long.

MATERIALS

Cherry and beech.

FINISH

Minwax Antique Oil and varnish.



Legs are slender but strong. The padded feet on these delicate Queen Anne style legs were left as large as possible to give the narrow table added stability.

Queen Anne Hall Table

BY E. JEFF JUSTIS, JR.

a narrow hallway in our home needed a table to hold family pictures and a guest book, prompting the design of this Queen Anne style piece.

I wanted to keep the width of the table to 15 in. or less so there would be enough room for people to pass by easily. Length was not critical, and in my initial drawings I settled on 41 in., which to me created the most pleasing proportions. I made the legs delicate but broadened the footprint as much as possible for stability.

The apron is made out of two pieces that are glued together. I made the lower portion out of thicker stock. After bandsawing the scrolled shape, I glued it to the upper apron. I also beveled the lower, inside edge of the apron to make it look less bulky. The tenons are pinned with traditional square pegs.

I made the top out of a 16-in. wide plank of mahogany and rounded the corners with a 2-in. radius to protect passersby. The edge is molded for a lighter look; I didn't want this tall, narrow piece to seem top-heavy.

SPECIFICATIONS

DIMENSIONS

41 in. long, 14¹³/₁₆ in. wide and 32 in. high.

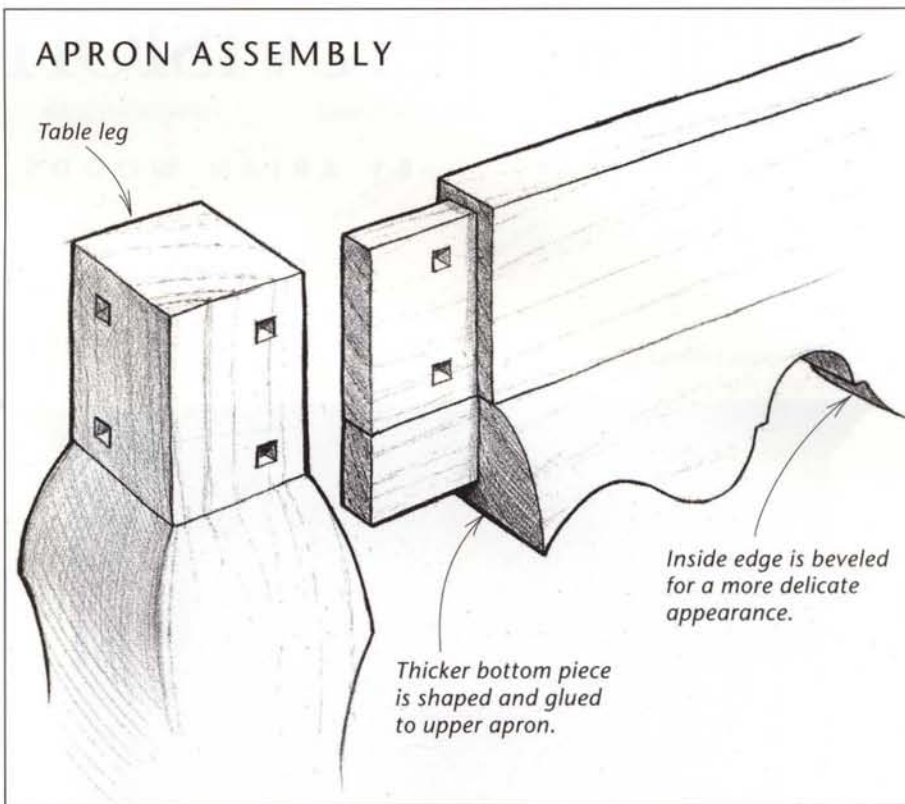
MATERIALS

Mahogany.

FINISH

Watco Oil and red mahogany filler.

APRON ASSEMBLY



A wide table wouldn't fit. Designed for a narrow hallway, this table had to be 15 in. wide or less.

Maple Television Cabinet

BY BRIAN WOODS



Careful proportioning makes a large cabinet less imposing. Instead of making his cabinet for a large-screen television one big box, the author broke the piece into two components: a wide, plinth-like base cabinet and a tall upper cabinet.

the task was to design a cabinet that could house a 200-lb., 30-in. television and still look at home in a century-old farmhouse full of antiques. I drew inspiration for the overall lines from the *schränk*, a large, roomy wardrobe widely used among the Pennsylvania Germans who migrated to eastern Ontario in the early 1800s.

The exterior of the cabinet, in keeping with the origin of its design, is all solid wood, with frame-and-panel doors and sides and mortise-and-tenon joinery. Once the cabinet is open, though, the 20th century intrudes. The raised-panel doors flip out and slide back into pockets created by an inner cabinet made of maple-veneered particleboard. The drawers and television shelf ride on metal drawer slides, and the television rotates on a ball-bearing swivel plate.

I worked hard at finding balanced proportions for this cabinet. Because it was such a large and heavy piece, I made it in two parts and joined them on site. I wanted the lower case to car-

SPECIFICATIONS

DIMENSIONS

79 in. high, 59 in. wide and 26 in. deep.

MATERIALS

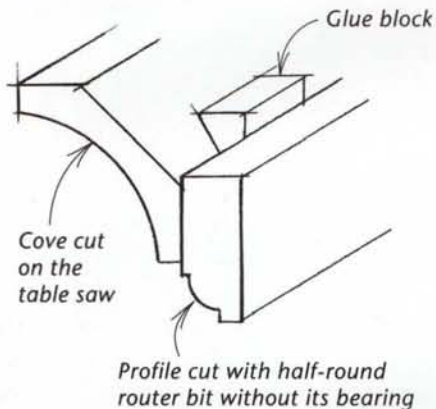
Hard maple, maple-veneered plywood and Baltic birch plywood.

FINISH

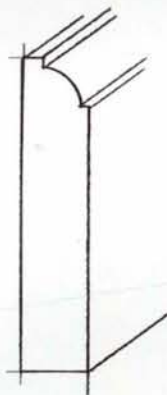
Danish oil.

MOLDING DETAILS

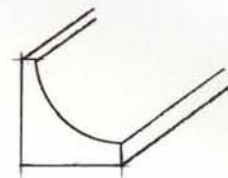
CROWN MOLDING



BASE MOLDING

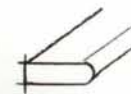


WAIST MOLDING



Trim between lower and upper cabinet

BEAD MOLDING



Applied around lower side panels and inside drawer openings

ry the visual weight of the piece, to give the impression of a solid foundation. So I made it wider than the upper case and oriented the grain of the drawer fronts and side panels horizontally. I oriented the grain vertically in the upper cabinet's door and side panels to give the piece a lighter look and a feeling of upward movement.

I designed moldings that I hoped would tie the piece together. I chose the large crown molding as a way of completing the visual movement from bottom to top. Its bold curve marks a definite end at the top of the cabinet and also brings the eye back down to the cabinet. For the waist molding I used a smaller cove that keeps the transition between the upper and lower cases from seeming too abrupt. ■



19th-century skin, 20th-century guts. The overall lines and solid wood construction of an early 19th-century wardrobe let this cabinet blend with antiques. Inside, however, the materials and hardware are modern.



Carved Mahogany Mantelpiece

BY KEVIN FERNANDEZ

When I design something for a client I try to do more than sell them on what I like. I find out what they're interested in and what styles appeal to them, then create the piece.

A book of French fables provided the primary inspiration for this mantel. My clients had been reading the book to their children, and we decided to use one of their favorite fables as the motif of the carving. The fable tells the story of a fox that invites a stork to dinner but serves the food on plates so the stork can't eat. The stork reciprocates by inviting the fox to dine from a narrow-necked bottle. I did a carving of the stork's revenge, with the fox slinking away hungry.

My clients wanted their mantel to have a French country feeling along with a certain formality. So in the overall design I tried to blend these contradictory directives. I used a garland of grapes and grape leaves to frame the carving. Those details, along with the scalloped and rolled bottom edge of the carved panel, emphasize the French country feeling. The grapes and leaves also refer to a small vineyard the clients have behind their house. A more formal feel comes from a rectilinear outline and a deep mantel shelf, and from the somewhat classical arched panels on the columns.

I chose Honduras mahogany for the project because I like the way it feels when you carve it, and because it holds details so well. I also thought the color would make a good contrast with the marble of the fireplace. ■

SPECIFICATIONS

DIMENSIONS

60 in. wide, 10 in. deep and 58 in. high.

MATERIALS

Honduras mahogany and softwood molding.

FINISH

Water-based lacquer.



Breaking the boundaries for more realistic carving. The author let the grapes flow over the bottom edge of the carved panel to give the carving a stronger sense of depth and flow. He bought egg-and-dart molding made of softwood and stained it to match the Honduras mahogany.

Arched panels serve as doors. Secret doors on both columns open to reveal storage for fireplace utensils. The molding around the panels is deep enough to serve as a handle.

Pear Bench

BY KATHERINE HELLER



Details add texture The rabbet along the top edge of the skirt and the step added to the lower edge create slight shadows, adding depth without taking away from the bench's simplicity.

When I have something in mind to make, like this pear bench, I like to start with rough sketches. These drawings sit in files and folders, sometimes for years, until the time seems right to start building.

I made this bench for a bedroom or dressing room. I wanted the piece to have clean and simple lines, appropriate for its purpose.

I started with a mockup, made out of lumber scraps and cardboard, to get a sense of the proportions. I played with the parts, varying dimensions and positions, such as the seat height and the relationship of the leg to the apron. I experimented with curved legs and additional stretchers. It was a matter of juggling many such small differences until I felt satisfied with the design.

Swiss pearwood seemed an appropriate wood for this bench because of its subtle pink tones. I went through stacks of lumber looking for boards with straight, vertical grain. I sawed up everything I needed from the same plank, making sure that the color and grain pattern of all the parts were visually compatible.

Details like the tapered legs evolved through intuition. I shaped the legs by eye until they looked right to me. To soften the bench's boundary, I created a shadow recess by rabbeting the top of the skirt. This recess also lightened the look of the bench without sacrific-



SPECIFICATIONS

DIMENSIONS

20 in. long, 13 in. wide and 16 in. high.

MATERIALS

Swiss pearwood, linen and Swedish linen yarn.

FINISH

Shellac polish and wax.

Frame mirrored in upholstery. The author made the cushion out of linen; the pattern of the fabric mimics the bench's design.

ing strength. I continued this detail around the tops of the legs. Along the bottom edge, I added a strip of wood, creating a slight step.

I chose linen for the cushion fabric because its texture and color contrast well with the pearwood. The fabric features a simple pattern that I cross-stitched myself using Swedish linen yarns. The pattern mirrors the bench design in the corners. ■



A Dining Table in White Oak

BY RON DAY

my clients wanted a round extension table with a pedestal base in a style that would complement or match a teak dining-room hutch. They loved the work of Arts and Crafts designers Charles and Henry Greene, so that's where I started.

I used quartersawn white oak. The wood has a unique figure and was a frequent choice in the Arts and Crafts furniture of the early 20th century. I was eager to do a virtual copy of a Greene brothers round table that I had seen. But when my clients presented me with a photograph of chairs they had bought on a trip to London, I took a second look at a design I had sketched earlier and put it aside.

The new design showed two curved "picket fences" forming the base. By making a full-size drawing, I tried to achieve a balance between stability when the table was open (requiring greater curvature of the base) and greater leg room at the sides (flatter curvature). I added the three heart-shaped slats as the central vertical motif. The slats matched a detail in my clients' new chairs. The specific size of the four wide slats with the tulip cutouts was determined by making several full-sized trial pieces of different widths and cutout patterns.

The original idea was to have ebony "dashes" inlaid into a smooth circumference, but my clients wanted to emphasize the joints between the eight boards comprising the top. Various quick sketches led to the idea of an ebony spline spanning the curved ends of each joint. I enjoy this type of input from clients. It shows they are taking an active interest in the project without dictating the details. By incorporating their design ideas, the piece really becomes a dream made real for them. The ebony strips applied to the faces of the legs add simple detail to the understructure, as do the ebony feet that make the table appear to float off the floor. ■



Ebony is the accent. Quartersawn white oak, a staple of American Arts and Crafts furniture, is paired with ebony for simple and effective detailing. The client suggested the overall approach, and the maker refined it.

SPECIFICATIONS

DIMENSIONS

48 in. in dia. (closed), 84 in. long (open) and 29 in. high.

MATERIALS

Quartersawn white oak and ebony.

FINISH

Teak stain and tung oil.

Tall-Boy Chest

BY ROBERT E. BROWN



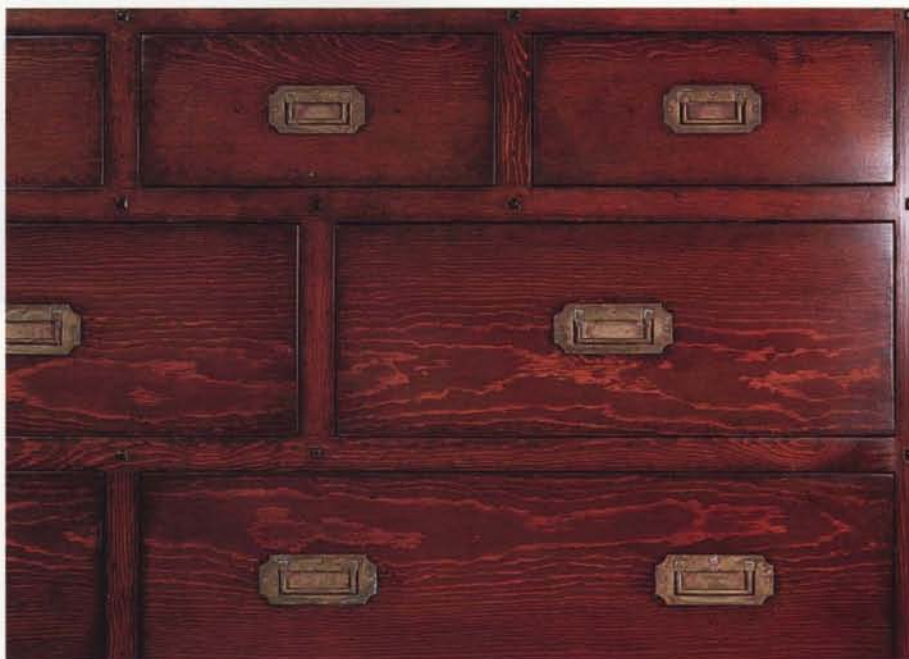
A mix of influences. Childhood memories of a tall chest belonging to the maker's father plus a timely visit to a famous Craftsman-era house helped create this design.

as a boy, I admired the chest of drawers in which my father kept his clothes and knickknacks. The “tall boy,” as he called it, was simple in design and very practical. It held everything from the bulkiest sweaters to the most delicate handkerchiefs. It was truly a functional piece.

After a motivating trip to the Gamble House, a turn-of-the-century Craftsman style home in Pasadena, California, designed by Charles and Henry Greene, I decided to create my own tall boy. Practicality is the main focus. While the Greene brothers’ work and an oriental Craftsman style were the main design influences, the basic proportions of the piece are more akin to those of a toolbox belonging to a grip, an electrician or a rigger on a movie stage. Because I’m a set builder in the film industry, I’ve seen many grip’s toolboxes, and I admire their shape and construction. These toolboxes are on wheels and have lots of custom-designed drawers to accommodate the tools and supplies.

In my tall boy, the irregularly sized drawers are designed to overlap like a brick wall. The cloud-lift details on the base and the decorative square plugs on the face frame are inspired by the Greene brothers’ designs. The red color of the piece suggests the lacquer finishes on Chinese furniture.

I used simple techniques (glue and nails) to build the case. The base is hand-dovetailed. The brass drawer pulls I used (see Sources, p. 100) were originally far too shiny and new for this antique-like case, so I fumed them in ammonia for a soft patina and then rubbed them out with 4/0 steel wool to create wear spots that blend in with the overall look of the cabinet. ■



Irregularly spaced drawers. Not all drawers are symmetrical to the chest’s centerline (above). They are stacked like bricks in a wall, a feature of some Craftsman furniture.

Details enliven a rectilinear case. A dovetailed base (top left) with a cloud-lift motif on the front of the chest, base molding and decorative square pegs all add visual interest to an otherwise unadorned case.

SPECIFICATIONS

DIMENSIONS

49¾ in. wide, 24 in. deep and 63 in. high.

MATERIALS

Birch carcass, pine face frame and drawer fronts.

FINISH

Minwax stain and polyurethane topcoat.



Curved parts give a large bed a light feeling. The parts all curve at different radii, creating an intriguing open space that draws the eye and lightens the bed visually. The author used similar maple detailing in the tables and bureau.

Bedroom Suite in Cherry and Tiger Maple

BY DENNIS SAINDON

*m*y clients gave me nearly complete freedom in designing this bedroom furniture; they asked only that I give the bed's headboard a feeling of reaching up and out. That request led me to this design of flaring curves. The key at the center of the headboard and the flared posts give a sense of upward and outward movement, and the broad top curve pulls the headboard and posts together visually.

To emphasize the upward movement, I ran the grain of the veneered headboard panels vertically. I hand-sawed the veneer in 1/8-in. sheets from a wide board of quilted cherry and showed my clients the slices. Together we selected and arranged the pieces to form a fan pattern that is symmetrical on either side of the center key. Using veneers from the same board, I laid out the drawer fronts and the sides of the matching bureau.

The bed was to stand under a skylight in a green room with an ash floor. I used cherry as the primary wood because I thought its red tones would complement the green walls. I chose maple for the trim to match the blond ash floor and to reflect some of the light from above, which would have been absorbed in a darker wood. I hoped the reflected light would highlight the contours of the molding. ■

SPECIFICATIONS

DIMENSIONS

Bed frame: 85 in. long and 65 1/4 in. wide; headboard: 74 1/4 in. wide and 29 in. high.

Bureau: 36 in. wide, 20 in. deep and 44 in. high.

Night tables: 20 in. wide, 20 in. deep and 26 in. high.

MATERIALS

Cherry, quilted cherry veneer, maple, tiger maple, pine drawer bottoms and bureau back panel.

FINISH

Oil and varnish.



Shared materials and detailing link the bureau to the bed. As he did on the headboard (left), the author ran the quilted cherry veneer on the bureau vertically (above). The cock bead around the drawers is maple.

Side Table with Mirror

BY ANDREW PEKLO



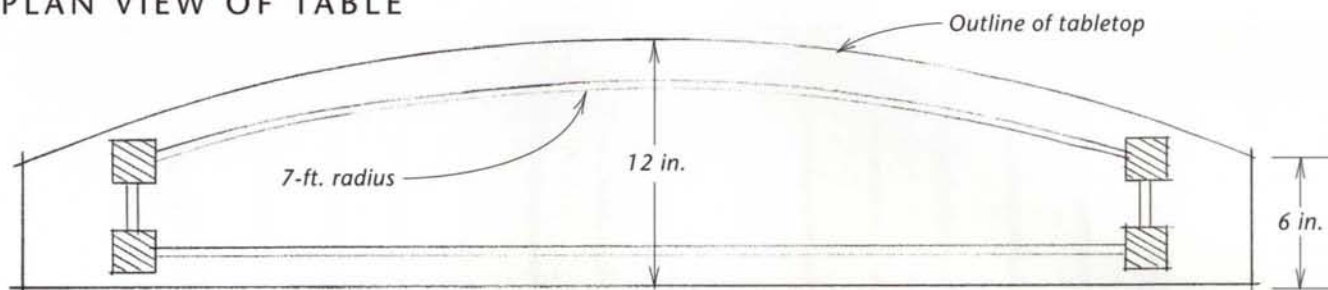
*t*he design of this table and mirror was in response to an apartment renovation that left my client with a small entrance foyer. I designed a narrow table, with a mirror, to make the space seem larger.

I detailed the table to complement Shaker-inspired pieces elsewhere in the apartment. But once I had built the mold for the curved, laminated front apron, it made sense to glue up another. So I made a second table, the one pictured here, for myself.

Since I no longer had to fashion something in a Shaker style, I altered the leg and top edge design. First, I beveled the underside edges of the 1-in. thick top. Then I floated the top off the base by raising the apron of the table above the tops of the legs. It was a pleasant surprise to see the combination of the curved front, feathered edges, arched and bowed front frame and the floating top.

Curves unify two pieces. The curved rails of the mirror are mimicked in the top and front of the table.

PLAN VIEW OF TABLE



To make it easier to fasten the top and brace it against cupping, I added two stretchers between the front and back apron pieces. I used exposed tenons for an added visual detail.

The mirror design, a blend of Arts and Crafts and Japanese influences, was not altered from my original. I tried to make it an extension of the table, with square, vertical sides and curved horizontal elements, and I used wedged tenons for added detail. The bead along the upper and lower rails of the frame creates texture and depth on an otherwise nondescript and unbroken surface. The beveled mirror, I think, adds sparkle. ■



Eliminating a heavy look. The apron of this table extends above the legs, making the beveled top look as if it's suspended over the base.

SPECIFICATIONS

DIMENSIONS

Table: 60 in. long, 12 in. wide and 34 in. high.

Mirror: 50 in. wide and 44 in. high.

MATERIALS

Mahogany.

FINISH

Combination of linseed oil, spar varnish and turpentine.



Old Elements Shape a New Design

Craft-furniture pioneer Walker Weed
describes his design for a settee

BY WALKER WEED

Modern settee with a sense of history.

Walker Weed draws on the history of furniture and his own past work for the design of each new piece. In this black walnut settee, he blended details from a variety of sources to create something distinctly his own.

in 1956, some friends asked me to build them a settee with a Shaker feeling but in my own style. My solution to this request was based on elements from a side chair that I was then building, and also borrowed understructure details from some coffee tables that I had designed earlier. The only restriction was the length, which was determined by the dining table with which the settee was to be used. I have since made this settee several times, in two lengths, approximately 5½ ft., like the one in the photos, and 8 ft. long. I think that is a good range of sizes.



One good seat leads to another. For his settee, Weed used many of the dimensions, angles and shapes he'd developed earlier in building this Windsor-derived side chair.

Cantilevering makes for a daring design. Extending the seat far beyond its supports lends the settee a subtle excitement; it attracts the eye and makes one wonder, "What holds it up?"

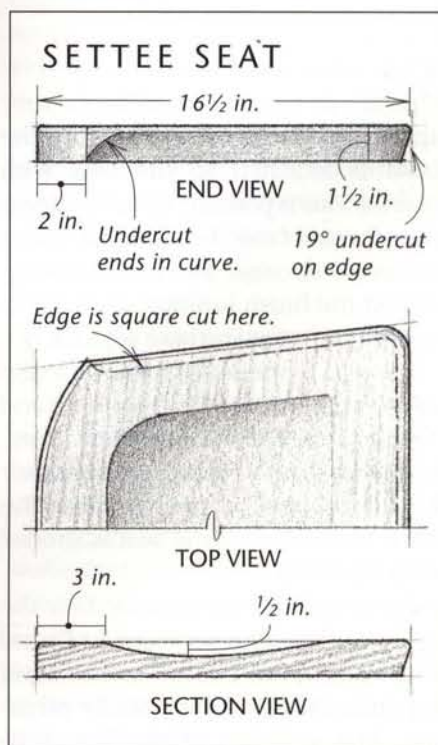


A PLANK SEAT

I had a walnut plank, 17 in. wide and 2 in. thick on hand, and I used it to make the seat. Using this single plank instead of gluing up narrower ones added much to the beauty of the design, as did the rich, dark color and handsome figure of that wood.

The rather long, cantilevered overhang on the settee seat is something I like to use to give a feeling of tension. I suppose it is to make the observer ask subliminally what's holding the seat up. If you extend it too far, a person sitting on the end might find himself on a seesaw. If you reduce the overhang, it begins to look unexciting, conventional and safe. I have enjoyed such wide projections on many Shaker tables and cabinets, but I have not seen them on their settees.

The shape of the seat goes back to my first side chairs, which were based on a Windsor chair I liked. The seat edges of those first chairs are quite rounded, but I modified that detail somewhat after reproducing some



Shaker side chairs that were made in the Canterbury, New Hampshire, community by Micajah Tucker. The seats of his chairs have a 19° beveled undercut along the front and side edges. He stopped the bevel a couple of inches shy of the back on each side and made a smooth, curving transition to a square profile. I subsequently used that detail in my later chair seats and in the seat of this settee.

Because the settee was to be used at a dining table, I used the seat and back heights and also the depth and back angle of one of my side chairs. These, in turn, were modified derivatives of their Windsor ancestors.

As in my side chair, the back of the settee seat is 1 in. lower than the front and the slope, together with the 102° angle between the seat and the back, enables a person to sit without feeling pitched forward. A horizontal seat with a back perpendicular to it would have been quite uncomfortable. I excavated the surface to a depth of ½ in., using first a router and then a belt sander with a curved platen. The resulting surface is quite traditional. The human posterior has not changed much since chairs arrived on the scene.

A SEPARATE BASE

I prefer to use metal fasteners very sparingly, if at all, but in this settee the base is attached to the seat with screws. This is perhaps not a solution a purist would favor, but I think it makes the piece stronger and certainly simplified the finish sanding since I was able to complete the base separately.

The legs of the settee make an angle of 75° with the floor in front view and 78° with the floor in end view. Note, however, that the back legs are closer together than the front legs since the back dimension of the seat is shorter than the front.

These angles are repeated in the splay of the end posts of the back and in the end bevels of the crest rail. I find repetition such as this visually pleasing. The splaying of the legs adds



Repeated angles are visually pleasing.

On the underside of the ends of the back rail, Weed cut the same angle as he did on the back edge of the seat, creating a pleasing symmetry.

A separate base simplifies construction and finishing.

Seen from beneath, the settee's construction is plain. The base is an independent unit screwed to the seat, and the spindles and back posts are mortised through the seat and wedged. The stretchers are tapered toward the middle for grace.



greatly to the strength of construction. If legs and other such members are at right angles to a seat or table top, the piece tends to rack unless they are beefed up. So splaying permits more delicacy because less material can be used. And, with a wide overhang, splaying also makes it possible to locate the feet of the legs under the front and back edges of the seat for maximum stability, just far enough in so that people will not trip on them.

The stretcher that runs the length of the base is not usually found on Shaker settees. I used it here to add strength and to lower the visual center of gravity. All three stretchers are curved and tapered to make them more graceful and delicate while still preserving necessary strength.



Learn from furniture you enjoy

Among my favorite quotations is this one from the Danish architect Kaare Klint: "An aversion for old things leads to a loss of perspective and excludes the best help we can get: building on experience acquired over hundreds of years. There are no problems that have not been solved many times before."

Designing and making furniture demand a lot of study, particularly of the best pieces of the past. These can be found in books, museums and private collections. Squirrel away in your brain proportions, dimensions, material selection, methods of joinery and finishing, and a knowledge of the tools that were used in building these things. To all of this information will be added your own experience as you go along.

But don't just study. Reproduce pieces that you really enjoy and, as you do, question the original maker's solutions. Subtleties of design and construction are often discovered in this way. The furniture that you like will have a common thread, a shared approach that is similar to your own way of stating things. When I first began to make furniture, in the late 1940s, I was most excited by early New England pieces (particularly the unsophisticated ones), by Shaker work, by the work of George Nakashima, and by the Danish designers, especially Hans Wegner. The Danes and Nakashima have acknowledged their debt to the Shakers. This furniture had common elements I admired—simplicity and strength achieved with an economy of material. —W. W.



At home in the history of furniture. Weed's enthusiasm for the work of others lends great strength to his own furniture. For him, making furniture in his barn has been a way of life as well as a vocation, keeping him close to his family and to the mountainous country he loves to explore on foot, on skis and by canoe.

LEGS, POSTS AND SPINDLES

The flats on the legs, back posts and spindles are touches I prefer to round turning. For me this design is a time-saver, and it evolved from my method of making these parts. These are first straight-tapered and then rounded with a router bit of the appropriate radius. Using a $\frac{3}{8}$ -in. radius bit on a leg that tapers from $1\frac{3}{4}$ in. at the top to 1 in. at the bottom leaves tapered flats on the sides. In a similar way, the spindles in the back of the settee start as $\frac{1}{2}$ -in. thick pieces, and they taper from $\frac{1}{16}$ in. wide in the center to $\frac{1}{2}$ in. wide at the ends. A $\frac{1}{4}$ -in. roundover bit produces a spindle with round ends and leaves double-tapered flats facing front and back.

When seen from the front, the back spindles are perpendicular to the seat and back rail. They look best to me that way. I tried fanning them, but that didn't look right. It introduced too many angles. The fairly wide spacing might be said to give a feeling of lightness while still being strong.

CHOOSING WOOD AND FINISH

There are a number of woods other than walnut that might be used in this settee. Cherry, white oak, rock maple, yellow birch and white ash—any of these would do well. It would also be possible to use a softer wood for the seat, such as white pine, butternut or poplar, but the other parts need to be hard and strong. If woods are used in combination, though, the contrast should be subtle; I wouldn't recommend, for example, the strong contrast of white ash and walnut.

The finish on the settee is flat oil and resin, which I like because it is subtle, brings out the grain of the wood and is easy to maintain. ■

Walker Weed, one of the first craftsmen trustees of the American Craft Council, has been making furniture in New Hampshire since 1948. From 1964 to 1981 he taught woodworking and directed the Crafts Program at Dartmouth College.

Choosing Brass Hardware for Period Furniture

When reproducing American furniture, the right choice of brasses makes all the difference

BY WALTER RAYNES



Reproductions can capture original details. This hand-carved die and the Hepplewhite-style backplate made from it by Horton Brasses show the level of detail possible in brass reproduction hardware.

Let's suppose you're about to build a piece of traditional American furniture—something like that chest of drawers you saw in a museum. You probably will spend some time finding the right boards and figuring out how to reproduce the joinery faithfully. But have you forgotten something? Ah, yes, the hardware. If you think that picking the hardware is as simple as opening a mail-order catalog, you may want to think again.

Brass hardware, especially visible and decorative items like drawer pulls and escutcheons, has a tremendous effect on the look of period furniture. When these pieces were built originally, hardware selection was not left to chance any more than decisions on joinery or veneers. The best pieces of period furniture were designed so that all the details worked together.

In a great many pieces of Federal style furniture, for example, geometric shapes and inlays have their counterpart in the brass ovals used for the drawer pulls. In more ornate pieces, like some Chippendale highboys, the hardware style is completely different. There, you may find the rococo flourishes of the brasses mirrored in the woodworking itself.

Before opening the hardware catalogs and placing your order, examine

several original hardware examples carefully. Look at all the different elements and you will probably notice the integration of proportion, decoration and hardware. The chart on p. 90 illustrates relationships between furniture styles and hardware for some of the most recognizable periods of traditional American furniture.

Taking the time to look at the subtle details of pieces from these periods will help guide you in your search for the right hardware for your reproduction furniture. Knowing something about how the hardware is made also is a benefit, since manufacturing methods often determine how authentic a reproduction looks. Brass hardware today is available in many styles and is made in different ways. And, of course, the better reproductions will cost more, perhaps twice as much as their standard-quality equivalents.

HOW PERIOD REPRODUCTIONS ARE MADE

Most brass hardware today is die-cast, stamped or cut from large sheets. Some of it may even be made from brass-plated steel or brass-plated zinc alloys. Modern manufacturing methods involve little handwork, and therefore can churn out large quantities of identical and relatively inexpensive

pieces. Most early brass hardware, however, was anything but uniform, and if price is no object, you usually can find reproduction hardware that is made exactly as it was originally.

Before 1750, most brass hardware was cast in sand molds. To sand-cast a part, a pattern of the part is pressed into a sand mold. The pattern is removed, and molten brass is poured into the mold, cooling in the shape of the pattern. Sand-casting is still practiced today, and is generally considered the best process for hardware on reproductions of that era because of the subtle but noticeable differences it imparts to the hardware. For example, the backplates of cast drawer pulls, escutcheons and rosettes were filed by hand to produce a beveled edge. Much of this early hardware was "chased," a process in which decoration is hammered into the brass by hand. Also, slight surface imperfections and undulations resulting from the casting process are apparent, even at a distance. The same is true for other cast parts, such as the bails, or handles, on drawer pulls. Many of the cheaper reproductions, by comparison, appear absolutely flat and uniform, lacking the subtle variations of sand-cast parts.

The availability of thin sheet brass after 1750 allowed decoration to be stamped into the metal by machine. This new technology led, during the Federal era in the late 1700s, to oval backplates often stamped with intricate designs. The Hepplewhite style ovals show incredible detail. Efforts to



"Chasing" brass by hand makes each piece unique. The decoration in these William and Mary and Queen Anne backplates was made by hand in a process called "chasing." By hammering the brass with engraved punches, chasing can produce a variety of patterns, and each piece will differ subtly from its mates.

recreate these designs have led to some high-quality dies. Some of the less expensive reproductions, however, have been simplified for ease of production (although the process remains basically the same). If a reproduction oval lacks the detail or crispness of an original, the hardware will look out of place.

One difficulty in searching for period brasses is that not all, and certainly not the best, of period styles are made these days. Many of the items available in the traditional style are adaptations

of originals or poor imitations. Some are reproductions of reproductions, resulting in a loss of original detail.

CHOOSING THE RIGHT STYLE

In addition to manufacturing methods, style and form are important considerations in choosing decorative brasses. Modern furniture styles are often notable for their lack of visible hardware, and woodworkers with contemporary leanings often use touch latches or sculpted wood pulls to achieve a clean look. But with traditional furniture, at least in my experience, hardware serves an aesthetic as well as a functional role, as part of an overall design.

For example, some Chippendale brasses were large and flamboyant, in keeping with the boldness of the rococo style of the time. Drawer pulls in particular were meant to be seen, and



Casting reproduces irregularities found in original hardware. This sand-cast Chippendale drawer pull (at right) made by Ball and Ball is thicker than the stamped version (at left). The beveled edges were filed by hand.

BRASS HARDWARE FROM 1680 TO 1820

STYLE		COMMON HARDWARE	HOW IT WAS MADE
William and Mary (1680-1730)		Tear-drop or pear-shaped pulls, backed by rosettes, loosely echo the shapes of turned legs popular during the period. Rosettes in their simplest form were circular; more elaborate rosettes had cast or stamped decoration.	Cast, hand-chased
Queen Anne (1720-1760)		Bails, or handles, on drawer pulls are used with decorated backplates. Later styles used post-and-nut mountings instead of wire. Bails often adopted the ogee curves found in the legs and moldings of the period.	Cast, hand-chased
Chippendale (1750-1790)		Brass hardware evolved into more elaborate rococo patterns in keeping with the furniture itself. Toward the end of the period, cast "bat wing" backplates were sometimes replaced by simple button-and-bail pulls.	Cast
Hepplewhite (1790-1810)		A sharp stylistic shift occurred due to changing manufacturing methods. Oval pulls often had elaborate decoration, such as the eagle motif, a popular symbol reflecting the pride of a new nation. The oval shape of the backplates mirrors the elliptical inlays and other geometric patterns found in the furniture.	Cast and stamped elements
Sheraton (1800-1820)		Brass knobs, similar in style and decoration to the Hepplewhite period, gained wide popularity. The decoration of the knobs mirrors carved rosettes found in furniture that reflected the designs of Thomas Sheraton.	Cast and stamped elements

Hardware for photos courtesy of Ball and Ball and Horton Brasses.

reflected the ornamentation of the furniture itself. On the other hand, if a particularly clean appearance was desired, such as on the doors and sometimes the drawers of a Hepplewhite sideboard, the only visible hardware might have been an inset escutcheon outlining a keyhole. Such an arrangement was often used so the hardware would not interfere with the panorama of highly figured veneers and inlaid decoration found on such pieces.

Within accepted styles of a given period, though, there is latitude in selecting hardware, depending on what effect you are trying to achieve. Even when building a special piece of period furniture, I don't want to be a slave to the perceived style of the time. I like to make each piece of furniture my own, as long as I can stay within the boundaries of a given period. So a Chippendale piece that was originally made with heavy rococo brasses might

instead get the less elaborate button-and-bail pulls, a style that was used on late Chippendale casework. This more restrained look can be particularly effective if I pick exciting wood for the drawer fronts. Because drawer pulls varied in appearance even in the same era, I don't have to be uncomfortable about choosing a version that complements the piece I'm making. I usually opt for a more restrained look, while remaining faithful to the style.



Reproductions can be expensive. A Ball and Ball employee files a Chippendale escutcheon by hand. This time-consuming process is necessary for a faithful reproduction.

Pouring brass is hard work. Molten brass, heated to 2,100°F, is poured into sand molds at Horton Brasses. The sand molds are destroyed after every pour.



FINISHES FOR BRASS HARDWARE

How hardware should be finished is the subject of debate. It may be highly polished or given a dull, "antique" look—a popular approach. I do not believe, however, that period hardware was anything but bright in appearance when it was new. It was meant to be seen, to turn heads. If you build reproduction furniture and want to show the intent of original makers, then antiqued hardware is the wrong choice.

Brass hardware has been coated in different ways over the centuries, to help preserve its luster and to make it look like gold. Conservation examinations have revealed evidence of different types of resin coatings on original brasses that were used to produce these effects. These coatings slowed oxidation and sometimes imparted a reddish-orange tint to the brass.

Some brasses had a coating of actual gold, created by a process called fire-

gilding. Fire-gilding produced a durable, bright finish. It was costly, though, and the method of application—mixing gold powder with liquid mercury, painting it onto the brass and then burning off the mercury—is by today's standards environmentally unsound and downright unhealthy.

Today, many manufacturers coat their brass hardware with a clear acrylic lacquer. Some period hardware suppliers, however, will lacquer their products only if requested. As a general rule, I do not use lacquer on brasses that will get a lot of use. The coating can chip and, if not refinished, will oxidize and discolor in those spots. On more decorative pieces, which do not get as much wear, a lacquer coating will help maintain the shine. ■

Walter Raynes divides his time between building custom furniture and restoring European and American antiques for private collectors and museums. He lives and works in Baltimore, Md.

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There are a number of period-hardware suppliers, from foundries that manufacture their own products to retailers who stock domestic as well as imported hardware. All of the suppliers listed below have catalogs, and many do custom work.

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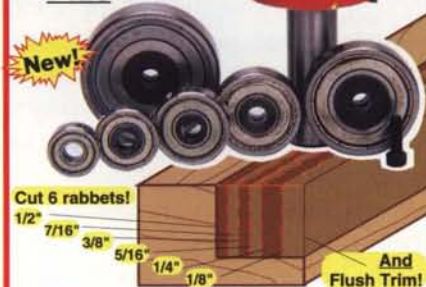
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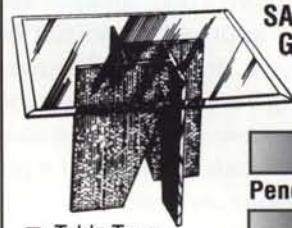
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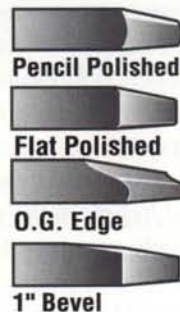
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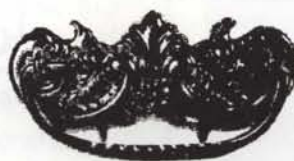
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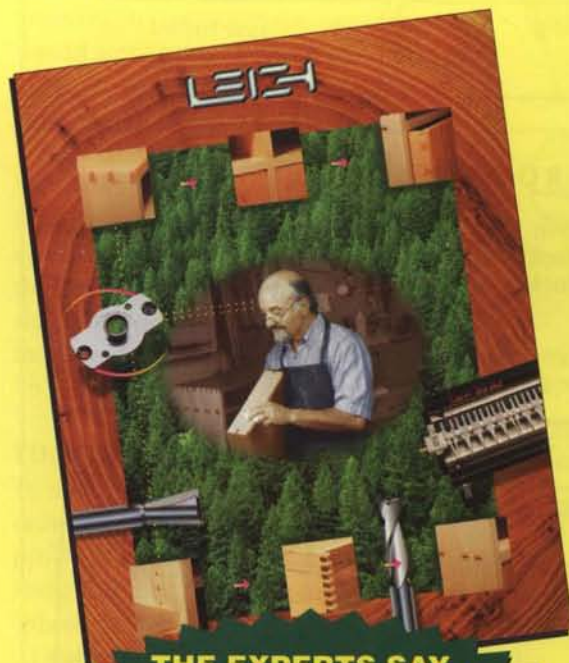
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how they did it

Some furniture makers have developed unusual or innovative techniques that are important to the success of their projects. When we spot such an approach, we'll share it with you in this column. If you have comments or suggestions on techniques you've read about here or elsewhere in the magazine, let us know. Send your comments to *How They Did It*, Home Furniture, The Taunton Press, P.O. Box 5506, Newtown, Conn. 06470-5506.

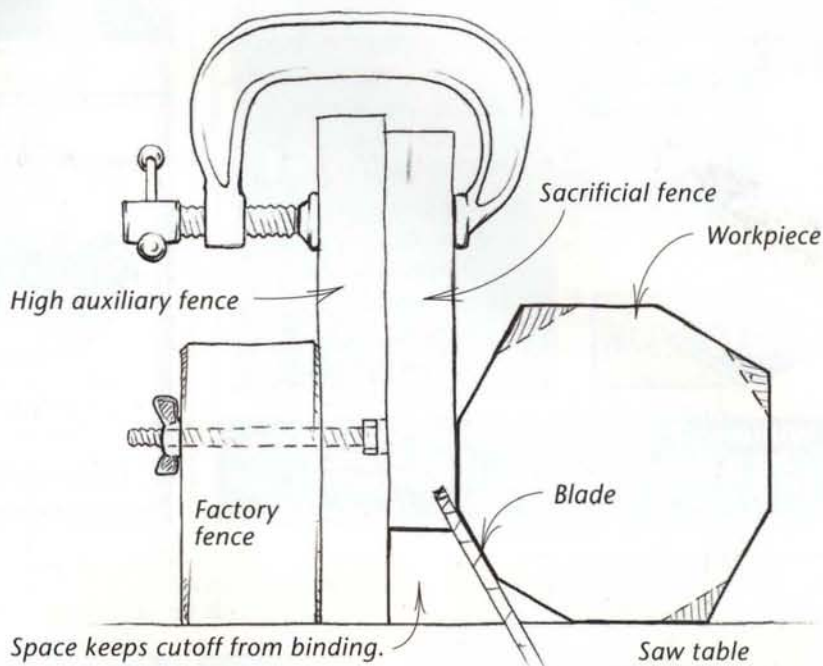
MAKING A TAPERED, 12-SIDED POST

With a shop-made table-saw fence and a simple plywood jig for my overarm router, first faceting and then tapering the 12-sided, upper column on my library stair (see pp. 50-51) were relatively easy.

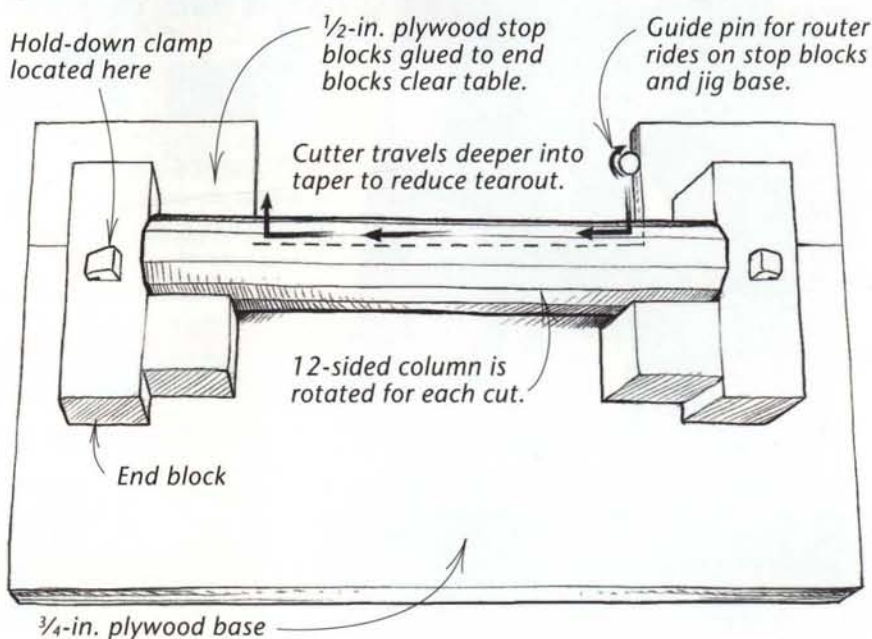
To facet the post, I made a two-part auxiliary fence for my table saw (drawing, top right). I used it to cut a square-section blank into a straight, 12-sided column. With the blade set at 30° and raised into an outer, sacrificial fence set the proper distance away (this distance depends on the size of the blank and can be determined either by trial-and-error on scrap or by trigonometry), I made a pass on each of the blank's four faces. Then I turned the piece end for end to take the last four passes (the flats between the angled cuts comprise the remaining four facets). The sacrificial fence was raised off the saw table so that it wouldn't trap an offcut and risk serious kickback, and I was careful not to let cutoffs stack up between the blade and the high fence.

To cut the stopped tapers, I made a jig with a 3/4-in. plywood base and end and side blocks to hold the column in place (drawing, bottom right). The blocks held the column just over the

TABLE-SAW SETUP FOR CUTTING FACETED PARTS



TAPERING JIG FOR ROUTER



edge of the plywood base with one end of the column overhanging farther than the other. The overarm router's guide pin rides along the edge of the plywood base to cut the taper.

I attached stops to the underside of the end blocks to limit the travel of the cutter, leaving the column full size at both ends. This arrangement kept the original 12 facets intact at the ends, so I could rotate the piece the same amount for each cut. It also left material for turning the finial at the top and the bead at the base. I made the stop blocks out of 1/2-in. plywood so the jig would ride only on the thicker plywood base. Though I used an overarm pin router, the same jig would work just as well on a router table or a shaper, provided you had a bearing or rub collar below the cutter.

With the stop blocks in place, all I had to do was rotate the column on the jig after each pass. To reduce the chance of tearout, I set up the jig so the cutterhead would start at the shallow end of the cut and travel to the deeper end.

—J. Harvey Baker

TURNING DRAWER PULLS

To make the cherry and curly maple drawer pulls for my bureau (see pp. 80-81), I first turned the cherry knob and then inserted a maple disc (photo, above right).

I started by turning cherry stock into cylindrical blanks whose diameter equaled the largest part of the knob. I made each blank long enough to yield three pulls. Then I turned the pulls and parted them off. The next step was to put each pull in a spigot

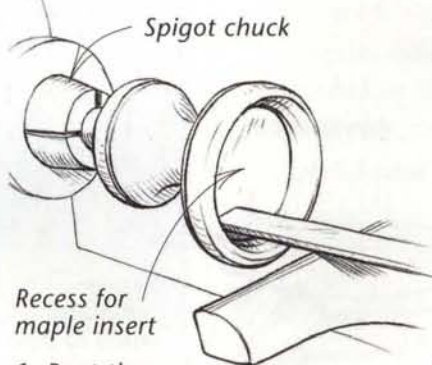
chuck and turn a square-shouldered recess for the maple disc, as shown in the drawing below.

To make the maple insert, I glued a block of highly figured curly maple to a scrap and screwed the scrap to a faceplate. I oriented the block with its radial grain out to obtain the best light refraction. I turned the block to the diameter of the knob recess and sliced off a series of discs. After gluing the discs into their recesses,



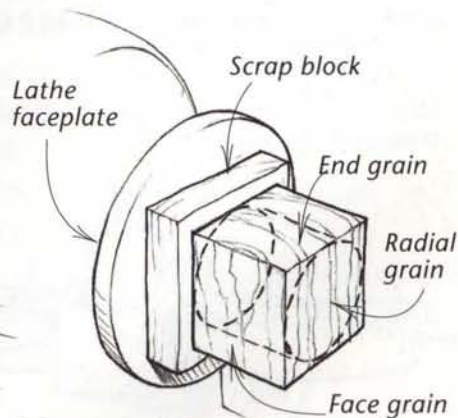
TURNING CHERRY AND MAPLE PULLS

CUTTING A RECESS FOR THE DISC



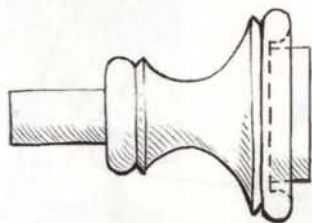
1. Rout the recess in the cherry pull.

MAKING THE DISCS

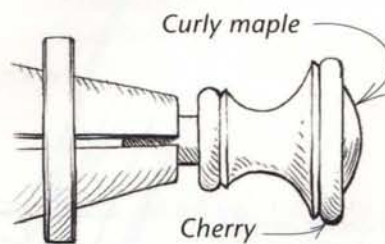


2. Turn a cylinder, then slice off the discs.

LAST TURNING



3. Glue the maple disc into the recess in the pull.



4. Mount the pull in the spigot chuck and turn an arc face on the curly maple.

I mounted each pull in the spigot chuck again to turn an arc on the face of each disc, as shown.

—Dennis Saindon

A GRINDING ATTACHMENT FOR SHAPING CONTOURS

The jig I developed to form the top of my chest (see pp. 54-55) allows me to cut compound curves with ease. The jig (drawing, below) has two principal parts: a two-wing cutting carriage with an acrylic shroud that surrounds a 4-in. chain-cutting disc on my angle grinder, and a base that holds the

workpiece and the templates that guide the grinder over the surface of the workpiece. One set of templates mounts on the cutting carriage and guides the cutter along the X axis. The other set of templates mounts on the base and guides the router along the Y axis. By adjusting the shape of the templates, I can create just about any compound contour.

The stationary templates in the base are mounted in saw kerfs in wood blocks. The blocks are clamped or screwed to the base with the workpiece between them. The

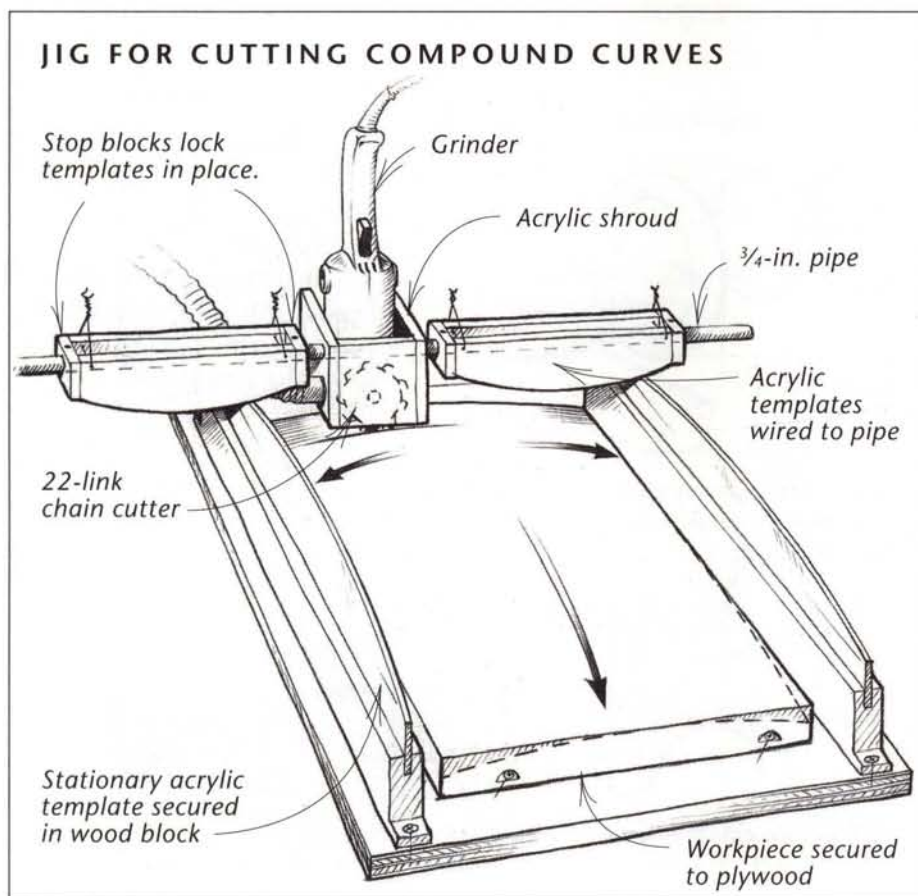
movable templates are a pair of U-shaped boxes fitted on a length of 3/4-in. pipe. They slide the length of the workpiece over the stationary templates and are also contoured. Twists of thick wire at the top keep the boxes from falling off the pipe, and stop blocks keep the templates from moving sideways on the bar.

The 3/4-in. pipe passes through holes bored in the acrylic shroud, allowing the tool to pivot. To cut the contours in the top, I made a series of passes the length of the workpiece, slowly working my way across the width of the top. Because the grinder pivots on the pipe, I can take off more material on each pass by tilting the cutter at a progressively steeper angle. On the last pass, the grinder is held at 90° to the workpiece.

This rig can take a cut of about 1/8 in. with each pass. The process creates lots of dust, so I made a second hole in the grinder shroud that accepts a shop-vacuum hose. The hose is pointed at the exit angle of the blade. After the last pass, I cleaned up the top with sandpaper.

For larger work, like the chest, I create half templates. After shaping half the top, I rotate it and cut the other half. The jig wasn't hard to make, and the raw material was inexpensive. I buy scrap acrylic from a plastics retailer for about \$1 a pound.

—David O. Crofcheck



A ROUTER JIG FOR PRECISE FITS

The top of my half-round table (see pp. 56-57) required exacting fits between adjoining pieces of veneer. I

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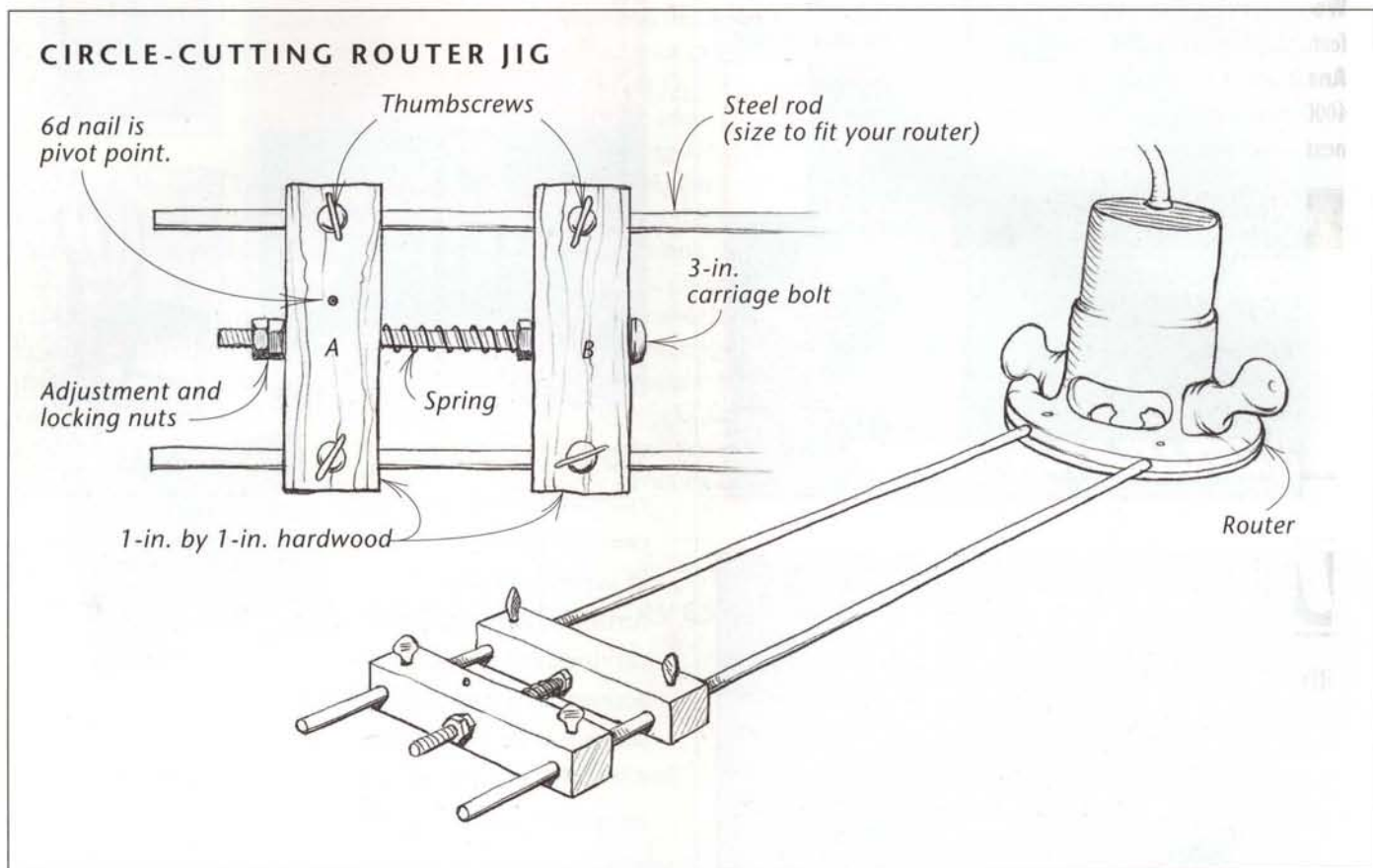
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built a circle-cutting jig for my router with a microadjust feature that allows me to get the router bit precisely where I want it. I saw the same basic setup of fine adjustment on an old Browne and Sharpe caliper that I own, and I was able to buy all the metal components for the jig at the local hardware store.

The two steel rods of the jig go into the sockets in the router base normally used for the edge guide attachment (drawing, above). I use a 6d nail for the pivot point at the center of the radius I'm cutting. To set the jig, I drill a hole so the nail presses

in easily. I set the router bit very close to the cutline, then tighten the thumbscrews on the piece of wood marked "B" in the drawing. By loosening or tightening the adjusting nut on the carriage bolt, the radius of the arc can be increased or decreased with great accuracy. The spring should be compressed through the whole range of adjustment. When the router bit is just where I want it, I tighten the thumbscrews on the piece marked "A" and make the cut.

The thumbscrews don't have to be tightened down much, so I just tapped the hardwood blocks with a

regular metal-tapping set to accept the thumbscrews. If the jig were used every day, though, I might add metal inserts in the wood blocks.

I started by using the jig to cut the arc on the outer edge of the bird's-eye maple after the veneer had been applied to the substrate. Then I taped pieces of lacewood to a piece of hardboard and used the jig to cut sections of lacewood veneer. I didn't need the jig for the thin inlay of cocobolo, which is made up of strips of veneer on edge. I cut these strips with a razor knife.

—Jim Macdonald

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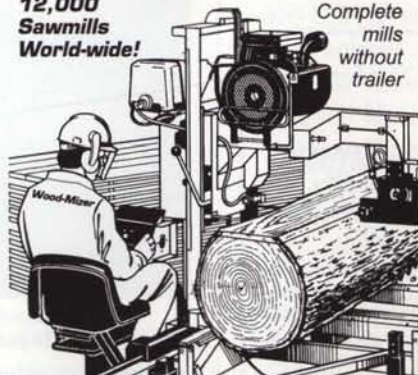
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TAPE FOR SHAKER CHAIRS

The cotton tape that Glenn A. Carlson uses to finish the seats of his Shaker chairs (see pp. 38-39) is made in $\frac{3}{8}$ -in. and 1-in. widths by **Sturges Manufacturing, Inc.** (2030 Sunset Ave., P.O. Box 59, Utica, N. Y. 13503-0059; 315-732-6159). There are 11 solid colors and two striped patterns. The minimum wholesale order is 2,025 yd. Prices per 75-yd. roll range from \$18 to \$33.

Sturges tape is widely available retail, often in smaller quantities. Three retailers are **Connecticut Cane & Reed Co.** (134 Pine

St., P.O. Box 762, Manchester, Conn. 06045; 203-646-6586); **H. H. Perkins Co.** (10 S. Bradley Road, Woodbridge, Conn. 06525; 203-389-9501) and **Shaker Workshops** (P.O. Box 1028, Concord, Mass. 01742; 617-646-8985).

CAMPAIGN-STYLE FLUSH PULLS

The pulls used on the chest made by Robert E. Brown (see pp. 78-79) are styled after those used on Campaign furniture from the late 18th and early 19th centuries. These pulls are mortised into drawer fronts so that they are flush with



Campaign-style pulls are mortised flush with the face of the chest.

the face of the chest. The handles fold flush with the frame of the handle.

Brown bought his Cast Chest Hinges from the **Garrett Wade Company** (161 Avenue of the Americas, New York, N. Y. 10013; 212-807-1155). There are two sizes: $3\frac{1}{2}$ in. by $1\frac{3}{4}$ in. (\$25.95/pair) and $4\frac{1}{2}$ in. by $1\frac{3}{4}$ in. (\$28.80/pair).

Flush pulls also are available from other companies. They include the **Period Furniture Hardware Co.** (123 Charles St., Boston, Mass. 02114; 617-227-0758), **Whitechapel Ltd** (P.O. Box 136, 3650 West Highway 22, Wilson, Wyo. 83014; 800-468-5534), **Paxton Hardware Ltd** (P.O. Box 256, Upper Falls, Md. 21156; 410-592-8505) and **Crown City Hardware Co.** (1047 No. Allen Ave., Pasadena, Calif. 91104; 818-794-1188).

POCKET-DOOR HARDWARE FOR TV CABINET

The pocket-door hardware that Brian Woods used on his maple television cabinet (see pp. 70-71) is called the Anti-Rak Flipper Door slide (model 1332), manufactured by **Accuride** (12311 Shoemaker, Santa Fe Springs, Calif. 90670; 310-903-0200). This system, which includes hinges and slides, can be used for doors up to 72 in. high, $\frac{3}{4}$ in. thick and up to 75 lb. A pair of Anti-Rak hinges and slides for one door sells for about \$50.

Another manufacturer, **Julius Blum Inc.** (Highway 16 Lowesville, Stanley, N. C., 28164; 800-438-6788) makes pocket-door and flipper-door hinges similar to the Accuride assembly.

Woods bought his hardware from **Richelieu-Martin, Inc.** (6420 Viscount Rd., Mississauga, Ont. L4V 1H3 Canada; 905-672-1500, 800-387-9505 in Canada). Other sources include **Constantine's** (2050 Eastchester Rd., Bronx, N. Y. 10461; 800-223-8087), **Woodcraft** (P.O. Box 1686, Parkersburg, W. Va. 26102; 800-225-1153) and **The Woodworker's Store** (21801 Industrial Blvd., Rogers, Minn. 55374-9514; 800-279-4441).



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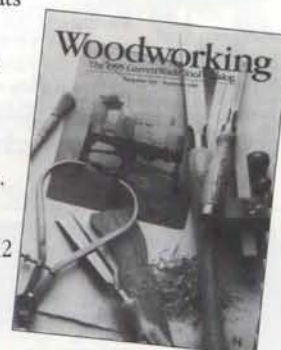
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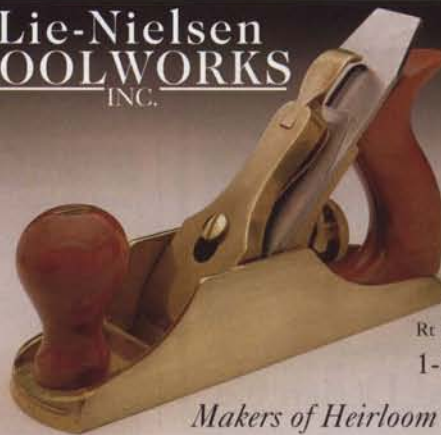
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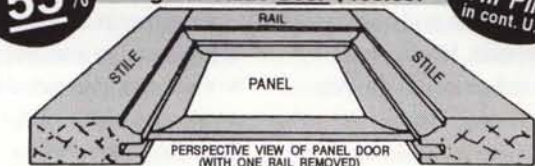
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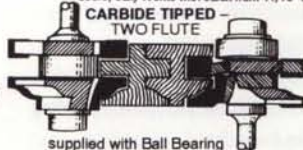


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about the furniture makers



ANDREW PEKLO

(above) is an industrial designer and architect. He has converted an historic mill in Woodbury, Connecticut, into a workshop, design studio and showroom. He often uses marble, leather and ceramics along with solid wood in his furniture designs. *Page 82*

J. HARVEY BAKER

is a mathematician who turned to full-time cabinetmaking in the 1970s when he built himself a home and a small shop in Waynesboro, Tennessee. He started by making looms and says his teachers have been old books and other woodworkers. *Page 50*

VERNON E. BLACKADAR

is a retired dairy farmer who took up furniture making about 10 years ago. He lives in Lithia, Florida, and says he enjoys working at his own pace. Blackadar also enjoys being able to set his own price on the furniture he makes, which he calls "an experience unheard of in agriculture." *Page 66*

ROBERT E. BROWN

is originally from London and now lives in Glendale, California, where he builds sets for movies and television commercials. His furniture shows influences of the Arts and Crafts era. *Page 78*

GLENN A. CARLSON

owns Shaker Chairs in Norfolk, Connecticut, a one-man shop specializing in the construction, restoration and repair of Shaker chairs. He also works two days a week at nearby Hancock Shaker Village, where he demonstrates seat-weaving techniques. *Page 38*

DAVID O. CROFCHECK

is a former graphic designer who gave up a job in the San Francisco area to pursue furniture making in Tucson, Arizona. He designs and builds furniture on commission and for shows and galleries. He takes a special interest in engineering tools and jigs. *Page 54*

RON DAY

has been making furniture and custom cabinets, both residential and commercial, for nearly 20 years. He's also done carpentry and built-in furniture for projects by architect Steve Badanes and Jersey Devil, a design/build group. He lives in Menlo Park, California. *Page 76*

KEVIN FERNANDEZ

runs a four-person shop, The Mad Woodchuck, in Los Gatos, California, building everything from clocks to staircases. He began his training under a violinmaker at 14. Later, he apprenticed to a master woodcarver. He started his own company in 1978. *Page 72*

JON FISH

is a finish carpenter in Wauseon, Ohio. He works on new construction as well as remodeling and specializes in built-ins and staircases. Before switching to carpentry seven years ago he was a social worker for 15 years. Making a cradle for his first child rekindled an early interest in woodworking. He developed his skills by making custom furniture on the side. *Page 58*

LOU GIORGIO

makes custom furniture in his one-person shop in Barrington, Rhode Island. He has taken a number of workshops over the years, but learned most of his woodworking in six years at a furniture factory in New Hampshire and six more in an architectural-millwork company in Vermont. *Page 46*

KATHERINE HELLER

studied woodworking under James Krenov at the College of the Redwoods in the early 1980s. She now maintains her own furniture studio in Carmel Valley, California. *Page 74*

CHARLES E. JOHNSON

began studying architecture as a high-school student. After college, he started a company that installed architectural millwork and built stairs. He established the Contemporary Furniture Studio in Farmington, New Mexico, in 1993. *Page 36*

E. JEFF JUSTIS, JR.

is a recently retired hand surgeon who has been working wood for more than 50 years. In addition to reproducing American furniture from the 18th and 19th centuries, he also builds and pilots small airplanes. *Page 68*

JIM MACDONALD

operates a one-man shop in Burnham, Maine. He specializes in French Art Deco furniture, and uses wood, metal and even eggshell inlays to provide visual impact in his furniture. *Page 56*

DOUG MOOBERRY AND KEVIN ARNOLD

make furniture at Kinloch Woodworking, a five-person shop in Unionville, Pennsylvania. Mooberry is the proprietor, and Arnold is a furniture maker who does most of the shop's carving. Kinloch specializes in reproducing 18th- and 19th-century American furniture but also designs and builds contemporary pieces. *Page 40*

RICHARD NAINGGOLAN

is an engineer who became interested in furniture making after 10 years as an amateur guitar maker. He lives in Surrey, England, where he builds furniture in his spare time. *Page 44*

DARRELL PEART

is a native of Washington State and has been a professional woodworker since 1970. He began by selling his work at Seattle's Pike Place Market. He now builds custom furniture in the Puget Sound area. *Page 47*

DENNIS SAINDON

runs a one-man shop specializing in furniture and architectural woodwork on Deer Isle, Maine. Before opening his shop in 1980, he taught high-school woodshop. *Page 80*

RANDY SCHUKAR

is a master electrician and a carpenter in Stevens Point, Wisconsin. He is a partner in Habitat Brothers, a company that restores and renovates old buildings. He does some cabinetmaking on the job, but builds most of his furniture in his spare time. *Page 62*

WESTLEY SPRUILL

is a Boston architect who first became interested in woodworking in a junior-high school shop class. He recently has rekindled that interest by taking an adult-education class, and in his spare time he builds furniture in a shop at the Massachusetts Institute of Technology. *Page 64*

GLENN THOMPSON

is an engineer who turned to woodworking full-time after 20 years as a hobbyist. Now designing and building custom furniture in Dexter, Michigan, Thompson is continuing a family tradition of professional craftsmanship. *Page 52*

HUNTER WEBB

is a furniture-design major in the crafts program at Virginia Commonwealth University. He worked for several years in a cabinet shop doing laminate work and now works part-time in a custom cabinet shop. *Page 42*

BRIAN WOODS

makes custom furniture in a one-man shop in Picton, Ontario. After an earlier career in medical microbiology, he learned woodworking on the job in various shops and then went out on his own. *Page 70*

DAVID WRIGHT

builds Windsor chairs full-time in a 10-ft. by 14-ft. shop beside his house in Berea, Kentucky. He makes all his chairs from green wood, harvesting the trees himself and splitting out and shaping the wood by hand. *Page 60*

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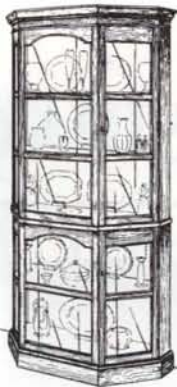
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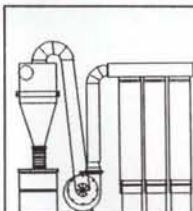


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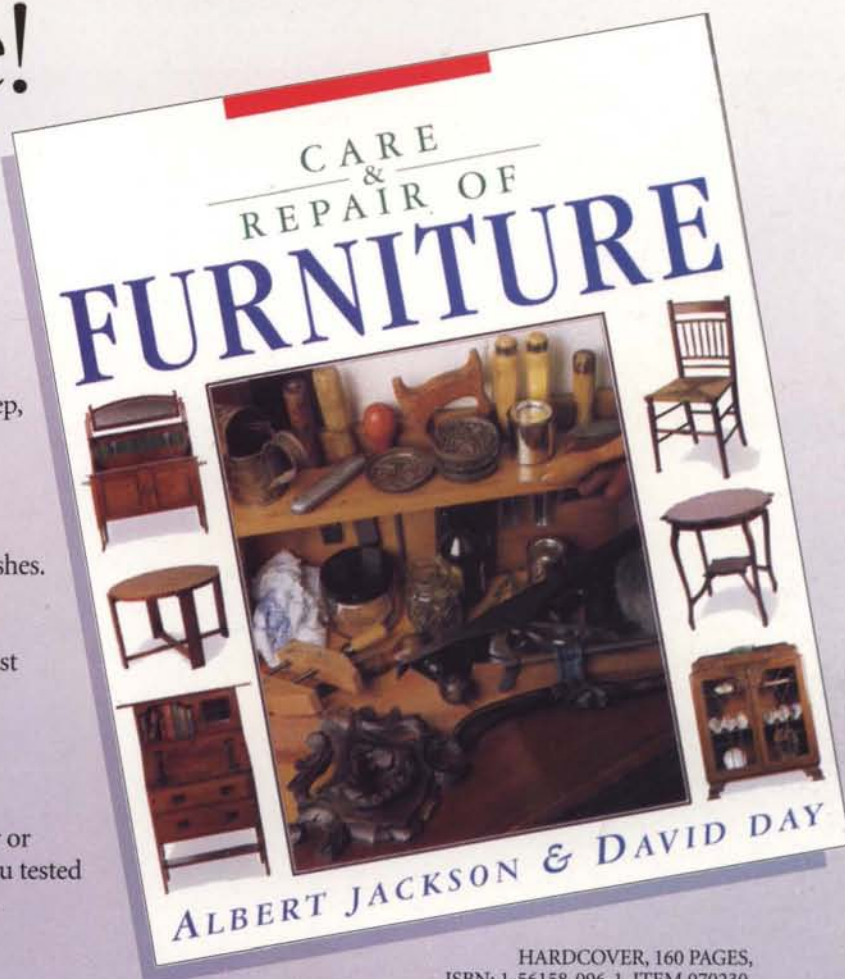
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