

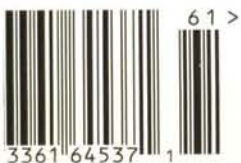
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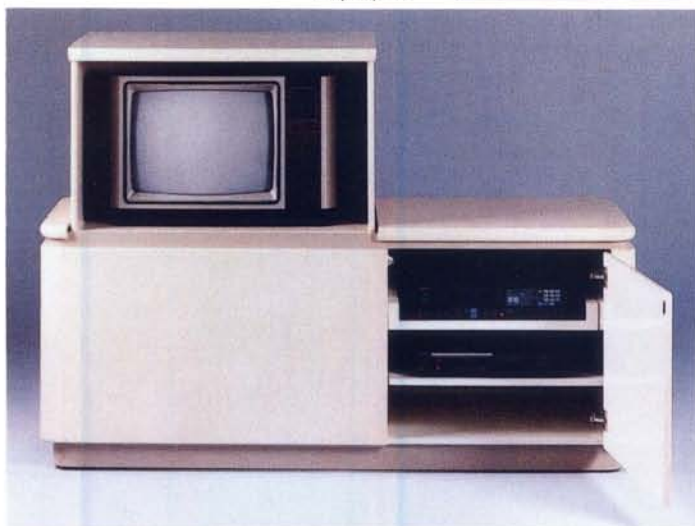
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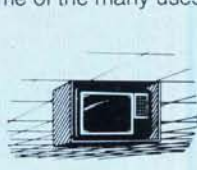
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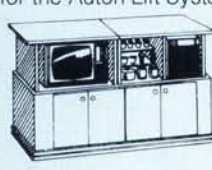
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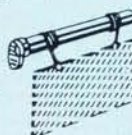
Pop-Down TV Monitor



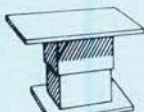
Pop-Up TV/Bar



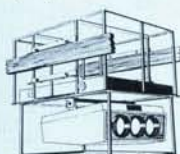
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On the cover: Tapers and curves animate this otherwise spare chair. Photo by Scott Phillips.

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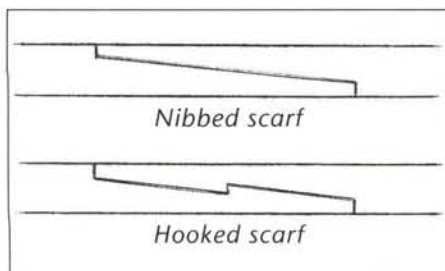
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IT WAS A NIBBED SCARF, NOT A HOOKED SCARF

As usual, your Winter 1995 issue was superb. Keep up the good work, providing inspiration to us with your emphasis on design and lots of photographs.

When reading Dave Corcoran's explanation in the How They Did It section, I was surprised that he called his joint a hooked scarf, which it is not. It is a nibbed scarf, the feather edges being nibbed. A hooked scarf,



typically nibbed also, has one or more beveled faces offset at a shoulder or shoulders. The shoulder of each piece "hooks" the shoulder of the mating piece, providing some mechanical resistance to tensile failure of the joint. A nibbed scarf relies on glue or fasteners for this.

—Charley Ingle, Sapchoppy, FL

'CRAFTSMAN' EXCLUDES NO ONE

Your magazine and *Fine Woodworking* are both excellent publications. One of the strong suits of *Fine Woodworking* is that over the years, following some spate in the early days, the editors have kept the magazine free of political correctness and back-biting. May you have the good sense to follow their example.

The Winter 1995 issue contains a letter from M.A. MacEwen, objecting to diction that excludes women, i.e., the "craftsman's corner." Using the word "craftsman" as a common reference to all woodworkers is correct, regardless of MacEwen's feelings. As one who uses English as carefully as he uses his tools, I long for the days when a chair was only a piece of furniture, not the head of a committee.

—Philip A. Houck, Boston, MA

Perhaps I'm getting grumpy, but letters like the one in the Winter 1995 issue complaining about the word "craftsman" are starting to annoy me. This word has a long and honorable tradition, and excludes no one. Men and women with sufficient skill earn the title of craftsman. (Similarly, the women in the local kennel club who head committees call themselves "chairmen" and seem undiminished by this.) I'm tired of people who try to tell everyone else what to do, say and think. If people concentrated more on substance and stopped whining, we'd all be better off.

—Keith Weaver, Petaluma, CA

DON'T PRICE THE FURNITURE

I would like to respond to the letters from Richard R. Wells and Joseph G. Nucci ("What About Time and Cost?" —Fall 1995). *Home Furniture* is a journal, not a catalog. Please don't price the pieces. Any evaluation of time and money would have to be qualified to such a degree as to become meaningless. For example, you would have to note extenuating circumstances, such as whether scrap

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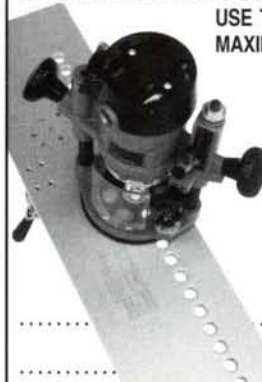
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material from a previous project was used or whether it was made as a gift or made as a student project.

Nucci's argument that the projects featured in your publication can be evaluated differently than custom furniture, casework, millboard and specialty wood products doesn't hold water. Just because an item is unique doesn't mean its value wouldn't differ from region to region, shop to shop or customer to customer.

—Carlo Adinolfi, Brooklyn, NY

KEEP YOUR DESIGN FOCUS, BUT GIVE US PRICES

I would like to encourage you to keep your evolving magazine focused on design. Measured drawings and woodworking techniques are available in many other books and magazines. Your articles on proportion, perspective and the effort that goes into a design are, as far as I know, only available in your magazine. Sure there are also lots of design magazines, but none that focuses on furniture designed by individuals. The magazines that do feature artists or designers often devolve into theoretical discussions

so dense that the word "artspeak" had to be invented.

However, may I suggest that a simple cost of materials and tally of hours required to design and build the pieces featured would be very useful. Potential customers often have no idea what it takes to design and fabricate a nice piece of furniture. Providing the materials' cost and the hours involved would surely lend some understanding as to why an entertainment center can cost as much as a car.

—Jueri Svjagintsev, Austin, TX

I have now received four issues of your magazine and am amazed at the variety of work and working attitudes represented. Like *Fine Woodworking*, I consider this magazine to be a valuable professional journal from which I have learned a great deal.

Like many other self-taught professional woodworkers, I have relied on your publications and others for a great deal of educational information. Since the demise of professional guilds and the great expense of formal institutional study, this is one of the only ways to see

what other craftsmen are doing and how they are doing it. You have taught us techniques, design considerations and, to a much more limited degree, marketing.

When will you take seriously your responsibility to help us learn to price our products as well? I am amazed at how little information is ever really given about how much an item profiled in your magazine was sold for and whether the maker was satisfied with the figure. I feel we really need that information to be able to successfully learn all aspects of this trade. Please give us the data and let us factor it into our own pricing equations. In all fairness to you, I do realize that this is a very sensitive issue. I do hope more information can be made available to us.

—John Sartin, Tucson, AZ

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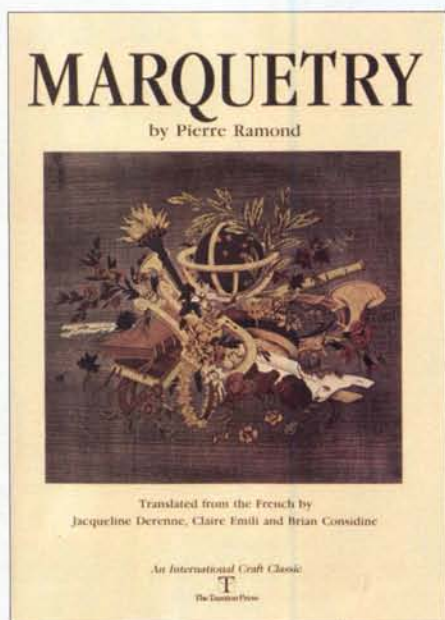
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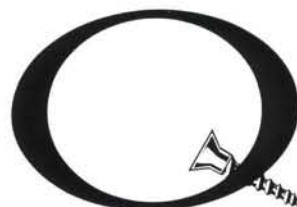
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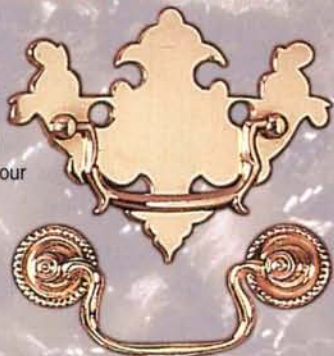
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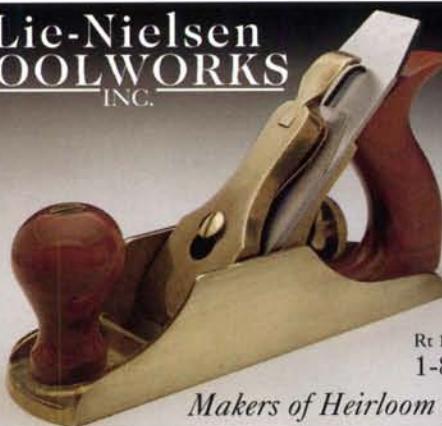
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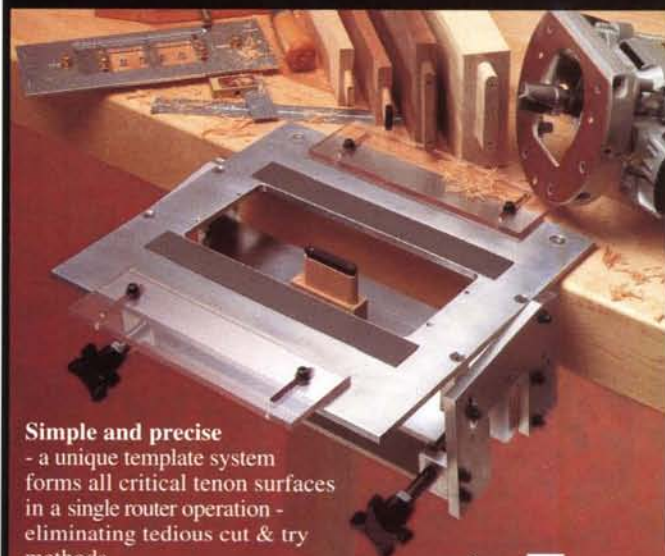
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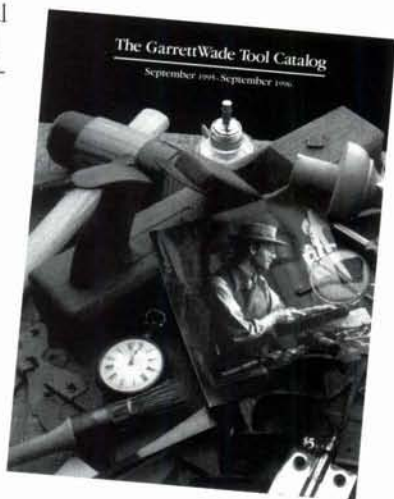
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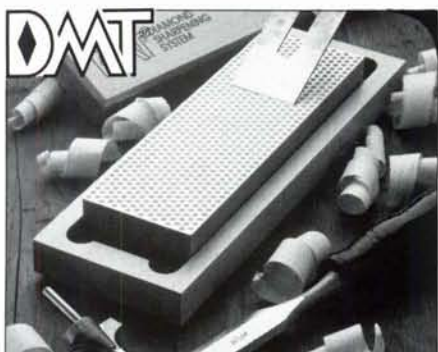
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the drawing board

ORIGINS OF THE GREENE-AND-GREENE 'CLOUD LIFT'

Can you tell me about the "cloud lift" so commonly seen in Greene-and-Greene furniture? Where did they get the inspiration for it, and how was it used in their designs?

—Philip C. Robbins,
Jackson, OH

Thomas Hugh Stangeland replies: The cloud-lift shape, used in much of the furniture and interiors designed by Charles and Henry Greene, is a form long used by Asian craftsmen. It is believed that the Greenes first encountered this and other Asian design motifs at an exhibit of Japanese artwork in Chicago in 1893. They subsequently began collecting Oriental art and incorporated features from this art in their design language. The cloud lift, an abstraction of cloud forms, is just one example of this Asian influence.

The repeating radii of the cloud lift—stepping a line up, out or down—is a gentle method of breaking a straight line or moving it to another plane. The cloud lift served many functions, sometimes seemingly contradictory ones. It was used to direct the eye, bridging vertical and horizontal lines. It was also used to



A classic cloud lift. The upward arches in this headboard, which is in the Gamble House in Pasadena, California, are examples of the ubiquitous cloud-lift motif in Greene-and-Greene designs.

A good idea never dies. Inspired by the Greene-and-Greene cloud lift, this arch was used to lighten the table base (at right) and to step the spindles on this headboard (below).



lighten the weight of a structural member, such as the trestle on a table, or to add girth to a joint. This feature makes Greene-and-Greene designs softer and more curvilinear than many other Arts and Crafts practitioners.

I use the motif in similar ways. For example, I used a modification of the cloud lift in the center of a headboard (see photo above) to bridge $\frac{3}{4}$ -inch spindles past a $1\frac{3}{8}$ -inch curved rail to meet another rail above it, which was 2 inches wide. I

used the same idea to lighten the stretchers and trestle of a table base (photo left).

The Greenes used the cloud lift in many ways, from architectural details to doors, windows, lamps and furniture. One of the best places to see their work is their Gamble House in Pasadena, California. To find out about tours, call (818) 793-3334.

Thomas Hugh Stangeland is a professional furniture maker in Seattle, WA.

MORE GOOD REASONS TO MAKE A MODEL

Many furniture makers use scale models when they design a piece. We asked two contributors to this issue to describe how they used models to design their furniture.

Thomas Throop: As I described in the article on my "Armchair in English Chestnut" (p. 68), I started designing this chair by sketching, but it is difficult to show how an object will look in three dimensions, especially one with multiple compound curves. Drawings also have their limits in communicating ideas to clients. I often make perspective drawings for clients, but it is hard to relate a curve moving in

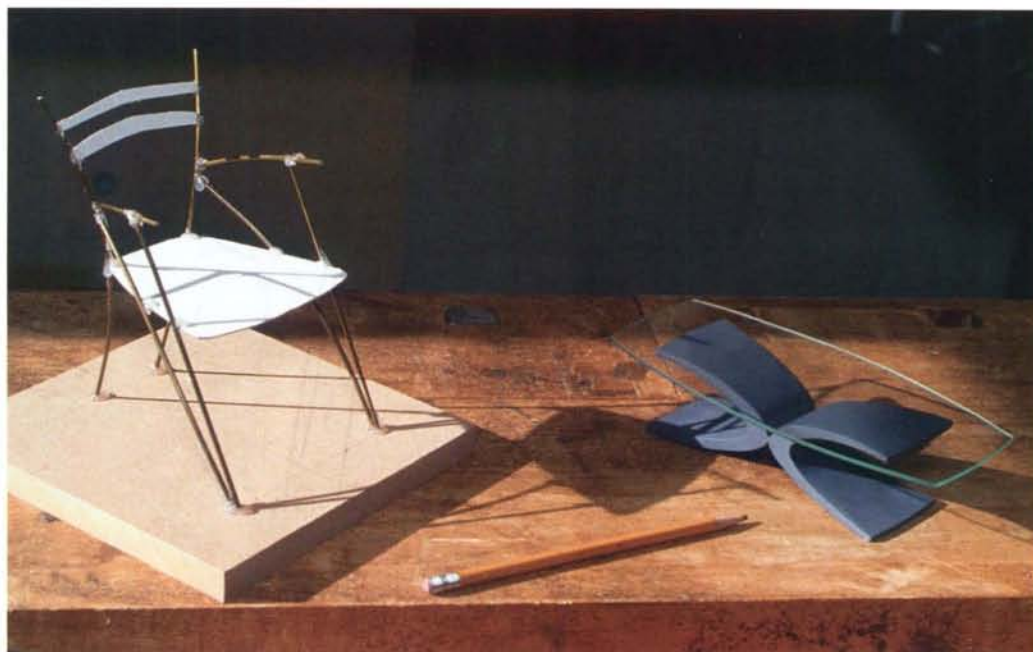
three planes. It's often easier to go right to three dimensions (see photo at right).

Wood didn't work well for this model; it took far too long to work with on such a small scale. I think it is important not to invest too much time in an exploratory model because you can easily become wedded to bad ideas. I decided to switch to cardboard and heavy-gauge wire, which are more pliable than wood.

The right material made a big difference. I played with wire arcs and made countless variations, using hot-melt glue to hold the form together (this just takes minutes). During this process I was constantly referring back to notes I had made, so I didn't stray too far from my original idea.

Many materials work well for making models. Round pieces are hard to make, so I often use plain or threaded rod. I have also tried the thin, flexible metal banding used in packaging. Using different materials can often suggest ideas, proportions, scale or composition, and open up a whole new set of possibilities.

Mason Rapaport: There are two main reasons why I build models, as I did for



Problem-solving in miniature. Model-making can be quick and painless. The wire and cardboard chair was made by Thomas Throop, and the pine and glass coffee table was made by Mason Rapaport.

my coffee table (p. 58). The first is to show other people what the piece will look like. I made the model of the coffee table to get into a juried show (see photo above). The jury wanted to know what kind of piece I was proposing to build, but I hadn't made it yet, so I took a couple of hours to make a model. More commonly, a customer will want a very real, concrete idea of how a piece of furniture will look before spending lots of money on it.

The second reason is for myself. When building a

tricky piece, and I want to see how it will go together or how parts of it will look, a model can be invaluable. And it need only take a couple of hours at most, perhaps a little more if I end up changing lots of parts. This is not a high price to pay, considering the problems it will solve.

In the example of the coffee table, I started by making a series of rough sketches, trying all sorts of different ideas. Then, when I hit upon something I liked, I did a scale drawing. I drew as many elevation and plan views as neces-

sary to capture all the parts of the piece. I then made several copies of this drawing and stuck them onto a block of pine using a spray adhesive (the model material should always be something that's easy to sand and shape). First I cut out the top profile, then the side view, which gave me the back-to-back curves.

I used the same method to cut out the shape of the top, only this time affixing the drawing to a piece of glass and then cutting out the pattern.

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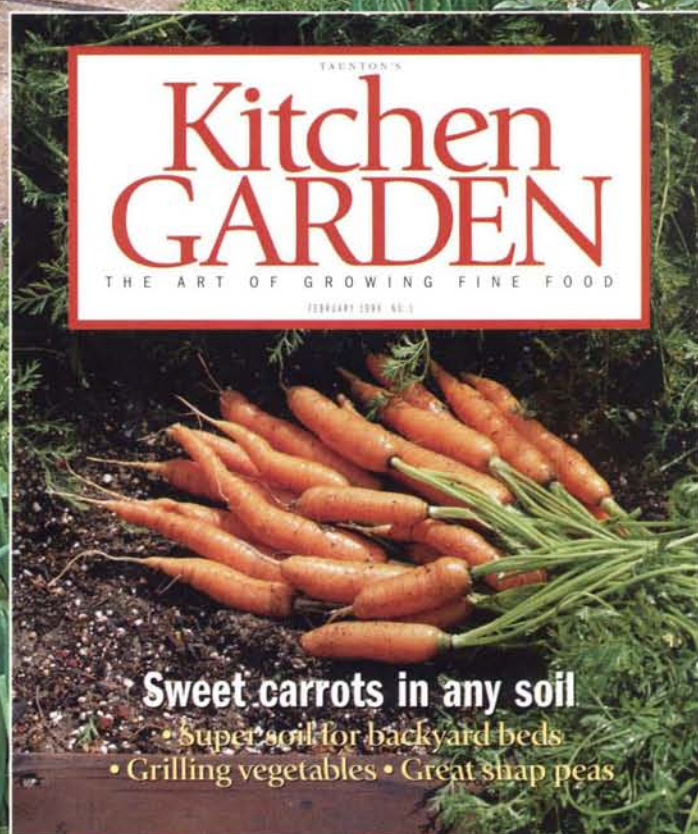
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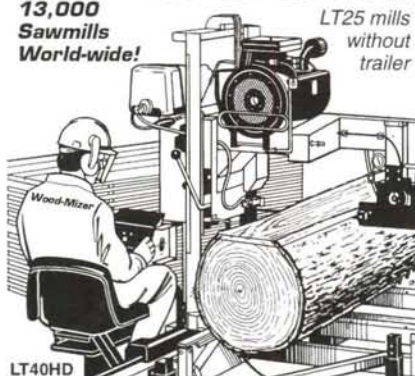
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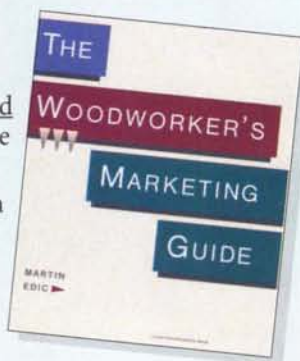
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ADDING TEXTURE TO THE FINISH

Bringing out the warmth of the wood was important to the feeling I was after in my "Built-in Bookcase" (p. 61). I used hand planes to prepare the cherry, so I got a glinting, hard surface rather than the duller, uniform appearance of a sanded surface. Then I used a couple of coats of shellac followed by four coats of a mixture of one-third varnish, one-third linseed oil and one-third turpentine. I rubbed each coat to get the piece to gleam.

That method was fine for the outer parts of the case, where there was molding and inlay to create visual interest, but inside the shelving cases, where the flat back panels would show, I wanted to do something different. So I pulled out my artist's gesso and coated the sheets of 1/4-inch plywood with it. I then recoated them with more gesso to which I added artist's pigment to give it a soft, pinkish cast similar to that of the spring growth of cherry. When that had dried, I applied a layer of burnt sienna. While it was still wet, I stroked through it with a comb made of spring steel. It added some color to the inside of the cabinets and some texture as well.

—Bruce Bulger



Good grooming. The flat backs of the cabinet come alive with a combed, painted finish.

A SUBTLE, STUBBORN FINISH

For my "Tiered Container for Small Carvings" (p. 56), I needed a finish that would let the olivewood speak for itself, but it also needed to stand up to a lot of handling. I used a recipe I learned at The School for American Craftsmen at the Rochester Institute of Technology, which was apparently

handed down from the days when Tage Frid taught there. Start by mixing equal parts raw linseed oil and turpentine and flooding the wood until it won't absorb any more. Then dry it off. Next, apply boiled linseed oil until the wood won't absorb any more. And then apply several coats of boiled linseed oil

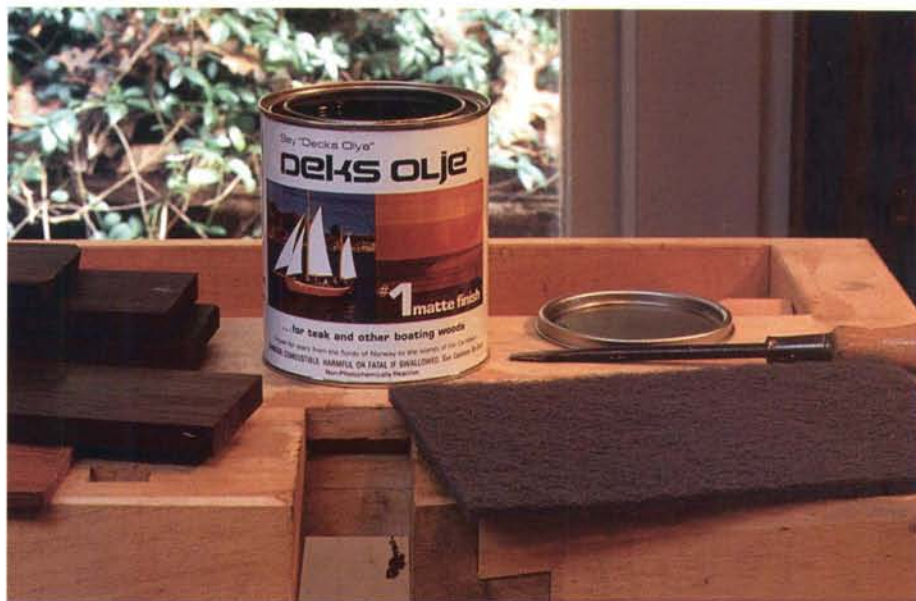
and Japan drier in a mixture of about six parts linseed to one part drier. If the weather is humid, use more drier. The raw linseed oil goes on first because it penetrates best. Then the boiled linseed, which dries harder, begins to build up on the surface. It's a strong finish and easy to repair—just sand out any blemishes and start over again.

—E.E. "Skip" Benson

SEAWORTHY FINISH FOR A DINING TABLE

I knew my "Wenge Trestle Table" (p. 83) would receive very heavy use, so I needed a very durable finish. But I wanted one that would enhance the graphic impact of the wood. The dramatic difference in density between wenge's earlywood and latewood give it jagged streaks of brown and black, which create a ghostly effect, like a photographic negative. The varying densities also create an unusual hard/soft sandwich, with the softer earlywood showing the effects of wear much more than the harder latewood.

With these factors in mind, I decided to use Deks Olje #1, a penetrating oil developed for marine applications. (You can topcoat with Deks Olje #2 for a bright finish, but I used only #1.) It's a very durable finish that hardens the surface without laying a film over it, resulting in a steely, matte finish. I was pleased with the way it made wenge look, but I didn't like it on some of the other woods I tested. I would recommend trying some on a scrap board before



committing yourself to a whole piece of furniture.

I flooded the wood with Deks Olje and let it soak up as much as it could. I flooded it again and again, using the finish as a sanding lubricant, going up through the grits to 600. After sanding, I wiped the table down with a dry cloth and let it air-dry until I could no longer smell the finish. It took about two weeks.

Then I burnished the surface with Bear-Tex, a synthetic abrasive that is made especially for applying and removing finishes. I started with medium and worked up through the grades to microfine, the equivalent of 0000 steel wool.

To fix a flaw in a Deks Olje finish, I wipe on some alcohol and then comb the surface with Bear-Tex. Bear-Tex, which comes in rolls, and Deks Olje are both available from marine supply stores or marinas. Bear-Tex is also available through metal-working supply catalogs.

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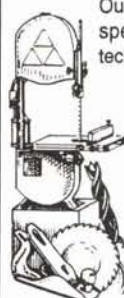


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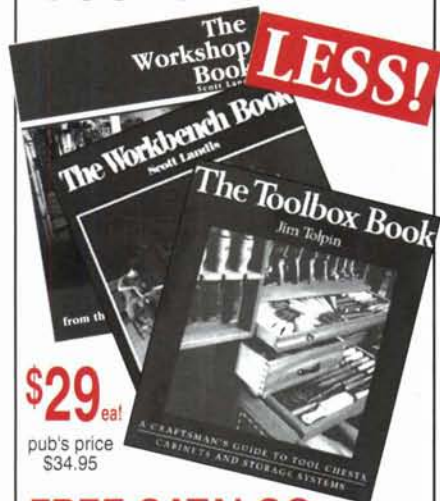
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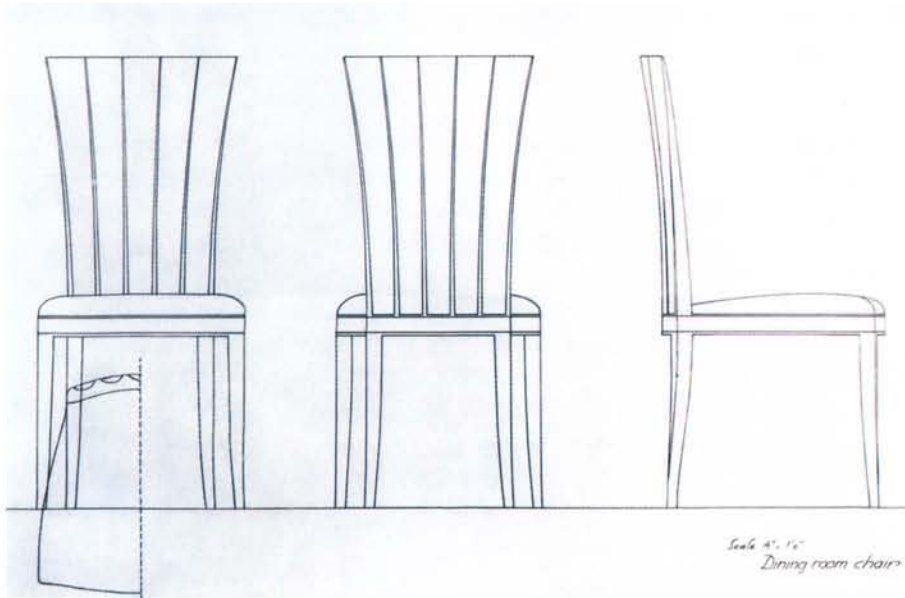


Eliel Saarinen: Bridge Builder

The architect's work links
Arts and Crafts and Art Deco furniture

BY LIZ SEYMOUR

An architect's view of total design. In the dining room of his Michigan home (left), architect Eliel Saarinen brought together various elements of late Arts and Crafts and early Art Deco in an integrated design.



Furniture masterpieces. The 1929 fluted ocher dining chairs, made of fir, that Saarinen designed for his own home are considered masterpieces of 20th-century furniture design.

Critic Richardson Wright wrote in 1925, "We listen to radio in a Louis XVI living room, drive our motors up to early Italian villas and land our airplanes in gardens that might have been laid out by Le Notre. Why not chuck the whole bundle of ancient sticks and create styles of our own?"

Four years after Wright posed his question, the Metropolitan Museum of Art invited nine leading architects to come up with some answers. They created a series of rooms furnished in the streamlined modern style. Glossy and glamorous, filled with chairs and carpets and lamps made from racy machine-age materials with names like Fabrikoid and Vitrolite, the rooms were a huge success; after 10,000 people visited the show on opening day, the exhibition schedule had to be extended from six weeks to six months.

SAARINEN REFUSED TO DISCARD THE PAST

One of the most popular vignettes in the show was a dining room created by a transplanted Finnish architect named Eliel Saarinen, who also served as design consultant for the exhibition. Executed in various shades of beige

Early Saarinen. The influence of Arts and Crafts style is evident in the architect's 1910 Hannes chair, which was made for Hvitträsk, his Finnish home, and named for his brother.



and brown, his room was a totally unified design, from the forks on the table to the wallpaper. A round table with a wide octagonal base was surrounded by six tall, straight-backed chairs made of black walnut; simple cabinets were veneered in a pattern of diamonds and triangles.

Unlike the other architects in the show who tried to expunge every link with the past from their designs, Saarinen had taken Wright's "bundle of ancient sticks" and used them as the raw material for an interior that was both new and yet comfortably familiar. A fellow architect called Saarinen a "bridge builder," a rare designer who

successfully melded the aesthetics of the machine age with the ideals of the Arts and Crafts Movement. In the Metropolitan show, Saarinen evoked the spirit of William Morris, Charles Rennie Mackintosh and the German *Jugendstil* movement, and he anticipated the sleek modernity of Art Deco. His furniture would later be considered among the masterpieces of the 20th century.

SAARINEN SOUGHT RECOGNITION IN AMERICA

Eliel Saarinen was already a Finnish cultural hero when he emigrated to the United States in 1923 at the age of 50.

In a career that began while he was still a university student, he had been a leading proponent of National Romanticism, the Finnish equivalent of the Arts and Crafts Movement. He had designed the Helsinki Railroad Station, the Finnish National Museum, the country's paper currency and one of its postage stamps. In 1922 he became a hero to American architects as well, when he placed second in the prestigious competition to design a skyscraper for the Chicago Tribune. Architect Louis Sullivan extravagantly praised Saarinen's design as "resonant and rich, ringing amidst the wealth and joy of life."



A symbol of design excellence. Cranbrook school's symbol is the crane, which Saarinen incorporated into his 1928 boys dining chairs. The chairs have been used daily for 67 years.

Detail, simplicity, materials and proportion.

Arts and Crafts tenets continued in Saarinen's simple oak chairs for the Cranbrook School for Boys dining room.

CRANBROOK FOCUSED AMERICAN DESIGN

With those endorsements Saarinen was a natural choice for the show at the Metropolitan. For his own part the show provided an opportunity to make a rough sketch for the much larger masterwork upon which he had recently embarked: creating his own home and studio at the newly opened Cranbrook Academy of Art in Bloomfield Hills, Michigan. The school would eventually produce many of America's best architectural and furniture designers in this century, including Charles Eames, Florence Knoll, Eero Saarinen and Harry Bertoia. Established in the

early 1920s in the Arts and Crafts tradition as a community where artists could work and learn together, Cranbrook Academy was already one of the engines driving the Modernist Movement in America. Saarinen himself was at its center, laying out the campus, designing the buildings and furniture, tutoring, lecturing and eventually becoming the president of the academy. The house he built was a distillation of the principles of balance, proportion, unity and restraint that Saarinen and Cranbrook shared.

Hailed as one of the most important residential projects in America when it was completed in 1930, Saarinen's



Exotic woods, rust tones. The lounge chair and table from 1929 use greenhart, African walnut, rosewood and maple in various geometric patterns.

have replied mildly "You are always Frank, but you are not always Wright."

HE DESIGNED THE ASHTRAYS AS WELL AS THE TABLES

Eero Saarinen once said that his father "saw architecture as everything from city planning to the ashtray on the living-room table." In this view, the furniture was of great importance. His solid roots in the Arts and Crafts style are preeminent in the furniture at Hvitträsk, his Finnish home and studio, and at the Cranbrook School for boys, an early Cranbrook building on which he played a collaborative role. By 1930, only a few years after the boys-school work, his furniture designs for the Saarinen House had taken a decided turn toward Art Deco.

Most of the furniture in the Saarinen House was made in the workshops at Cranbrook, overseen by a skillful Swedish cabinetmaker, Tor Berglund, who shared Saarinen's Scandinavian reverence for wood. The exception is the dining-room table and 14 chairs, whose complex construction required the machinery of a larger shop. They were made by The Company of Master Craftsmen, a division of the New York department store W & J Sloane.

The dining chairs with their flaring fluted backs (influenced, some theorize, by the fascination with Egypt that swept America and Europe after the discovery of King Tut's tomb in 1922) are the most famous of Saarinen's furniture designs, long recognized as Art Deco harbingers. Their popularity stretches from coast to coast—from New York, where a chair is on permanent display at the Metropolitan Museum of Art, to Hollywood, where reproductions of the chairs and dining



Geometric blizzard that works. The table Saarinen designed for this alcove shows his deft mixing of geometric patterns in the tabletop, the table legs and nearby rug, column, panel and seat.

house and its furniture became a magnet for both designers and architects, who came to Cranbrook as students, teachers or friends of the outgoing and hospitable architect and his family. The elegance and subtlety of the spare Saarinen interiors are said to have influenced, among others, Bertoia, Eames and Knoll, who themselves went on to create some of the 20th century's most recognizable furniture designs. (Saarinen's son Eero, also an architect, designed the Dulles International Airport terminal, the TWA terminal at Kennedy International Airport, as well as some of the furniture at Cranbrook Academy, and became famous for his Tulip pedestal chair.)

There were dissenters: Frank Lloyd Wright supposedly complained once about the symmetry of Eliel Saarinen's rooms, to which Saarinen is said to

Cranbrook and Hvitträsk

The best examples of Eliel Saarinen's furniture can be seen at Cranbrook Academy in Bloomfield Hills, Michigan. The home he designed for his family on the campus has been restored and is now a museum. It is open for public tours on Thursday, Saturday and Sunday (\$6), and for private tours on Wednesday and Friday (\$10). For information call (810) 645-3323.

Before there was a Cranbrook, there was Hvitträsk, the Finnish lakeside home and studio that he built at the turn of the century. Hvitträsk embodies the Arts and Crafts aesthetic that drove Saarinen's early career. The furniture that fills Hvitträsk is a direct ancestor of the Saarinen House designs: simple, geometric and functional. But where the Cranbrook furniture is inlaid, the

Hvitträsk chairs and tables are turned and carved with folkloric motifs, in keeping with the spirit of the rustic house. Located 19 miles west of Helsinki, in Kirkkonummi, the house is open daily from April 1 to Oct. 31, and from Tuesday through Sunday the rest of the year. For information call the Finnish Tourist Board: (212) 370-5540.



An inherited design sense. Eliel Saarinen's son, Eero, became as famous as his father. He designed the terminal at Dulles International Airport and the famous tulip pedestal chair.

chair back so that each of the outer flutes is part of a single piece of wood that runs the entire height of the chair. The flutes themselves are each made of separate pieces of maple that are roughed out, glued in place and then shaped. Few people who see these masterpieces realize that the black detailing is paint rather than inlay. Saarinen requested inlay but was overruled by the maker, who said it was impossible to do on the curve of the chairs.

Inlays provide the main ornament on most of the other pieces of furniture in the house. The shapes of the pieces are austere, but the materials are luxurious: veneers of African walnut, rosewood, maple and mahogany in the living room; fir, ebony, holly and boxwood on the dining-room table. In an upstairs sitting area, a set

of painted furniture is embellished with gold-leaf details.

Although the furniture was intended only for Saarinen's family, it has reached a broad public through reproductions and exhibitions. Now it is also possible to see the furniture in the setting for which was created: After a 17-year restoration project, the Saarinen House is open to the public.

"No work of art in any field," Saarinen once said, "can be considered a work of art unless it reveals the basic nature of the artist himself." The bridge builder who helped guide the design world from Arts and Crafts to Art Deco is nowhere more clearly revealed than in the designs he chose to live with every day. ■

Liz Seymour studies furniture history and development from her home in Greensboro, NC.

table were recently used in the recent movie *The Mask*.

DECEPTIVELY SIMPLE CHAIR DESIGN

The simple shape of the chair required a great deal of careful engineering. Not wanting to thicken the silhouette of the seat with corner blocks, for instance, Saarinen specified that the back legs be a continuation of the

Designing Along the Grain

Make the wood grain flow with the furniture

BY PAUL HARRELL



Grain control. The wood for this desk was cut so that the grain follows and accentuates its concave front, convex sides and flared legs.

if someone remarks on the grain in a piece of furniture, they are usually responding to something exotic: wood with wild quilted figure or vibrant bands of color, perhaps a piece of quartersawn oak with a sunrise of medullary rays streaming across it. Most furniture does without such arresting patterns, but the visual power of the grain is still at work. Even in furniture made with the plainest wood, the grain pattern can have a profound impact on the success of the design.

On the drawing board, a design is all outlines. When you build the piece in wood, in effect you draw a lot more lines on it. Selecting and orienting the wood to control those new lines is a key part of the design process. Often, the difference between enhancing and undermining a design is just a matter of rotating a leg blank 90° before you saw it, or spending a minute or two laying out a group of stretchers before cutting them out. Selecting and sawing wood with care is like good joinery: Neither will rescue a bad design, but they are both necessary to turn a good idea into fine furniture.

SAME DIMENSIONS, DIFFERENT DESIGN

I made the two tables shown here to demonstrate how deeply a few small changes in the selection and sawing of wood can affect a design. The tables have the same materials, the same details and the same dimensions. But they are not the same design.

In the table on the facing page, the three drawer fronts are cut from the same piece of wood, and as the face grain flows across them, it curves upward in the middle, accentuating the concave shape. The stretcher below the drawers is sawn so that its face grain also picks up this inward bow. The grain of the convex side apron is continuous with the front, having been cut from the same board. But it was sawn so that its face grain curves downward, to emphasize the apron's outward bow. And in the legs, the

grain sweeps out at the bottom to follow their flare.

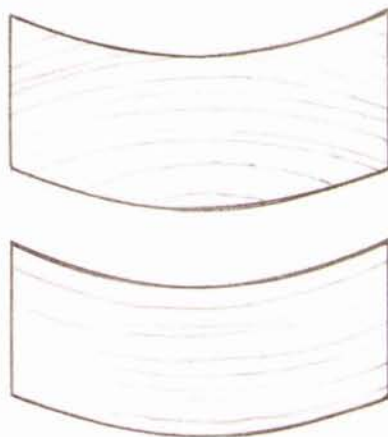
But in the table below, two of the drawers match fairly well while the third is from a different plank. The face grain on the side apron goes any which way. And as the legs curve outward, the grain sweeps inward.

If I've succeeded, nothing in the first table calls attention to itself; all the shapes seem clear; it has what English furniture maker Edward Barnsley called repose. In the second table, the haphazard choice of wood makes the piece seem at odds with itself.

On the following pages, I've presented a few techniques for predicting and controlling grain. I don't think there is always one right way to have the grain flow across a piece of furniture. The point is not to let it be an accident.

GRAIN COMPLETES THE PICTURE

A good shape on the drawing board can be emphasized or undermined by the wood grain. A careful craftsman can learn to predict and control the grain.



Grain dead. Mismatched drawer fronts and aprons, and legs with grain that fights the curve rob this desk of its repose.

Arranging the grain for wooden legs

Because legs are seen from all sides, it is important that the grain on adjacent faces be compatible. For a straight or tapered leg, you can get the same grain pattern on all four faces by cutting the leg blank so that the grain

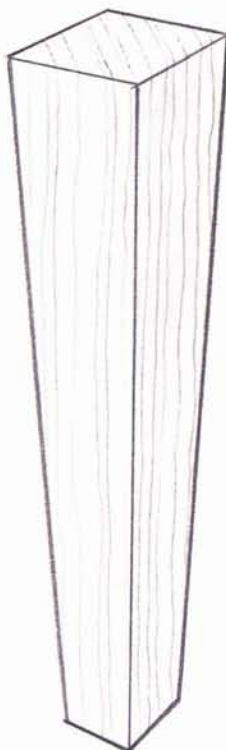
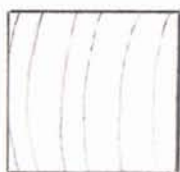
(as viewed on the end) runs diagonally from one corner to the other. Cutting the leg with the end grain parallel instead of diagonal results in two faces with straight grain and two with curving grain.

If the legs will be curved, the diagonal pattern of the end grain should run toward the outside corners

of the legs. This allows the grain lines to follow the shape of the legs instead of running counter to it. If the legs are oriented incorrectly, the grain lines will be cut as the curve is sawn. The grain will appear to fight the curve of the leg, and in addition, the grain will be shorter, and the legs weaker.

When I want to cut blanks for legs, I

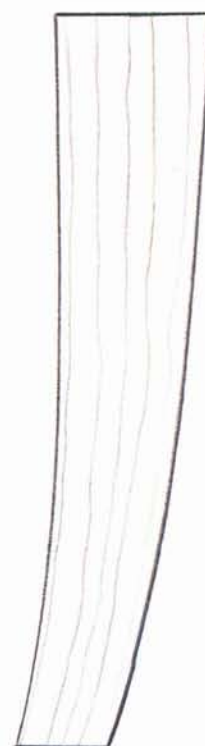
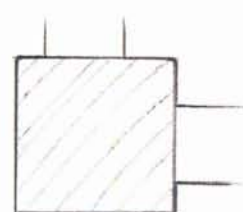
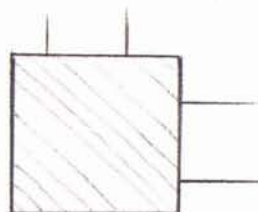
ORIENTING THE GRAIN FOR LEG BLANKS



Parallel end grain results in a leg with two straight-grained faces and two wavy-grained faces.

Diagonal end grain results in a leg with straight grain on all four faces.

ORIENTING THE GRAIN TO FOLLOW A CURVED LEG

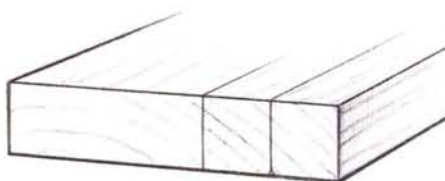


With end grain diagonal but running side to side, the face grain fights the curve of the leg.

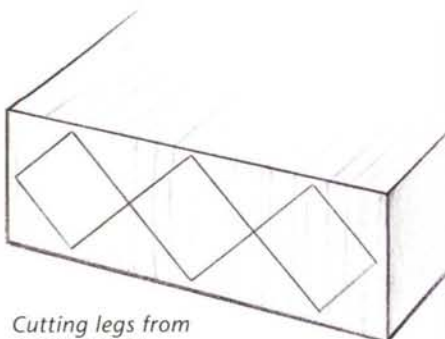
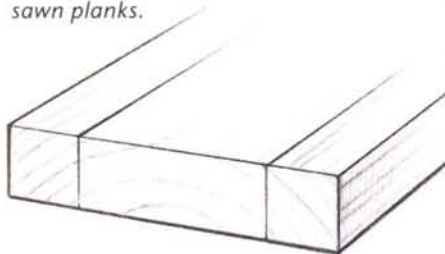
With diagonal end grain running outward, the face grain will follow the curve of the leg.

try to find planks that have diagonal grain at one or both edges. It's possible to get legs with the right grain from a thick quartersawn plank, but you have to make a lot of sawdust to do it, and you lose a board better suited as a tabletop, cabinet case or veneer.

FINDING LEGS IN LUMBER



You can often find leg stock at the edges of flat-sawn planks.



Cutting legs from quartersawn planks wastes wood.

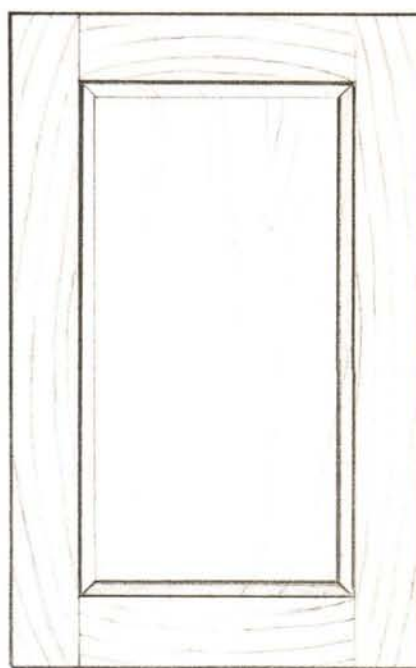
Grain design for doors

When I'm building frame-and-panel doors, I want wood for the stiles and rails that will frame the panel, not compete with it. I try to keep the pieces as uniform as possible, never mixing flat and quartersawn pieces.

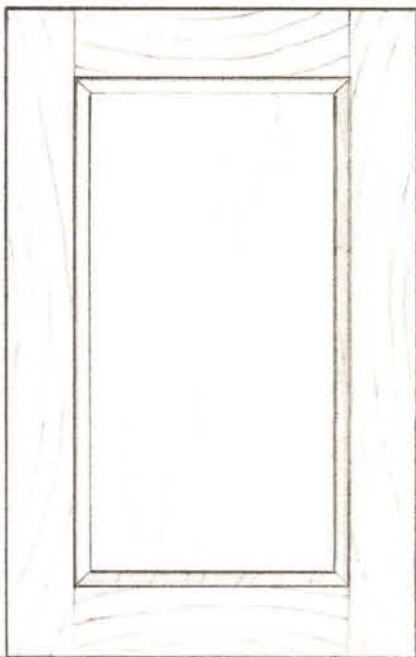
Just as with curved aprons and stretchers (see following page), doors that curve inward or outward across their faces will benefit from having rails whose grain accentuates the curve.

After cutting out pieces for a door or doors, I always experiment with different arrangements of the parts. The same pieces turned a different way will often have very different appearances.

FRAMING GRAIN



Turned outward, curved grain fights a frame's shape.



Curved grain creating a circular pattern gives a frame unity.

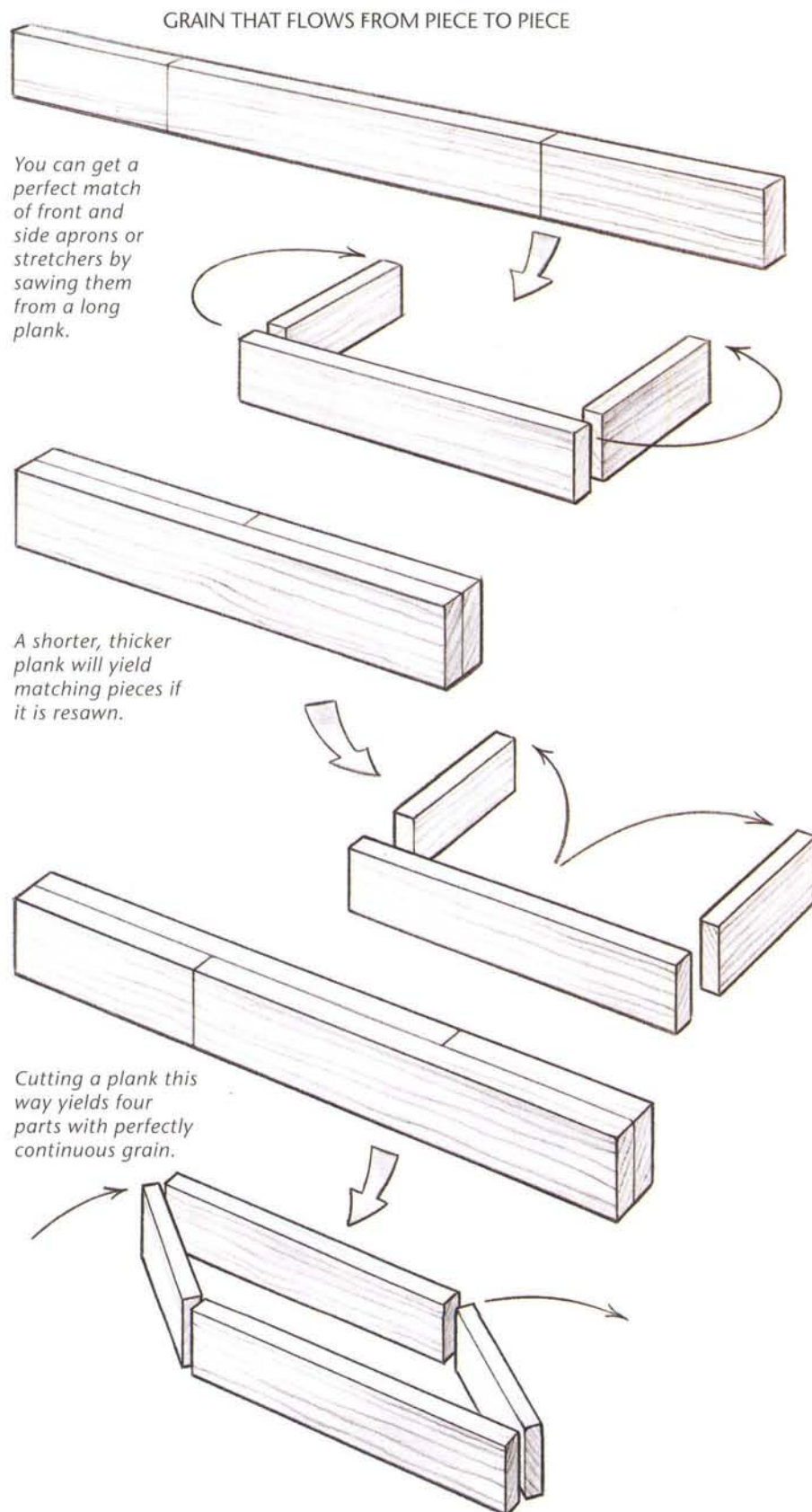
Sawing wood for aprons and stretchers

I look for mild, fairly straight-grained stock for straight aprons and stretchers. The various pieces don't have to be identical, but I avoid mixing widely different grain patterns. If the wood has a strong pattern of bands or streaks of color running through it, it's worth the effort to match the aprons end-to-end so that the pattern is continuous.

For curved aprons and stretchers, it's important that the face grain accentuate the shape. On a concave apron, face grain that curves upward in the middle like a frown will reinforce the curve of the piece; face grain that runs perfectly horizontal will reduce the apparent curve; face grain that curves downward in the middle like a smile will fight the curve.

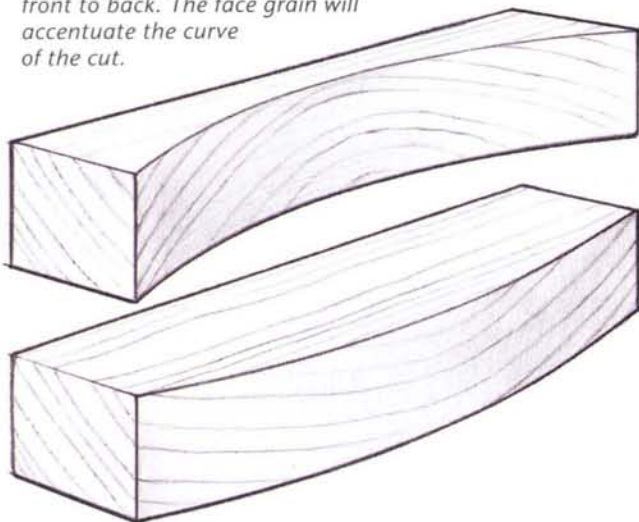
When sawing a curved part, pick a blank with diagonal end grain. If you cut it with the end grain running up from front to back, the face grain will accentuate the sweep of the curve, whether convex or concave. If the end grain slopes the wrong way, the face grain will work against the curve.

The amount of curve in the face grain can be predicted by the amount of slope in the end grain. A steep upward slope in the end grain will yield an exaggerated curve in the face grain.



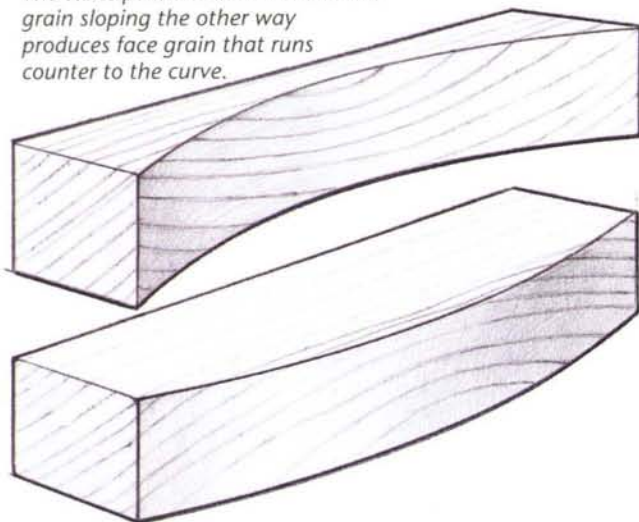
ACCENTUATING A BOW

When cutting a concave or convex piece, choose a blank with diagonal end grain and orient it so that the end grain slopes up from front to back. The face grain will accentuate the curve of the cut.



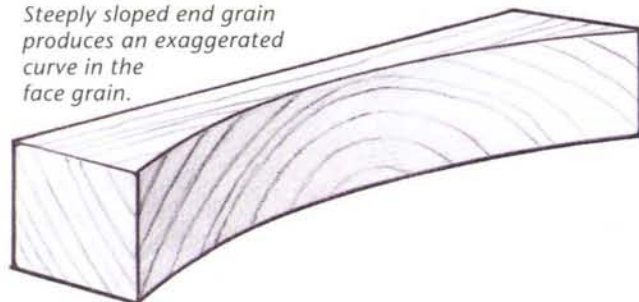
UNDERMINING A BOW

The same part oriented with the end grain sloping the other way produces face grain that runs counter to the curve.



STRONGER CURVES

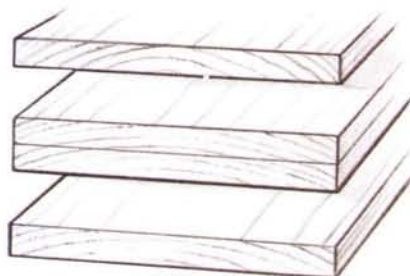
Steeply sloped end grain produces an exaggerated curve in the face grain.



Dealing with drawers

I often resaw thick veneers for drawer fronts from a single plank, but even these will vary subtly in grain and color. The thick veneers sawn from the top of the plank have tighter face grain than the ones toward the bottom, which have a wide flat-sawn section in the center. If the color is consistent, putting the fronts with the tighter grain at the bottom of the bureau should give the piece a solid, grounded feeling. If the flat-sawn center section is darker, as it will be in some woods, these fronts might look better at the bottom.

RESAWING FOR DRAWERS



Resawing veneer from a single plank for drawer fronts ensures a good color match.



Using tighter-grained veneers for lower drawers can give a chest a harmonious rootedness.

Paul Harrell is a furniture maker in Pitsboro, NC. He studied under James Krenov at the College of the Redwoods in Fort Bragg, CA.



Classics in a rustic setting. The author translated a request for “classical” furniture in a *somewhat* rustic home by using fluted columns, the pediment of a Greek temple and Georgian-inspired chairs.

A Roomful of Furniture

Interpreting space, size, occupants' desires
and other styles in the home

BY LOY DAVIS MARTIN

matched sets are out. Just look at any home-decorating magazine. Few pieces of furniture look like they were intended to reside together in the same room. Things were made to match in the '50s and the '60s, but the creative eye today is the eclectic eye. By and large this is fortunate for the independent furniture maker. We make unique pieces, and people like to put unique pieces with other pieces to show off their creative skill. However, something has also been lost.

From the furniture maker's point of view, that lost something is a certain richness of opportunity to interpret our clients' homes, the objects and furniture they have already chosen and the new ideas they have for living. So when a couple asked me to design and build several related pieces for their dining room, I welcomed the task and approached it as a series of interpretations.

INTERPRETING CLIENTS' CRITERIA AND DESIRES

Before beginning any drawings, a furniture maker must consider the overall feel of the clients' home and approach



to life. The couple live in a contemporary house: lots of glass, light and rough-hewn beams, with lovely views of a mountain forest. They collect Japanese antique furniture and art, which gives their house a casual feeling; I'd call it sleek rusticity if that's not an oxymoron. For their dining room,

Contrast without conflict. Column flutes in the table legs were cut through pearwood veneer to reveal darker bubinga in the hollows. The woods were reversed for fluted pilasters in the sideboard.



A temple of light. The top half of the large "temple" cabinet was encased in glass, including the back, to showcase items and to keep it from blocking the sunlight that streams in when the curtains are open.

however, they wanted a bit more formality, a feeling they described to me as "classical." My first task then was to interpret "classical."

I started with fluted columns for the dining-table legs and moved this classical theme outward to the crystal cabinet and the sideboard. The showcase portion of the cabinet became a kind of temple porch. For the sideboard, I

decided to punctuate its great mass and length with fluted pilasters, giving it an architectural feeling different from that of the cabinet.

Because I work with sawn veneers, I was able to pierce through a pearwood veneer to a bubinga core on the table and the cabinet, showing dark in the hollows of the flutes. On the sideboard, I reversed the relation, piercing the dark wood to show the light wood. For the pearwood chairs, I made the idea of the classical into an allusion to the English neoclassical, modifying and simplifying a familiar Georgian chair design (see drawing and photo on p. 41).

CONSIDERING OTHER STYLES IN THE ROOM AND HOME

The second important interpretive challenge was to relate the new work to other furniture in the home. For this job I had to link these rather strong quotations from European classicism to the earthier, more Asian aesthetic of the rest of the house. My opportunity came as I began resawing veneers from slabs of Bavarian pearwood. One plank revealed the dark mineral deposits that finally appeared in the panels of the sideboard doors.

At first I started to discard these apparent "flaws." But then I had another thought. Here was the color of some of the wood sculpture and *tansu* cabinets my clients had collected, and here was an intrusion of natural forms into the realm of our very well-governed European conventions. It seemed to me just the link this dining room needed to bond to the genteel rusticity that surrounded it. The couple went along, and the mineral deposits became a series of book-matched panels in the sideboard doors. The decision to use them led in turn to the choice of precious Brazilian rosewood for the door and drawer pulls and for the inlaid stringing on the table and in the crest rails of the chairs. The color match of the mineral deposits and the rosewood was almost perfect.



INTERPRETING THE SPACE IN THE ROOM

Custom furniture makers must always consider the space of the room. In this case, the dining room—despite opening entirely along one side into the living room—was quite long and narrow. The length created an interesting separate space for the crystal cabinet at one end of the room and allowed ample flexibility for an extension table. But narrowness in a dining room is always a problem. One needs width for the table itself and for chairs to move in and out on either side. And if there is also to be a sideboard against the long wall, every inch counts.

To compound the problem, we all wanted the sideboard to have a curved front, and we soon found that any arc of a circle either bulged too much into the dining room or lacked the necessary grace and softness.

My solution was a curve on the front that was tighter in the center and tapered out at the ends. This choice was



Flaws become beauty marks. Pearwood mineral deposits were used in the door panels because the color provided a link to the owners' other furniture and invoked rusticity amid formality.

Throwing the maker a curve. The author curved the credenza front with a constantly changing radius to lessen its intrusion into the room, but it presented difficult drawer-construction problems.

clearly the right one, but it made this sideboard one of the most difficult pieces I have ever built. Each door and drawer front is a different portion of a constantly changing curve. I laminated and veneered the door panels, bandsawed the door-frame rails, and veneered the drawer fronts over bandsawn solid blocks. In addition, each drawer front had to be dove-

tailed into the drawer sides on a different angle at each point in the overall curve. If that weren't enough, the sideboard top, carcass and laminated base each had to be built as a slightly offset concentric version of the original curve. I learned that interpreting the space itself is not always a simple matter of getting a few proportions right.



Furniture fits the room, which fits the house. The furniture not only had to work together in a small room but also had to fit in a home with open beams as well as a collection of Asian decoration.

CONSIDERING THE BUYER

Interpreting the future owners of the furniture is also not a simple matter. As designers, we need to interpret their tastes (not always unified where couples are concerned), the tones they like to set in their domestic lives (not always the same in morning and evening, let alone in different sea-

sons), and not least important their physical needs. In this dining room, space had to be reserved for the usual china and crystal, and the central stack of drawers in the sideboard was designed as a silver chest, with burgundy suede linings and silver mounts made of maple, pearwood and ebony. The large "temple" cabinet had to hold a lot of serving pieces and crystal, but none of us wanted to block the wonderful morning sunlight that filters through the oaks outside and into the dining room's tall windows. The solution was to build a large cabinet but to put glass all around the top showcase portion. Filled with crystal goblets and decanters, the cabinet enhances the natural light.

CHAIRS REQUIRE SENSITIVITY

With all of the clients' dining ware accounted for, the most sensitive physical interpretation still remained: the dining chairs. I like to design chairs that will fit the user, just as a boot-maker shapes a boot to fit his client's foot. For, say, a desk chair, I take a full array of body measurements and proportion the chair accordingly. With dining chairs, however, there is a conflict. My clients both were rather below average in height. In fact, the woman had never sat in a dining chair that allowed her to place her feet flat on the floor.

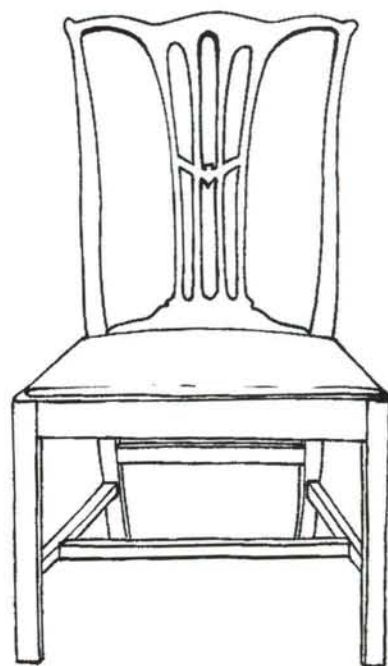
Naturally, I was eager to remedy this lamentable condition, but then how far can one go, knowing that a full range of other-sized people might occupy these chairs sooner or later? Does one build the chairs to fit the clients and recommend that they invite to dinner only those guests shaped roughly like themselves? In this instance, parents and in-laws would have been among the first exclusions. Because I didn't know the answer, I started by building a prototype chair to the necessary small dimensions for the woman's comfort. Then I had all my friends sit in it. This experiment led me to a principle that I am tempted to de-



Chair fit for a king or queen. The author had to size his chair to be comfortable for his diminutive clients, as well as for larger guests who would sit in it.

GEORGIAN CHAIR

The author based his chair on English Georgian designs that were popular in about 1760.



clare as a law of chair design: A large person can be comfortable in a small person's chair, but a small person cannot be comfortable in a chair that is even a little bit too large. I am 6 feet, 3 inches tall and weigh quite enough, and yet I found these munchkin chairs, as my wife calls them, quite comfortable for a long sitting.

If I had to find a word to characterize this project as a whole, it probably would be "complex." It took a long time to design and build these pieces, and after working for several months without seeing a piece come to completion, one yearns for the standard "one piece at a time" regimen. I would not want this kind of challenge too

often, but I find that I am eagerly taking on another such project. The potential for stylistic cross reference and the rich possibilities for interpretation proved irresistible. ■

Loy Davis Martin, a former English professor, has been making and designing furniture for 13 years in his one-man shop in Palo Alto, CA.

Bowfront Ash Credenza

BY NICHOLAS GOULDEN



this credenza started with a simple sketch—almost a doodle—of a pair of gently curving doors with coopered panels. In the sketch, the outer stiles were the full height of the door, and the inner stiles were short. The rails had an uninterrupted sweep, giving the curve more visual power without being physically intrusive. Overall, the doors appeared broad rather than tall.

This sketch sat for several months until I found an extraordinary ash board, which I used for the panels. Its dusky peach color, dividing green streak and curly white portion almost immediately brought the sketch to mind, and I quickly picked out wood for the rest of the doors and the carcass.

Once I was committed, I had to scale up the door idea into something useful. I quickly found that with a height of around 30 inches, each door would be about 24 inches wide and far too massive for the subtle detailing I wanted. I preferred the doors to be wider than they were tall.

The solution was to scale the doors down and add a row of drawers. I used three drawers because two did not look balanced on the curve.

At this stage, I made a full-scale mockup and adjusted the proportions of the drawers until they looked right. I originally had thought that the front of the drawers would overlap the dividers. The mockup showed that this would create an unbroken band across the top, which overwhelmed the doors, so I brought the dividers through and slightly recessed the drawer fronts.



Nothing to hide. The carefully crafted back panels are asymmetrical for a reason: The off-center middle stile defines a bank of shelves on the left side of the cabinet.

Playing with the mockup also confirmed part of my original idea, which was to have the different parts of the door frame be of different thicknesses. The outer stiles are the thickest, and the center stiles are the thinnest, resulting in reveals, or steps, that reinforce the curved front. (For more information on the door construction, see *How They Did It*, pp. 101-102.) ■

Door design brings out the curve. The inner door stiles stop at the rails, giving the top and bottom border an uninterrupted sweep.

SPECIFICATIONS

DIMENSIONS

32 in. wide, 16 in. deep and 30 in. high.

MATERIALS

Bandsawn ash veneer, white oak and maple drawer sides.

FINISH

Shellac and wax.

Sheraton Armchair

BY PETER VAN BECKUM

Designing with a builder's eye. The architectural quality of the backsplat in this copy of a Samuel McIntire armchair is no accident. McIntire designed buildings as well as furniture.



the original of this Sheraton armchair was made by Samuel McIntire within a year or two of 1800. McIntire (1757-1811), who ran a shop in Salem, Massachusetts, designed and built houses as well as furniture, and the two pursuits cross-pollinated. The carved basket of fruit against a punched background on the crest rail of the chair is a motif also found on mantels he designed.

My copy is made from two boards of Honduras mahogany. All the visible parts, except the backsplat, came from a straight-grained 8/4 plank. I chose an unexciting wood because the design has such dynamic shapes and negative spaces. I wanted to accentuate them rather than show off dramatic wood grain. Also, the straight-grained wood provided strength in a chair whose fine dimensions place it just above the threshold of structural requirements.

I cut and carved the splat, with its pattern of intersecting Gothic arches, from a single piece of 4/4 mahogany. I could have carved it in sections and glued them together, but I wanted to avoid joint lines for appearance's sake. Using a single board also makes the carving a little easier. Once you've figured out what the grain is doing and adjusted your carving technique, you're set, because the grain will be fairly similar throughout.

The fabric of the seat is haircloth, a combination of cotton and horsehair. The stuffing is curled horsehair. Both are authentic to the period. Ash rails and corner blocks are hidden beneath the upholstery. Ash holds tacks well and tolerates repeated upholstering.

The chair's simple, straight-tapered legs provide a nice visual base and don't require that a lot of labor be lavished on a part of the chair that is often out of sight. They leave the greatest embellishment for the splat, a dining chair's most prominent element. ■



All the curves are above the seat. McIntire used straight lines in the legs and stretchers to make the curving back and arms more expressive by contrast.



Carving a place in history. Samuel McIntire's masterful shaping and carving (reproduced here by the author) made him famous in and around Salem, Massachusetts, at the end of the 18th century.

SPECIFICATIONS

DIMENSIONS

23 in. wide, 20½ in. deep and 38 in. high.

MATERIALS

Honduras mahogany, ash, cotton and horsehair blend fabric, curled horsehair stuffing and brass tacks.

FINISH

Boiled linseed oil.



Elegance stripped of ornament. By excluding involved detailing, the author gave his display cabinet an elemental starkness. Thick sides left unmolded let the walnut grain and the large coves at the crown and waist do the talking.

Coved Walnut Display Cabinet

BY BILL BRACE

When a friend of mine moved to New Mexico, he asked me to build a display cabinet for part of his mineral collection. The cabinet would occupy a large entrance hallway in his new home, so it needed to be substantial. The display function of the cabinet called for glass shelves and doors and adequate lighting in the upper half, with paneled doors concealing shelves and drawers below.

I thought dark woods would look good set against white adobe walls. So I chose some black walnut I had harvested locally and had been air-drying for three years. I cut one highly figured board into veneers that I book-matched and used for the door panels.

I admire the work of James Krenov and had always wanted to incorporate in a piece of my own the deep coves he uses so effectively. An elliptical cove became the centerpiece of my cabinet, separating its top and bottom halves and providing an eye-catching transition. It also provides space for secret storage. If you remove a drawer, you can reach up onto a secret shelf behind the cove. I added a smaller cove to cap the cabinet. It hides the thin fluorescent fixtures that illuminate the shelves.

Exposed joinery is another appealing element of many Krenov pieces, but in this cabinet I thought it might distract the eye from the delicate grain patterns of the panels. So I used concealed joinery on the outside of the case and saved a set of exposed dovetails for the drawers inside, where they provide visual impact as the doors are opened. ■

SPECIFICATIONS

DIMENSIONS

48 in. wide, 18 in. deep and 75 in. high.

MATERIALS

Black walnut, black walnut veneer, maple, birch plywood, glass and brass hardware.

FINISH

Watco oil and paste wax.



Dovetails discovered. Open the doors, and the dovetails in the maple and walnut drawers provide a ray of light. Frameless glass doors above put everything behind them on display.

Maple and Metal Bed

BY CHRISTOPHER FRANK



American concept, Italian expression. This bed is pared down to its essence: comfort, quiet and harmony.

this bed was designed for a model loft in the SOMA district of San Francisco. An interior designer had seen my work at a local furniture exhibition called "Overtime." She needed a bed for the loft she was decorating and briefly described the space to me. I had developed a concept for a bed several years before but never executed it. After hearing some of the details of the space, I knew this was a golden opportunity to finish my design.

The concept is a reinterpretation of "grandma's bed." The metal and wood combination, the existence of the head and footboards and their scale are all familiar aspects of an old bed. In contrast, the design reflects the ideals of modernism in the choice of materials and the finishes, as well as the absence of ornamentation and visible joinery. The metal in the headboard and footboard has a sparkling powder-coat finish with a grainy texture. This contrasts with the smooth lacquer finish on the fiddleback maple base. This is the opposite of the usual tactile properties in which the wood is rough and the metal is smooth.

The resulting proportions and simplicity of the bed were influenced by the time I spent studying design in Milan, Italy. The concept is American and



A nonchrome sparkle. The metal of the headboard and footboard is treated with a powder-coat finish that sparkles and has a grainy texture.

inspired by the culture, but the expression of the concept is Italian in nature: I am always trying to pare things down to their essence. A bed should convey comfort, quietude and harmony. ■

SPECIFICATIONS

DIMENSIONS

61 ½ in. wide, 85 in. deep
and 40 in. high.

MATERIALS

Fiddleback maple and cold rolled steel.

FINISH

Water-based lacquer and nickel
powder coating.



Mirror images. A bit anachronistic, card tables today are often placed against a wall while they're half open, like a demilune, to display the intricate inlay work on the tabletop.

18th-Century Card Table

BY WALTER RAYNES AND CARL CLINTON

No dealing on this deck. The spectacular mahogany crotch pattern and the oak leaf and acorn inlay are traditional details.

work is where you find it. A customer of ours spotted a Federal-style card table in our storeroom while waiting for a repair job that should have been finished. The customer loved the table and commissioned us to build a similar one on the spot.

Card tables often had highly decorated tops that were visible when folded in half and placed against the wall. The interiors usually were utilitarian and sometimes were covered with baize (a feltlike fabric woven out of wool or cotton) to provide a better surface for playing cards.

This table is a marriage of New York and Baltimore styles of the late 18th century (about 1790 to 1800). The bell-flower inlays on the legs are more of a Baltimore style, while the circular top with pie-shaped wedges of crotch mahogany, the central field of oak and acorn inlays, and the dentil stringing is more associated with tables built in New York.

Never slaves to tradition, however, we made some changes. The interior

of the table (the flat part when open) is the most spectacular, made to be seen and not for playing cards. (The owner uses it to display a collection of decorative glass.) We also made the legs more slender than the originals to give the table a lighter look, and we reduced the overhang of the top to show off the inlay work in the apron.

In another departure from tradition, we reversed the grain direction of the crotch mahogany veneer. Purists may cringe when they see this (it certainly distressed another client of ours—an antique dealer), but we think these changes, plus the more than 200 hours of work that went into this piece, resulted in a spectacular table. ■

SPECIFICATIONS

DIMENSIONS

36 in. in diameter (open) and 28 in. high.

MATERIALS

Mahogany and mahogany veneer, poplar, and the following veneers used for the inlays: walnut, holly, rosewood, curly maple and ebony.

FINISH

French polish.



Birdcage Windsor Side Chair

BY CURTIS BUCHANAN



Soon after seeing a continuous-arm chair for the first time, I started making Windsor chairs for a living. The continuous arm was my North Star, guiding me while I stumbled along, learning the craft. As I got deeper into chair-making, I continued to think of it as the height of Windsor chair design, feeling that the chairs that followed it represented a degeneration of that classic chair. But now, after 12 years of chair building, I find myself going down the same road as chairmakers of old, gravitating toward simpler forms.

Last year I became intrigued with the birdcage or double rod-back style. I pored over photos of old chairs and began to pinpoint details that I wanted to incorporate in my version. I found a particularly fine birdcage Windsor in Charles Santore's book *Windsor Style*

The punch is in the paint. Simpler Windsors often substituted paint for carved detail. This birdcage Windsor's paint imitates bamboo.

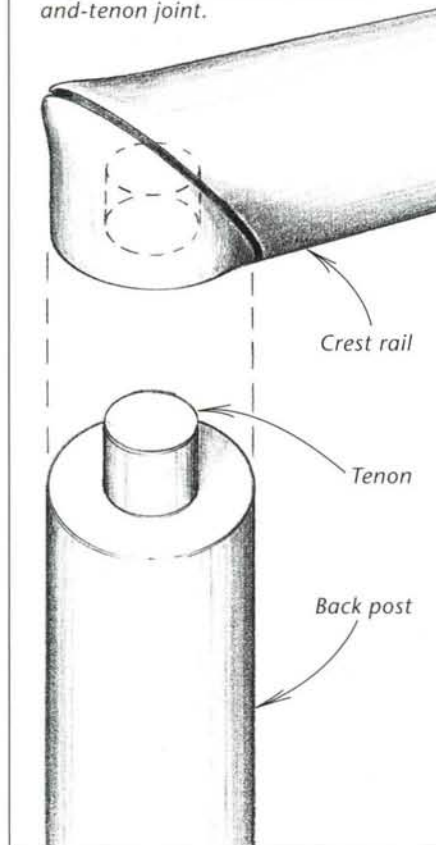
in America (Running Press, 1992) and used it as the foundation for the structural design of my chair. I based the paint decoration on another side chair in the book. Both chairs were made in Maine in the early 1800s.

The chairs in Santore's book had shallowly carved seats, but I carved mine an inch deep for comfort. The pommel, the high point between the sitter's legs that is often a visual focal point, is missing on my chair. Instead, the attention is drawn with a double groove, or gutter circling the seat and a three-color paint job. The gutter provides a little texture and a convenient way to define the areas of paint.

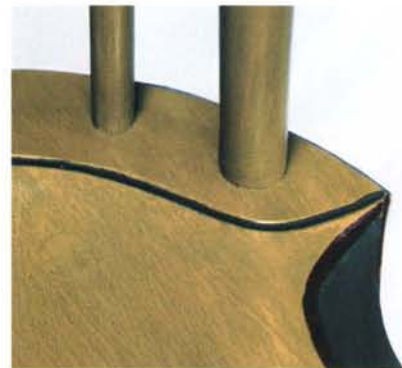
The crest rail of a rod back can be attached in various ways, but the false miter is one of my favorites. I carved the false miter on my chair with a groove and a puckered shape called a duck bill, which pulls the corners up. Together with the bent spindles, the puckered miters create the impression that the seat is jutting forward. I further emphasized that effect by decreasing the rake on the chair's front legs and increasing it on the rear legs. ■

FALSE MITER JOINT

The false miter, emphasized with a carved groove and pucker detail, disguises a conventional mortise-and-tenon joint.



Pucker up. The false miter joint between the crest rail and the post is carved in a grooved and puckered shape called a duck bill.



A seat with a gutter. A gouged groove, called a gutter, defines the transition from the flat to the hollowed part of the seat and separates the fields of paint.

SPECIFICATIONS

DIMENSIONS

19 in. wide, 17 in. deep and 37 in. high.

MATERIALS

Maple legs, crest rails and back posts; red oak spindles; white pine seat.

FINISH

Milk paint with top coats of penetrating oil.

Demilune Tables

BY RICHARD FROST



Curves create an entryway. Rounded shapes link these two tables visually while forming an inviting passage from hall to kitchen.

these two tables had to span a century or so. The low table was designed to fit under the arm of a sofa in the eat-in kitchen of an 1860s sea captain's house; the taller one was to stand a few feet away, in the entrance hallway linking the house with its recently modernized carriage house. So the tables had to be compatible with both buildings. The home's owners wanted a place to throw mail and keys, and something to catch people's attention when they entered the house. We chose cherry, a wood used elsewhere in the house, and settled on a style that seemed formal but not too stiff, with shapes that create a walkway between the hall and the kitchen.

I curved the tabletops to avoid having sharp corners stick out in this high-traffic area. The curves start at either end as straight lines, then blend into the arc of a circle. I used the same geometry for both tables so that their forms would appear related, even though their proportions were quite different. The frame-and-panel construction emphasizes the curves of the tops and presents these two particularly vibrant pieces of bird's-eye maple as works of art.

The legs are square at the top and octagonal at the bottom, making them look more delicate than they really are and forming long triangular facets that draw the eye up and down the leg. A little cove toward the top of the leg gave me a good way to start the taper and broke up the long vertical

lines a bit. At the bottom I used a matching cove to create a foot. The position of this bottom cove was oddly critical. I tried a number of possibilities on mock legs before zeroing in on what seemed just right.

As it turns out, my customers decided to use the hall table as a stand for a piece of sculpture so that they wouldn't be tempted to toss mail and keys on it as they enter the house. ■



Good home for a demilune. Half-round tables are traditionally placed against a wall but work just as well with a sofa. A cherry frame surrounds a panel of bird's-eye maple on the tabletop.

SPECIFICATIONS

DIMENSIONS

Hall table: 25 in. long, 9½ in. deep and 32 in. high.

End table: 29 in. long, 14 in. deep and 19½ in. high.

MATERIALS

Cherry, bird's-eye maple and walnut drawer pull.

FINISH

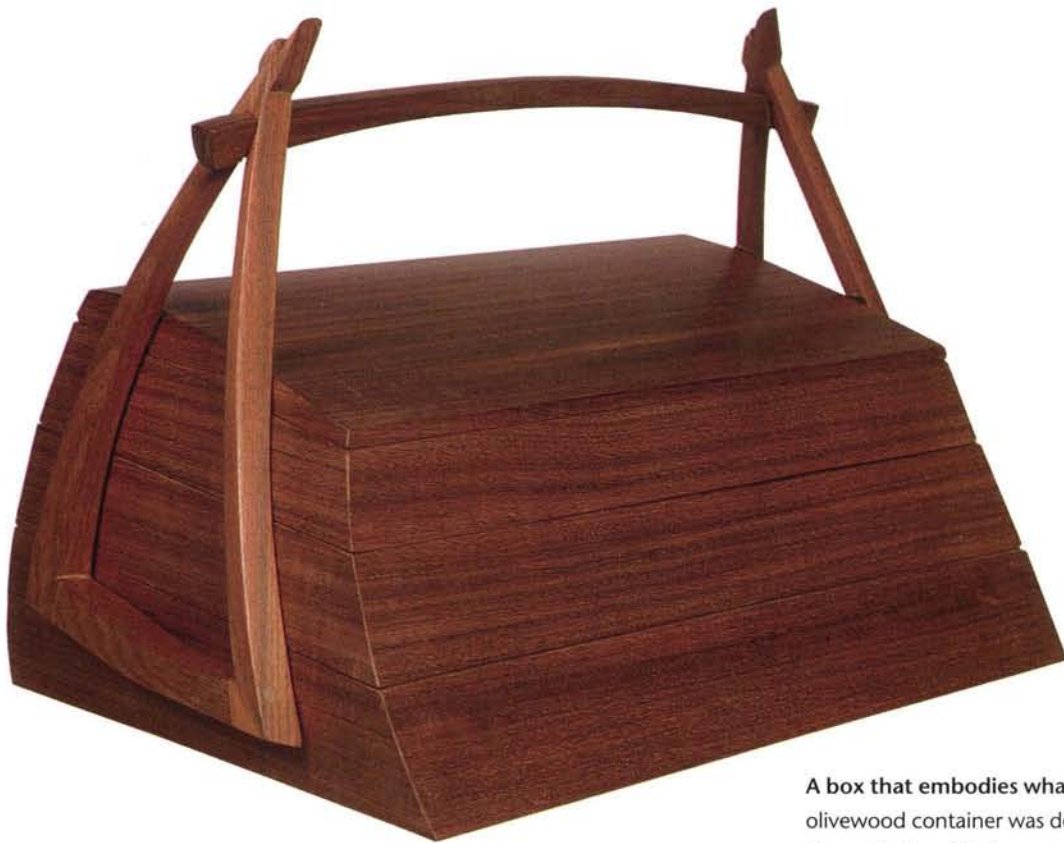
Watco oil.



Skirt fitting. Maple cockbeading dresses up the skirt and balances the cove on the leg.

Tiered Container for Small Carvings

BY E. E. "SKIP" BENSON



A box that embodies what it encloses. This olivewood container was designed to express the aesthetic of the Japanese carvings it holds and to enhance the act of examining them.

*i*t's a challenge to design a container for precious objects. The design needs to be strong enough to stand alone but not so strong that it overwhelms the objects it contains. My aim was also to design a container whose form said something about the objects inside. The client who commissioned this piece had a collection of *netsuke* (pro-

nounced 'net-skee'), Japanese carved figures, and she wanted a convenient container in which to store them. She didn't want them on display; she enjoyed getting them out and studying them one by one and sharing them with friends. I wanted the *netsuke* to be enhanced when seen in the con-

tainer; both by the way they looked against the olivewood and the suede lining, and by the suspense created in the process of opening the container and getting to the pieces.

The size of the container was a function of the number of *netsuke* it was to hold and of the need for it to be lightweight and easily portable. I derived the three-tiered format from the *inro*, a



SPECIFICATIONS

DIMENSIONS

17 in. long, 14 in. wide and 18 in. high.

MATERIALS

Solid olivewood, olivewood veneer, aircraft birch plywood, custom brass hardware and suede cloth.

FINISH

Raw linseed oil with a top coat of boiled linseed oil.



No flip-up lid. An unusual interlocking handle and independent trays registered with brass pins add an element of discovery to opening the container.

In the language of the hand. The author derived the handle's shape from Japanese writing on the ivory sculptures.

box for holding small objects that is worn under the sash in the traditional Japanese costume. *Inro* are most often made of wood, carved and decorated, and frequently have three sections.

The curving wedge shape of my container was influenced by my study of old *inro* and by my own affection for the form. To make this unusual shape,

I made Styrofoam forms and bent thin sheets of plywood and veneer over them using a vacuum veneer press (for more details on this technique, see *How They Did It*, p. 103). I based the shape of the handle on writing I found on some of the *netsuke*.

I veneered the container with olivewood, which slightly enhances its softly curved sides without distracting the

eye from the shape. I wanted a subtle but stubborn finish, so I used a mixture of raw and boiled linseed oil (see *The Finish Line*, p. 20, for an explanation of this versatile finish). For the lining I used suede cloth as a substitute for real suede leather, because I was told the acid in suede leather might harm the old ivory of the carvings. ■

Curved Legs for a Coffee Table

BY MASON RAPAPORT



Learning curves. The author was an apprentice learning vacuum veneering when he designed his curvy coffee table.



the conventional coffee table follows the load-bearing-straight-down-to-the-ground principle. Which is exactly what I was trying to avoid when I designed this one. The question was how to build something that defied that principle but was still perfectly sturdy.

The table was an anniversary present for my sister and brother-in-law, and my first thought was conceptual: To represent two people joining themselves together, I decided to place two C-shaped curves of constant thickness back-to-back and bind them at the center with a ring of wood.

Then my thoughts turned from romance to engineering. With the type of base I had conceived, all the load would be transferred to the area where the two Cs met, the vertex. I planned a floating tenon there to join the two Cs. Roger Heitzman, the furniture designer I was apprenticing with at the time,

pointed out that the beefier I made the vertex, the stronger the table would be. He suggested that instead of making the Cs constant in thickness, I should make them thicker at the middle and thinner as they curved away from the vertex. I liked what that did to the appearance of the table, and I decided to taper the Cs in width as well, making them narrower at the middle and wider at the ends. At this point I erased the ring from around the Cs to keep the lines of the table clean.

Some time later I designed an end table, a simple variation on the coffee

table. Two symmetrical curves would not have fit under the end-table glass, so I began to look at asymmetrical curves. After trying to balance one large curve, I decided it might look nice to have one large curve and a smaller one complementing it. I set the smaller one into the larger one to increase the strength of the piece. For both tables, I used glass with a highly polished edge (for tips on ordering glass, see Sources, p. 109). ■



SPECIFICATIONS

DIMENSIONS

Coffee table: 60 in. long, 30 in. wide and 15 in. high.

End table: 24 in. square and 23 in. high.

MATERIALS

Coffee table: curly cherry veneer, walnut, plywood and ¾-in. glass.

End table: cherry and walnut veneer, walnut, Ebon-X, plywood and ¾-in. glass.

FINISH

Watco oil, varnish and mineral spirits mixed 50/50.

Offspring end table. Reworking instead of merely repeating the forms of the coffee table produced a related but fresh variation for this end table.



Bookshelves that invite browsing. Cherry cabinets give the room warmth; the counter provides a place to open a book.

Built-in Bookcase

BY BRUCE BULGER

*m*y friend Alan's house, where these cabinets stand, is open and inviting from the front entrance on in. When I first visited, I saw this room with its generous bay window and a 16-foot stretch of white wall. I'm a painter as well as a furniture maker,

and my first suggestion was to paint a mural on that long wall. But a mural holds no books, and Alan had a lot of them. So we started talking about a full-length bookcase.

We could have put in bookshelves floor to ceiling, but for a number of reasons, I prefer bookshelves with



cabinets below. The counter gives you a place to browse through a book and a chance to touch the polished surface of the wood. The doors, the drawers and the moldings all display the warmth of the wood, absorbing and reflecting light.

Alan's house was full not only with books but also with beautiful objects of art and craft from his travels around

the world. So the case was designed to hold some of these treasures in addition to the books.

Because the bay window runs all the way to the side wall, I couldn't run the cabinet into the corner. I solved the problem by leaving the end of the case open and by mitering the shelves gently back to the wall. This created a place to display sculpture or glass that took advantage of the light from the window. I added texture inside the

cabinet with a combed paint finish (see *The Finish Line*, p. 20).

At the right end I made the cabinet turn the corner. And instead of ending the cabinet full-depth, I slanted it toward the wall to avoid a closed and heavy appearance. Opening the corner cabinet also made the shelves better suited for display. You can see inside from anywhere in the room. ■



From building to bookcase. The author adapts molding details like these from architecture.

SPECIFICATIONS

DIMENSIONS

16 ft. long, 18 in. deep and 7 ft. 8 in. high.

MATERIALS

Solid cherry, white pine, artist's pressboard, figured maple and ebony.

FINISH

Shellac, blended linseed oil and varnish, gesso and paint.



Opportune window. Open corner shelving solves the problem of ending the cabinet at a window and also catches the south light.

Inlaid outlines. Stripes of figured maple follow the edge of the counter and also form a sector, a tool for calculating proportions and ratios.

English Library Stool

BY MARIO RODRIGUEZ

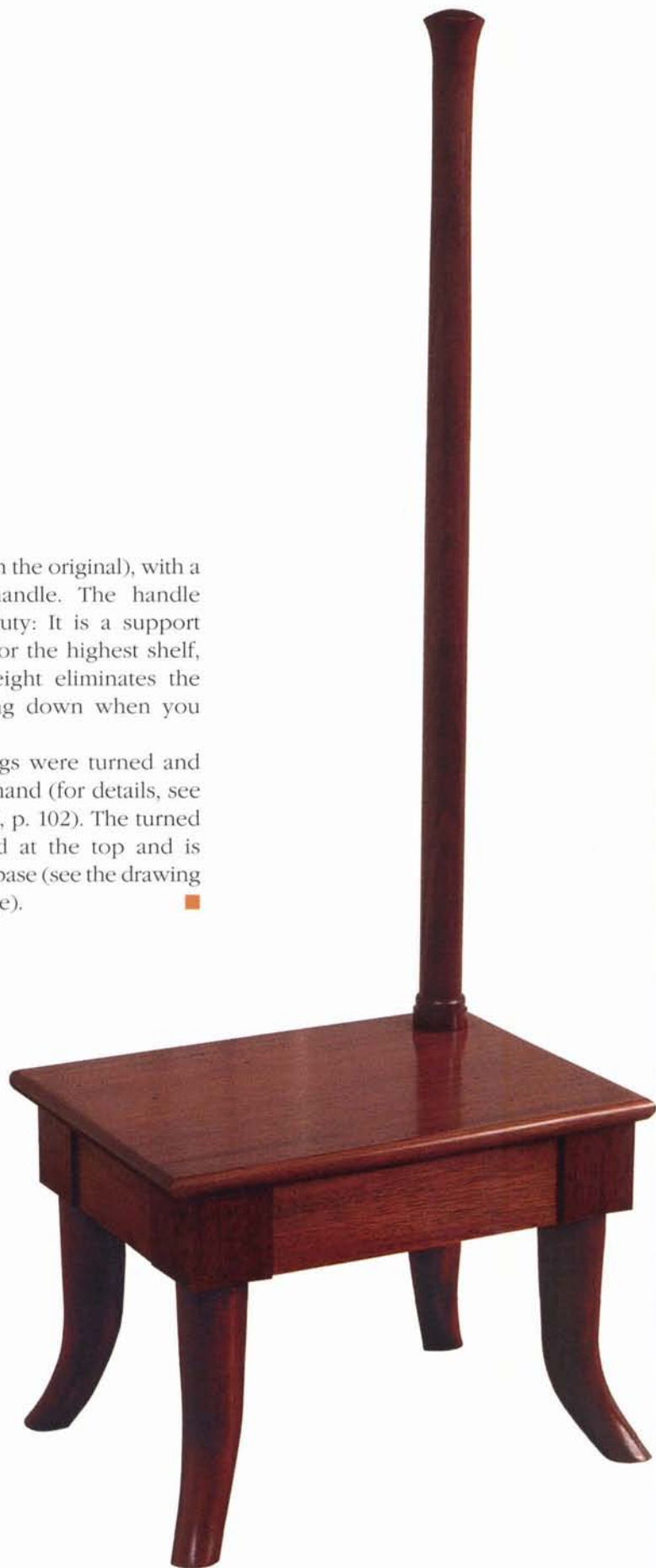
after making floor-to-ceiling built-ins for my living room, I needed a small, lightweight step for reaching the upper shelves. One day, while I was browsing through a book on English furniture, I came across a photo of a 19th-century step stool used in shops not only for reaching merchandise on high shelves but also as a seat for a quick rest between customers.

My version of the English step stool, made entirely of scrap mahogany, is a single step just 10½ inches off the floor

(a little lower than the original), with a long, tapered handle. The handle serves double duty: It is a support when reaching for the highest shelf, and its waist height eliminates the need for bending down when you want to move it.

The splayed legs were turned and then shaped by hand (for details, see *How They Did It*, p. 102). The turned handle is domed at the top and is tenoned into the base (see the drawing on the facing page). ■

A scampering step stool. A slight splay in the legs gives this simple stool a playful, lively profile.



SPECIFICATIONS

DIMENSIONS

10½ in. wide, 14 in. long, 10½ in. high and 38½ in. to top of handle.

MATERIALS

Mahogany.

FINISH

Qualasole, a premixed French polish compound.

HANDLE GETS PLANTED INTO BASE

Handle has graceful taper ending in domed top.

Turned post is made separately from base.

Round tenon sits in mortise drilled into top of leg.



Handle does two jobs. The turned, domed handle can be used for balance when standing on the stool, or just to carry it from one room to another.

Mahogany Federal Sideboard

BY LANCE PATTERSON



the man who asked me to make this sideboard dictated size, shape, style and type of wood. Proportion, decoration and construction were left to me.

The sideboard was to be a small, D-shaped Federal piece made of mahogany. I checked my memory and the library for pictures of such sideboards. I feel more comfortable when I find some precedent for my design choices. But I do not like to make close copies. To me, it's missing the point of this furniture to make exact copies because furniture makers who built the original Federal pieces made them different to suit individual customers.

I borrowed the D-shaped top and the form of the front with the fans on spandrel brackets from Thomas Sheraton,

but I simplified it by having only two cupboards flanking one central drawer and by including simpler, straight-tapered Hepplewhite legs.

I used dark mahogany swirl veneers on the cupboard doors and the drawer front, and bright, large, deeply shaded holly spandrel fans to catch the eye and invite people in for a closer look.

I like my designs to be strong visually. All of the lines of this sideboard are accented with inlaid stringing or bandings, and all of the corners on the front are further accented with fan inlays. The long-petaled bellflowers on the legs are similar to period ones on some pieces from Baltimore or Annapolis, Maryland. I particularly liked the distinctive sand shading of the top tip of the long central petal and the bottom tips of the side petals. However, I did try to restrain the number of design elements and colors.

I chose the simplest Hepplewhite drawer pulls, and the escutcheons are inlaid ivory, which was recycled from old piano-key covers. (When recycled ivory is not available, I use bleached cow bone.) The decoration ties the piece together by accenting all visible surfaces with related lines and colors, but clearly the front is designed for primary visual interest. ■

Sheraton meets Hepplewhite. The D-shaped top and the fan decoration in this Federal sideboard (left) were inspired by Thomas Sheraton; the leg design was borrowed from George Hepplewhite.

A Federal case. The holly inlay, the shaded fans and the long-petaled bellflowers (right) unify the sideboard by accenting visible surfaces with related lines and colors.



SPECIFICATIONS

DIMENSIONS

65 in. wide, 22½ in. deep and
38½ in. high.

MATERIALS

Mahogany with swirl mahogany, holly
bubinga and black-dyed veneer, and
poplar secondary wood.

FINISH

Oil-varnish.



Sculptural skeleton. The author's chair is stripped to its structure, but tapers and curves give it a springy vitality.

Armchair in English Chestnut

BY THOMAS THROOP

i was playing with a spool of wire when this chair's design took shape. I started out sketching, but I don't have a great facility for it. I often find it difficult to translate the image in my head to a piece of paper, especially when the design contains compound curves. After a brief struggle with the pencil, I decided to make a model. I tried using wood but found it difficult to work at such a small scale. Then I grabbed a spool of heavy-gauge wire. I clipped off a pile of pieces several inches long

and started experimenting. Using hot-melt glue, I could put together a model in a matter of minutes. I made one miniature chair after another until I struck upon the structure for the chair as it stands. It was very rough—eight arcs of wire and a piece of shirt cardboard for the seat—but it had the feeling I sought.

The chair was to stand at a dining table that overlooks a large pond and rolling, open fields backed by woodlands. It wasn't a conventional dining

room, but a freestanding structure—a glassed-in, metal-framed gazebo for dining. I tried to create a chair that was the equivalent of that structure: something light and airy that you could see right through.

Arcs appealed to me as the basic elements of the chair because they are skeletal yet sculptural. When I first made a full-scale mockup of the chair, I used plain cylinders, mimicking the wire arcs. But when I saw them full size, they lacked grace, and I decided to taper some of them. Tapering let me add visual weight and emphasis where I wanted it. I thickened the arms toward the ends where your hands rest to make it more inviting to sit in, and flared the legs at the floor to ground the chair, which might otherwise have appeared nearly weightless. ■



Animated geometry. Melding the front leg with the curved strut behind it gives geometric forms an organic aspect.



The right back. Slats with sharper curves on their top edges and softer ones below match the airiness of the rest of the chair.

SPECIFICATIONS

DIMENSIONS

21 in. wide, 24 in. deep and 34 in. high.

MATERIALS

English chestnut and leather.

FINISH

Watco Danish oil, paste wax.

Side Tables Inlaid with Brass

BY JANE SWANSON



i am inspired by the graceful lines of the Art Nouveau period. Typically, those sinuous lines were carved, in relief or in the round. I felt they could also be rendered in inlay, which seemed an appropriate decoration for some side tables I was designing.

I developed what I thought was a simplified version of flowing Art Nouveau carvings for the inlay. But in hindsight, I don't think I could have created a more technically challenging inlay

design. Each line I drew was related directly to one or more of the other lines, making precision critical.

My original design called for a drawer beneath the top, but it seemed too heavy visually. In keeping with the delicacy of the inlay, I decided to leave the structure open and the legs light. The legs are modified versions of legs I had seen on a desk by Carlo Zen in Alastair Duncan's book *Art Nouveau* (Thames and Hudson, 1994).

I selected brass and cherry for my materials. I find that the brass brings forward the warm tones of the cherry. Instead of having brass appear only in the inlay, I decided to veneer the shelf with sheet brass (for tips on using brass, see Sources, p. 109). I think the brass shelf draws people closer to investigate. Upon approach, the inlay becomes evident, its appearance varying from subtle to brilliant, depending on the play of light upon the metal. ■



Art Nouveau duet. Curves at the foot and top of each leg give the tables a *balletic* poise appropriate to their flourished inlay.

Brass makes a beautiful line. Its pliability and homogeneity make brass an ideal medium for inlaying the fluid lines of Art Nouveau.

SPECIFICATIONS

DIMENSIONS

24 in. long, 14 in. wide and 22 in. high.

MATERIALS

Solid cherry, cherry veneer, medium-density fiberboard and brass.

FINISH

Waterlox and wax.

Mahogany Dresser with Carved Pulls

BY PETER TISCHLER



Screening the mass. Graduated drawers, string inlay, chamfered edges and a curving base reduce the visual weight of this dresser.

many sources inspired me as I was designing this dresser: The Colonial cabinetmakers I studied in trade school and whose work I continue to examine in museums; more recent masters, such as Edward Barnsley; and the wood itself.

I consider wood selection a central element in furniture design, and I think it is the key to this dresser. The material for the case was taken in sequence from one long, wide plank, and the wood for the drawer fronts was resawn from one highly figured board (see the drawings below). I selected the wood for the drawer dividers for its straight grain and lighter color, which helps set off the darker drawer fronts.

I did some important things to lighten the appearance of the piece, adding embellishment at the same time. I made the drawer dividers thinner— $\frac{5}{8}$ inch rather than the $\frac{3}{4}$ -inch dividers found in most American furniture. The chamfered corners and mitered dovetails, along with the holly stringing, graduated drawers (and pulls) and the curve of the legs all are intended to focus the eye inward and upward.

I made the pulls in two pieces. The base plates are Macassar ebony, and the pulls themselves I carved from Honduras rosewood. The wood for the back came from the dog board of a hard maple I had sawn, and it shows some nicely quartersawn speckles. (The “dog board” is the plank that includes the pith, or center, of the tree

when a log is sawn lengthwise. Although the center of the tree is unusable, the quartersawn section of the plank on either side can be used.) The bottoms of the drawers are cedar; I think furniture should smell as good as it looks. ■



Carved by hand, for the hand. These ebony and rosewood pulls are graduated along with the drawers and were shaped to fit snugly in the hand.

SPECIFICATIONS

DIMENSIONS

37½ in. wide, 21 in. deep
and 33 in. high.

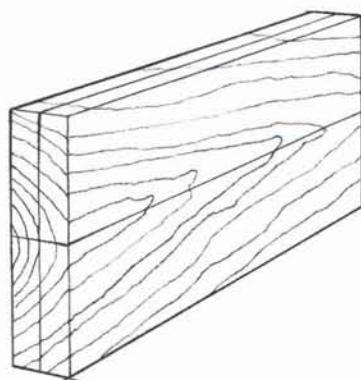
MATERIALS

Brazilian mahogany, Honduras rosewood, Macassar ebony, holly, cedar, maple and poplar.

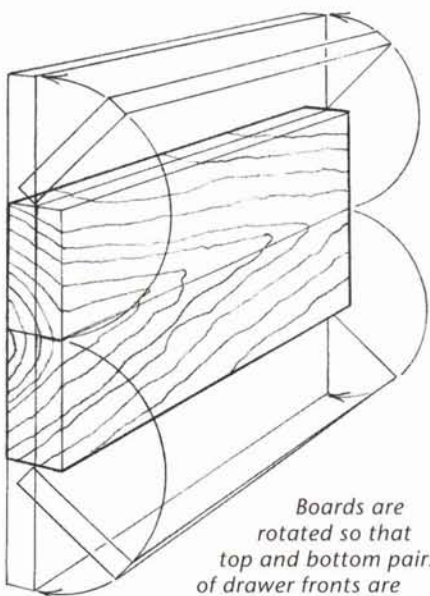
FINISH

Orange shellac on inside of case and drawer sides; Waterlox varnish on exterior.

BOOK-MATCHING DRAWER FRONTS OUT OF ONE BOARD



Solid board gets ripped in half lengthwise and then resawn.



Boards are rotated so that top and bottom pairs of drawer fronts are book-matched.



Book-matched drawer fronts have consistent figure.

Painted Redwood Bench

BY DON GREEN



Elegance without decoration. This redwood bench has little ornamentation yet lots of detail. The curved slats are offset by a corresponding curve in the lower stretcher.

benches are for brief stretches of sitting, so I had flexibility in the design of this piece. I could play with the form and not concern myself so much with the strict demands of seating. It had to “sit” well but only for a short time.

I probably went through 10 ideas about how the leg-and-stretcher system would work, visually and structurally, until I felt it harmonized with the top. I started by exploring ideas on

paper and then refined them in a series of full-scale mockups.

The shallow curves of the top and of the lower stretchers play off each other, as do the taper of the legs and the lengthwise taper of the top slats.

I decided to build the piece in redwood so that I could create an aged



quality to the surface. By sandblasting the horizontal surfaces of wood, rubbing in white paint and then sanding it back, the hard part of the grain shows through the paint. To soften the look, I also sanded through the paint along the hard edges. The diamond inlays of purpleheart add detail to the top of the bench and contrast nicely with the white background. ■

SPECIFICATIONS

DIMENSIONS

72 in. long, 21 in. deep and 18 in. high.

MATERIALS

Redwood and purpleheart.

FINISH

Oil paint.



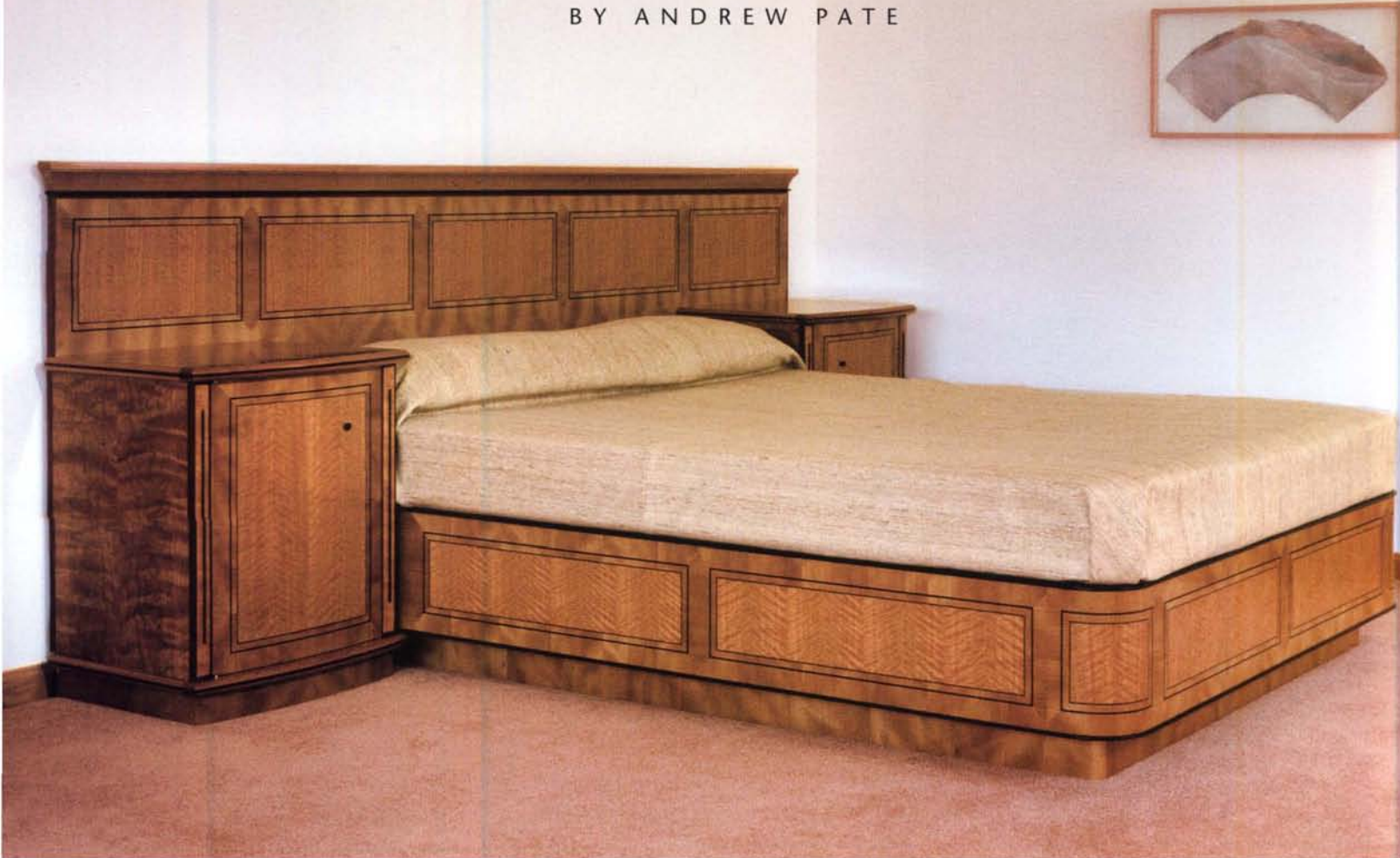
Inlays add color. The diamond-shaped inlays in the benchtop are made of purpleheart.



Grain stands proud. The author sandblasted this bench, then painted and sanded it, revealing a textured grain pattern.

Contemporary Bed with Herringbone Panels

BY ANDREW PATE



Precision and care. The author's bed displays adept use of several veneers and inlays that are cut in geometric patterns and follow the curve of the piece around edges and corners.

*t*he style of this bed and nightstands evolved from a library design for a recent customer. If I had to label it, I would say it has influences of Art Deco and Biedermeier.

My designs are strongly influenced by the growth of ideas from one com-

mission to the next. For example, the veneered herringbone panels, bull-nose edges, dominating cherry and decorative padauk and ebony came from the library design. In addition, I gain a great deal by uncovering materials from suppliers and working with their potential. The herringbone, for instance, was the result of a discovery of curly eucalyptus veneer.

A showpiece for wood and figure. The author dressed up his relatively rectilinear bed by curving the nightstand doors and the foot of the platform and by using a herringbone pattern in panels outlined by ebony inlay.

SPECIFICATIONS

DIMENSIONS

Headboard: 104 in. wide, $\frac{3}{4}$ in. deep and 42 in. high.

Platform: 61 in. wide, 81 in. deep and 14 in. high.

Nightstands: $21\frac{3}{8}$ in. wide, $16\frac{1}{2}$ in. deep and 27 in. high.

MATERIALS

Cherry, padauk, ebonized cherry, ebony, figured cherry and quartered cherry veneer, eucalyptus fields veneer herringbone, $\frac{3}{4}$ -in. maple plywood and medium-density fiberboard.

FINISH

Headboard and platform: conversion varnish.

Nightstands: Blond shellac French polish.



The bed was not fully designed until years after the library. Its conception and basic design sat for a long time until it was dusted off and finished in time for a local woodworking show.

Patience had its reward in this case. Several of the craftsmen who helped me with the library also assisted in the completion of this large and complex bed. I am often asked how long it took to make the bed. A couple of months was my simple answer. But in reflecting on the years of projects—particularly on the library, which offered me an opportunity to strive for excellence and led me to this bed—two decades might be more like it. ■



Decorative elements that don't fight. The red padauk accent, ebonized cherry bead, ebony inlay, cherry molding, figured cherry panels and blond cherry veneer borders meet near the corner of the headboard.

Walnut Chairs and Dining Table

BY HANK HOLZER



Furniture that flows. A series of curved and tapered parts are lightly linked together in the author's sprightly, dynamic dining furniture.

im intrigued by calligraphy. Not that I'm a master of the art, but I like practicing it. I love the flow of the lines, the way the elements of a character are delicately joined into a whole, the way a line runs from thick to thin with a flick of the brush. I tried to capture some of these qualities when I designed the chairs to go with this walnut dining table. I thought of each element—the hoop of the arms, the flared, split backsplat, the U-shaped seat rails—as strokes of a brush.

I wanted a chair that would engage the eye and keep it moving. I used curved forms to generate the motion. The eye will follow a curve, but it also likes a taper, and I made most of the curved parts of my chairs tapered as well. To make the tapered curves, I used bent laminations. This technique is strong and versatile and keeps the grain flowing around the curves along with the eye.

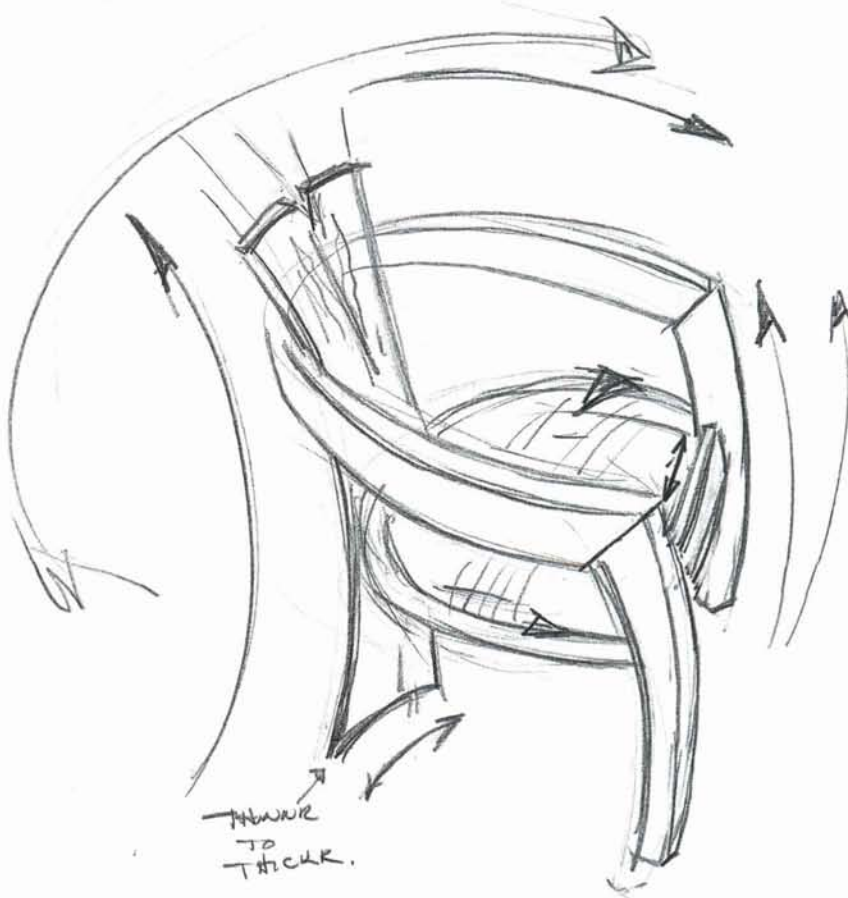
It's important for a chair to be inviting; I tried to make these chairs so that they entice you to sit. But I also wanted animation, a chair that almost looks like it could follow you around the room. To attain this whimsical appearance of movement, I avoided massive

joinery. Where the back meets the arms and the seat, I used connections and joinery that, though quite strong, give the appearance of parts that are just lightly touching.

I wasn't thinking of calligraphy and constant motion when I designed the dining table. The legs of the table, with their tapered curves, make a familial link with the chairs, but the table is more of an unfolding piece; its legs open out and upward like a tulip. ■

MAKING THE EYE MOVE

The chair's curves and tapers are designed to keep the viewer's eye in motion.



SPECIFICATIONS

DIMENSIONS

Table: 60 in. dia. and 30 in. high.

Chairs: 22 in. wide, 24 in. deep and 34 in. high.

MATERIALS

Black walnut, ebony and black leather.

FINISH

Catalyzed lacquer.



Lyrical charm from the 19th century. The author found the idea for this cherry Victorian washstand, with its elements based on treble clefs and bass clefs, at an antiques auction. He altered the structure but not the aesthetics.



Modest embellishment. Other than the curves, the washstand has little ostentation. Sparingly used maple inlays on the pulls and the drawer front balance the curves.

Victorian Washstand

BY ROBERT GRAVELL



*t*his piece began to take shape when my wife and I spotted an old Victorian-style washstand at an auction. The washstand had been painted black and was badly warped and cracked. In spite of its poor condition, the charm of its design was evident. The piece had a lyrical appearance. The curve of the front legs reminded me of a musical treble clef, and the scroll on the top of the backboard looked much like a bass clef.

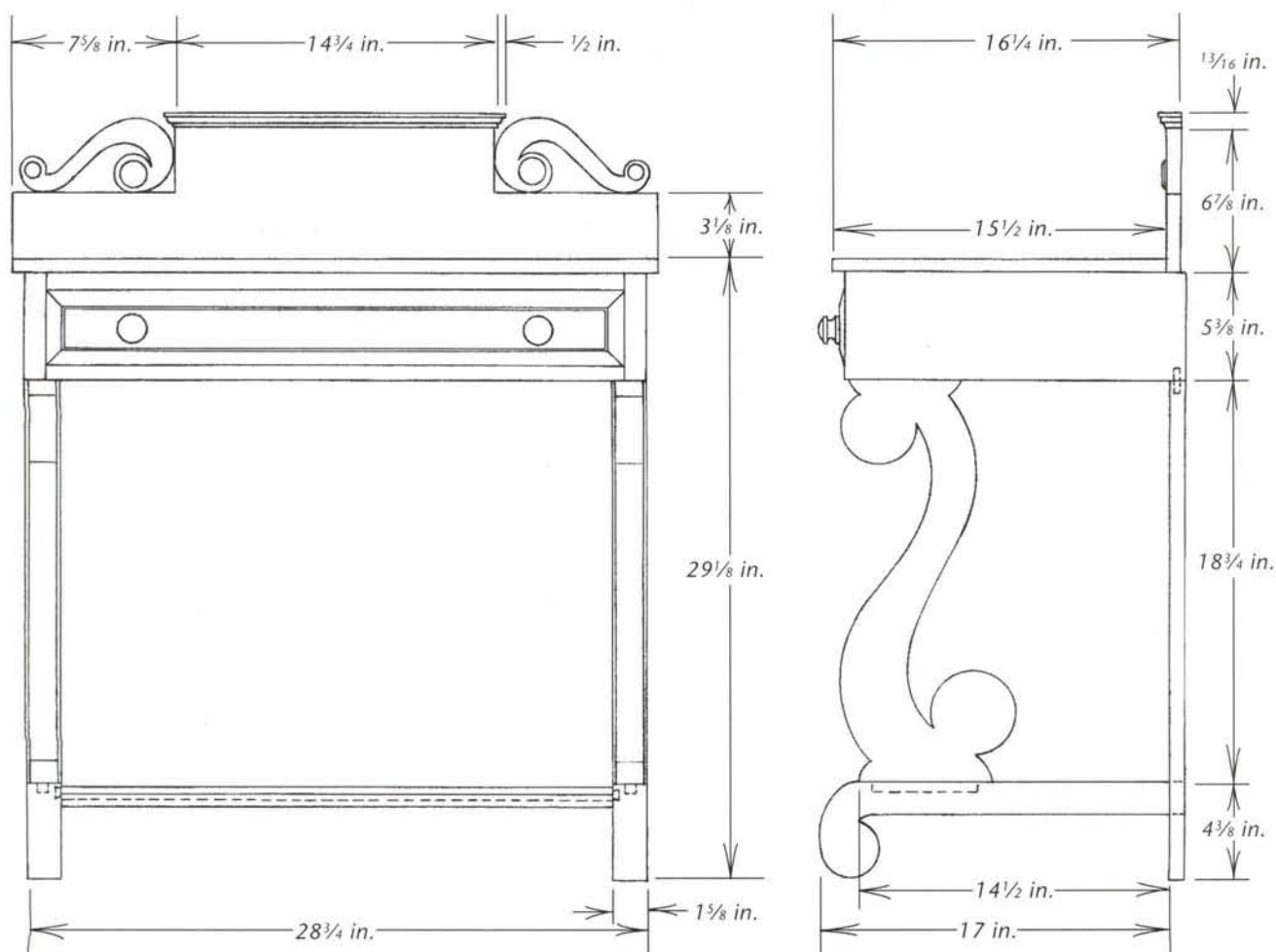
I was unable to obtain any information on the origin or history of the

Finished to be seen. Even though the washstand will most likely be placed against a wall, the author finished the backside as nicely as the front, but it is the only place where the joinery shows.

VICTORIAN WASHSTAND

The aesthetic design of the washstand was based on one the author saw at an antiques auction, but he improved the

structural design. The ornamentation is based on the treble and bass clefs used in musical scores.



washstand, so I made a sketch and later drafted plans to build a nearly identical stand.

I had two design goals: First, I wanted to allow the beauty of the overall geometry to speak for itself with minimal embellishments; second, it was important to provide for wood movement to avoid the warping and cracking fate of the piece we saw at the auction (see *How They Did It*, p. 100).

I chose solid cherry because of its lack of bold, detracting figure. I added a modest amount of maple inlay to provide small points of interest in the

upper section of the stand. I used the inlay sparingly so that I could maintain the overall impression of the design geometry and provide balance to the attention-gathering design of the treble-clef legs. A satin finish eliminated reflection and gave the piece a mellow, aged appearance. ■

SPECIFICATIONS

DIMENSIONS

30 in. wide, 17 3/4 in. deep and 36 3/16 in. high.

MATERIALS

Cherry and maple.

FINISH

Diluted cherry stain, Tung oil and wax.



Black boards, pure form. In a house full of modern art, the wenge dining table speaks with its deep color, elemental form and rough surfaces.

Wenge Trestle Table

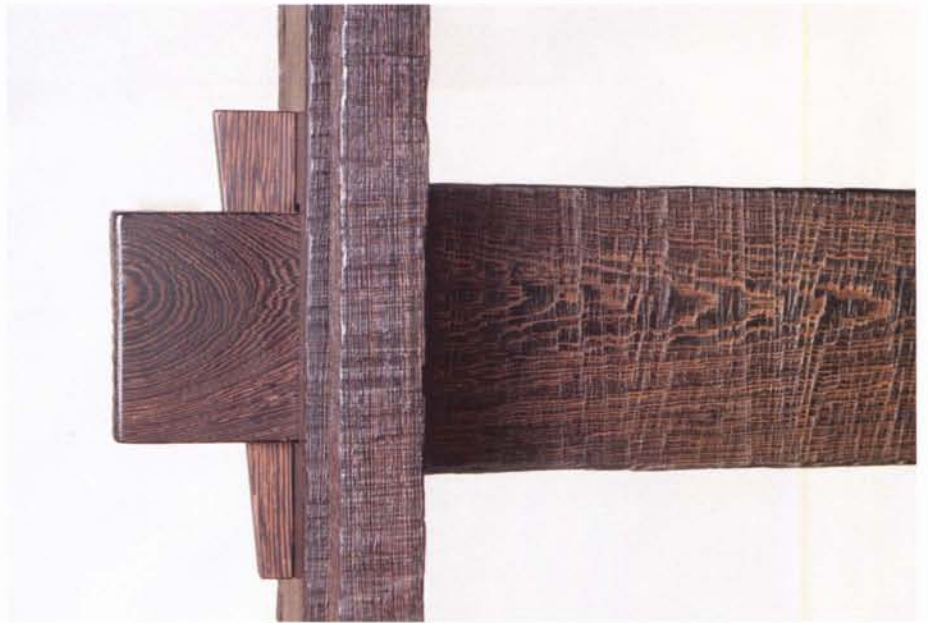
BY SCOTT SCHMIDT

the rough surfaces that give this table its character came right out of working the wood. Wenge can be brittle, it splinters easily, and with its alternating hard and soft grain, it works something like aluminum laminated to balsa wood. It often tears when it's cut, and I did the rough-cutting on an ail-

ing bandsaw that vibrated to the point of roaming around the shop. I hated the bandsaw, but I loved the sheared, torn surface the herky-jerky cutting produced. And I found that by holding the workpiece off the table a bit, I could obtain an even more sculptural

surface. A similar effect could be achieved on a stable bandsaw by putting a very slight kink in a blade with a pair of pliers and by backing off the blade guides a bit, if necessary.

The rough edge looked particularly good when the adjacent surfaces were smooth and burnished. Here was a



Rough me up. Wenge is smooth when finished but tough to work. The table expresses that contrast, pairing smooth surfaces with rough-cut ones.



detail that expressed the wenge paradox: This wood looks placid and feels wonderfully smooth when it's finished, but it's a rascal to work.

I knew the table would need to live well in a room where there was a large, dark marble fireplace, wood floors and a wonderfully eclectic collection of artwork. There were also children and parties and any number of informal gatherings to be considered, so the table would have to be unafraid of use and expandable to accommodate 10 or 12 diners.



Like an old pair of jeans. The table's leaves fit snugly in the strong, silky-sliding extension arms the author designed.

I sought something of the strong lines and architectural quality of the Craftsman style in my design. After the sturdy, straightforward trestle shape was set, the biggest question was material. My customers and I decided to find a dark wood with pronounced grain. I had been doing quite a bit of work in wenge at the time and was painfully aware of its working characteristics. We chose it, nevertheless, for its beautiful color, for the graphic effects of its grain, for its durability and for its gleaming smoothness in use (see *The Finish Line*, p. 20, for a description of the finish).

I wanted to take advantage of flat-sawn wenge's attractive steely brown and black figure, so I ran the tabletop's grain lengthwise and cut the leaves at each end from the same boards as the top. To support the leaves without introducing a lot of massive hardware, I designed a system of slotted extension arms that accept battens screwed to the underside of the leaves (for details on this arrangement, see *How They Did It*, p. 99). When the leaves are in place, the wenge's dark but definite grain is continuous from one end of the table to the other. ■

SPECIFICATIONS

DIMENSIONS

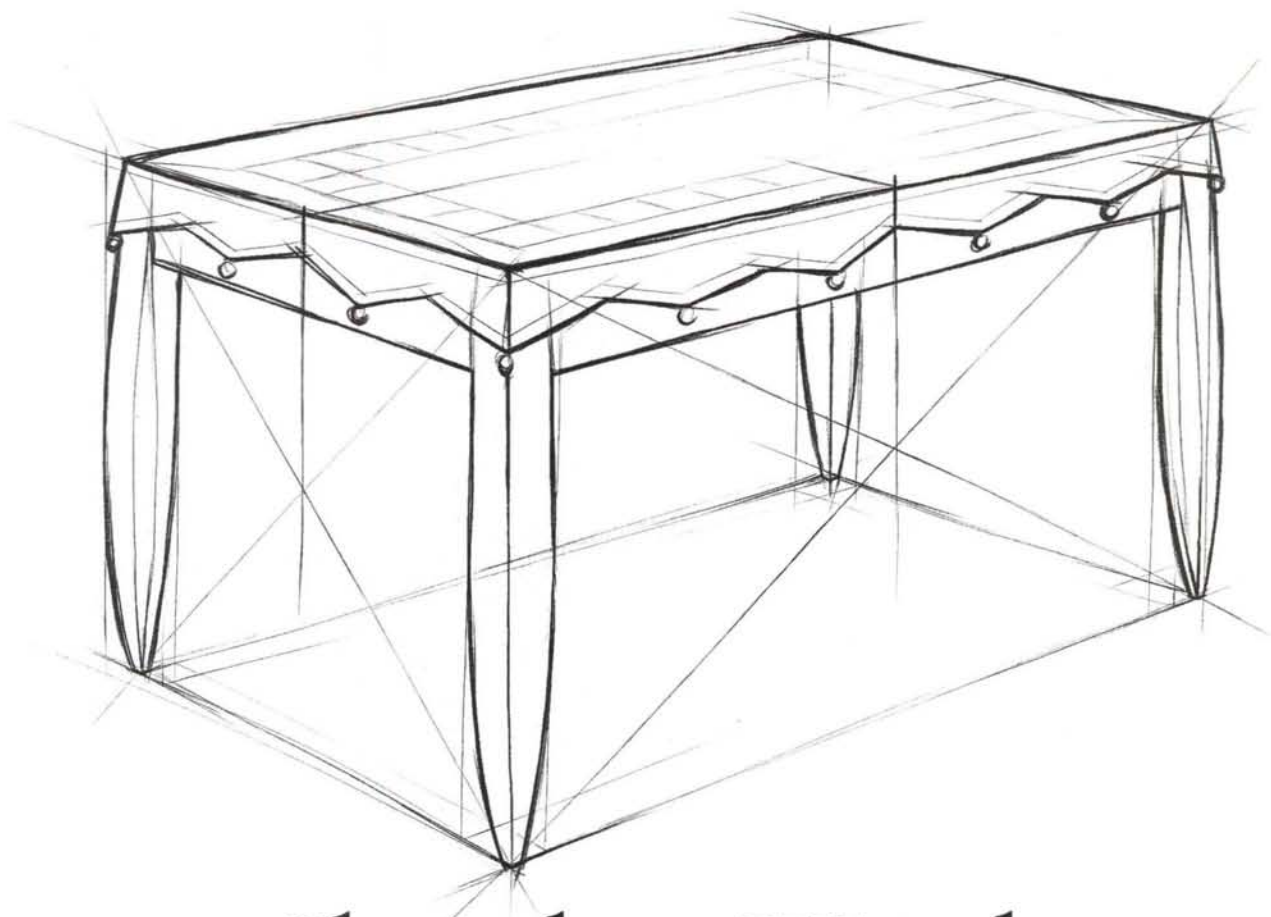
72 in. long, 38 in. wide and 29¼ in. high; leaves, 38 in. by 14 in.

MATERIALS

Wenge.

FINISH

Marine penetrating oil-and-varnish.



Sketches Worth a Thousand Words

A perspective sketch renders an object in 3-D

BY PETER DUDLEY

What you see is what you get. The perspective sketch of this desk (above) looks the same as the photo (right) of the finished piece.



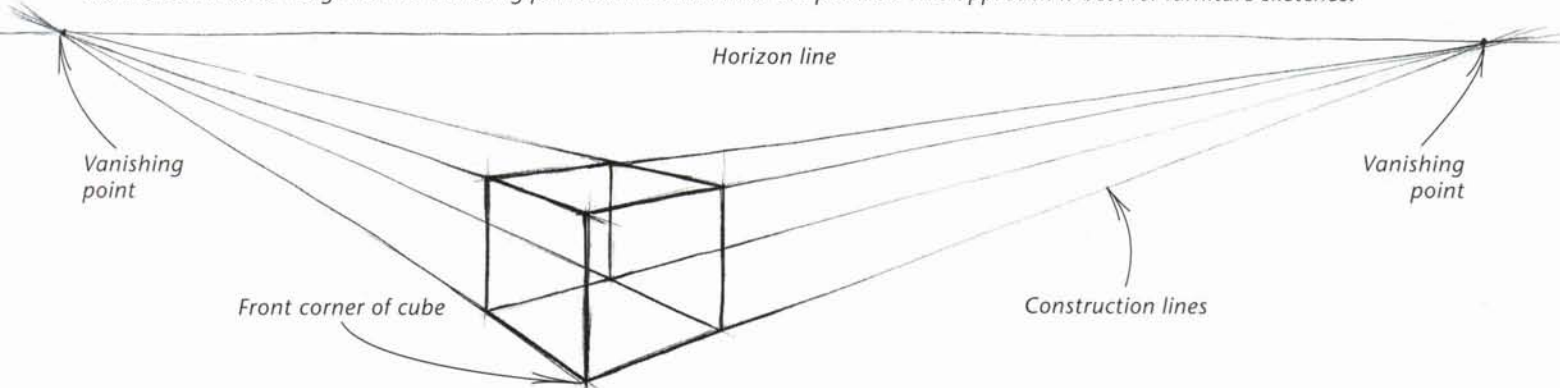
i once proposed building a residential library with nothing more than a perspective sketch that took about 15 minutes. With a simple pencil drawing I was able to produce a picture of how the library would look. The customer could see everything he needed to and agreed to my proposal and my price on the spot.

The perspective sketch is a way to see a piece of furniture as it will appear in reality. Some designers build models and mockups to see (or sell) their ideas in three dimensions. But model-

THREE KINDS OF PERSPECTIVE

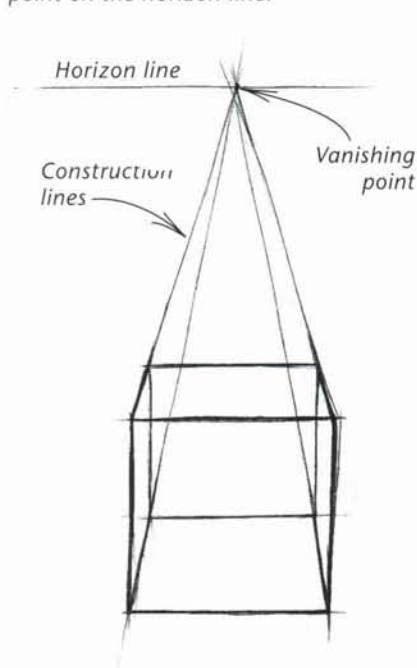
TWO-POINT PERSPECTIVE

Horizontal lines converge to two vanishing points. All vertical lines are parallel. This approach is best for furniture sketches.



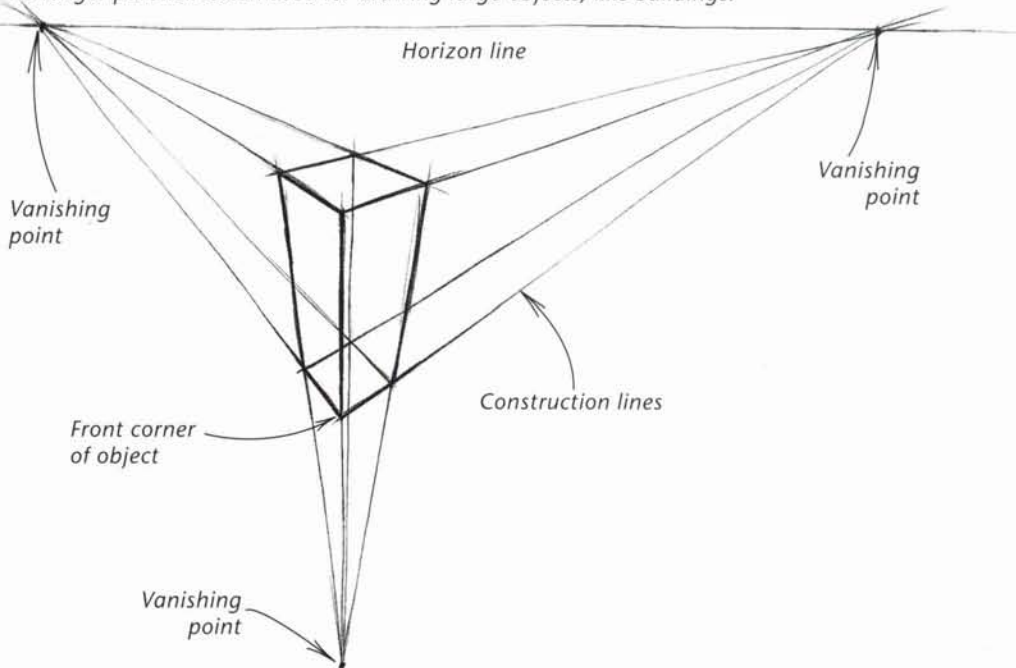
ONE-POINT PERSPECTIVE

All lines converge to a single vanishing point on the horizon line.



THREE-POINT PERSPECTIVE

Horizontal and vertical lines converge to three vanishing points, and vertical lines are no longer parallel. Often used for drawing large objects, like buildings.



making is time-consuming and often adds far too much to the cost of a piece to make it worthwhile. A sketch, if done right, can do the same thing.

Sketching in perspective takes practice. Like finding your way around a new town, you may get lost in unfamiliar areas when you first start drawing three dimensionally, but in time it will become second nature.

WHAT IS PERSPECTIVE?

The theory behind a perspective drawing is simple: Objects appear larger as

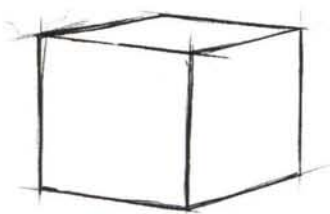
they get closer and smaller as they get farther away. Think of how a photograph captures railroad tracks disappearing to a point on the horizon. We know the tracks are parallel, even though they appear to converge to a vanishing point. Drawing in perspective is a method of rendering objects the same way. By making parallel lines converge toward the horizon, a perspective drawing tricks the eye into "seeing" three-dimensionally.

There are three kinds of perspective drawings: one-point, two-point and

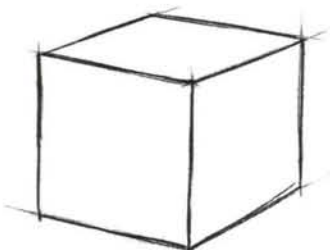
three point perspective (see the drawings above). The method most commonly used for drawing furniture is two-point perspective, in which the object is viewed at an angle, and horizontal lines recede to two points on the horizon.

Like orthographic projections, perspective drawings may contain any amount of detail and can be measured to reflect an object accurately. The detailed three-point perspective drawing is hardly ever used in furniture design (it is much more common in

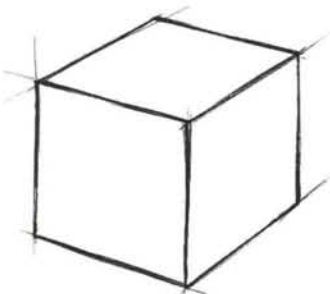
CHANGING THE HORIZON LINE



When the horizon line is low, you see less of the top surface. If the horizon line were below the object, you would see the bottom of the box.

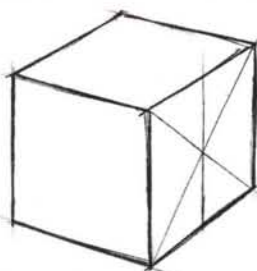


As you raise the horizon line above the viewing level, you see more of the top surface.

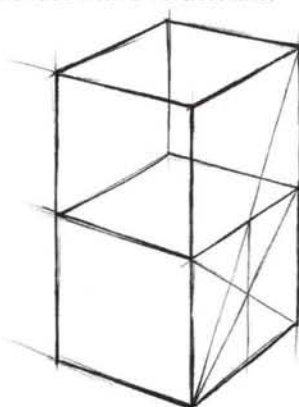


A higher horizon line shows even more of the top.

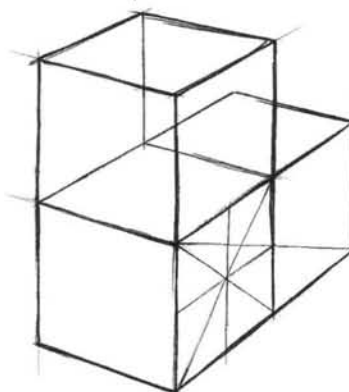
MULTIPLY A CUBE



Sketch a cube and use diagonals to find the center of one face. Bisect the face with a vertical line.

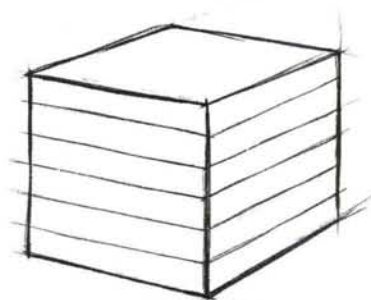


Draw a diagonal through the midpoint to locate the top of the second cube.

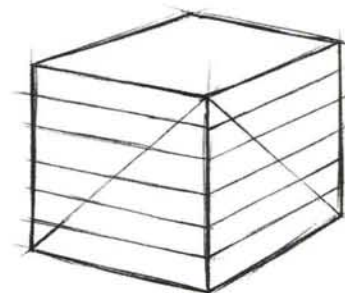


Use the same procedure to build another cube alongside the first.

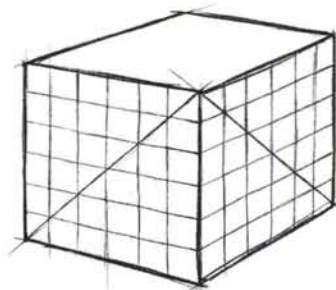
DIVIDE A CUBE



Sketch a cube and divide the front corner into equal parts. Scaled vertical measurements may be taken only from this front edge. Project these points to the vanishing points.



Draw a diagonal from the top corner of one face to the bottom.



Draw parallel vertical lines where this diagonal intersects the horizontal lines. Use this guide as a ruler to scale an object.

architectural illustrations). The two-point perspective sketch, on the other hand, can be a quick, lifelike rendering.

MASTERING THE CUBE

Practice is essential to thinking and sketching in perspective, and the best place to start is with the cube. Cubes are simple objects that display drawing errors immediately.

Before you start drawing, it is helpful to make a small cube (5 inches to 6 inches square) from cardboard or plywood. Draw a grid on the cube and place it on a table about 2 feet away, turned to a 30° angle. Close one eye and look at the cube while sitting, with your eye level about 12 inches to 18 inches above the table. The lines on the cube will appear to get smaller and

converge to a horizon line at the far end of the table or beyond. As you raise or lower your eye level, the horizon line will go up or down.

Start drawing the cardboard cube using the grid as a guide. First sketch the horizon line and the vertical front edge of the cube. Then draw in the construction lines that converge to the two vanishing points and then fill out the

rest of the cube. In two-point perspective, all vertical lines should be plumb and parallel, and the horizontal lines on both sides of the cube must converge to only two vanishing points.

Once you understand the mechanics of perspective, quickly sketch a succession of cubes at different angles and eye levels by raising and lowering the horizon line (see drawings on the facing page). Keep the sketches large—no more than six or eight on a page—and don't worry about wide variations in your results. Everyone has made ugly drawings at one time or another, and with practice you will improve.

FURNITURE BUILDS ON CUBES

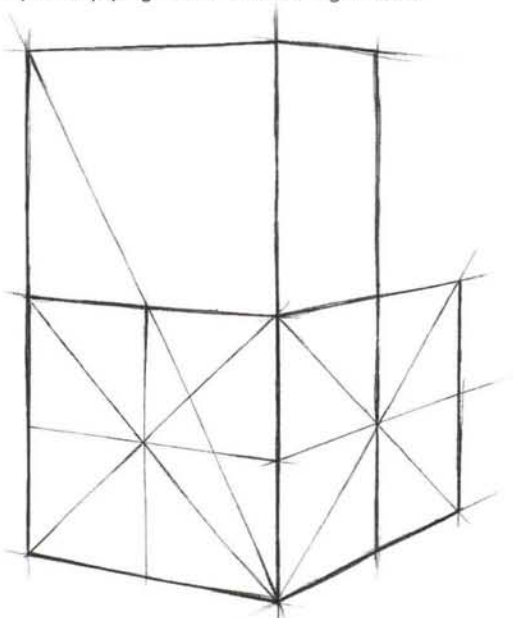
As you learn to sketch furniture in perspective, I recommend starting all your drawings with a cube. Think of the cube as a transparent crate into which you are going to put a piece of furniture. But because furniture is rarely cubelike, you will probably need to construct irregularly sized rectangular boxes from stacks of cubes. Don't panic. This is easy. By connecting diagonal and vertical lines, you can make any shape of rectangular box you need to hold a particular piece of furniture (see drawings on the facing page).

For a simple example, try drawing a Shaker-style chest of drawers (see photo and drawings at right). Start by drawing a cube and think of it as half the height of the chest. Then draw another cube on top of it, half as deep (you can draw two cubes on top of one another and remove half). Remember, this is a sketch, so it doesn't have to be perfect.

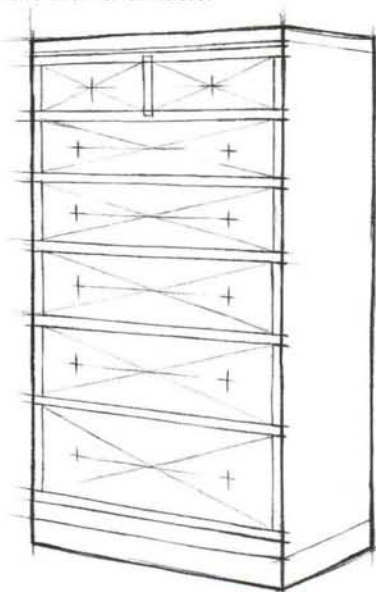
Once you have the outline of the chest, mark off the drawer dividers, the base and the top molding on the front corner and draw lines back to the vanishing point. It is important to remember that the only place in the drawing you can accurately measure is the vertical line representing the front corner of the cube. In two-point perspective, the rest of the object becomes distorted as it converges to the horizon line.

FROM CUBES TO FURNITURE

To sketch this chest of drawers, draw a rectangle by multiplying and then dividing a cube.



Measuring off the front corner, determine the placement of the base, the molding and the drawer dividers.



Once you have a fairly good representation of the piece, you can trace it onto a new sheet of paper without the cube and all the construction lines. Trace the drawing as many times as you need to see new dimensions or proportions. I often use my first sketch as a pattern for others by tracing the basic outline onto a new sheet. I never have to restart the drawing from



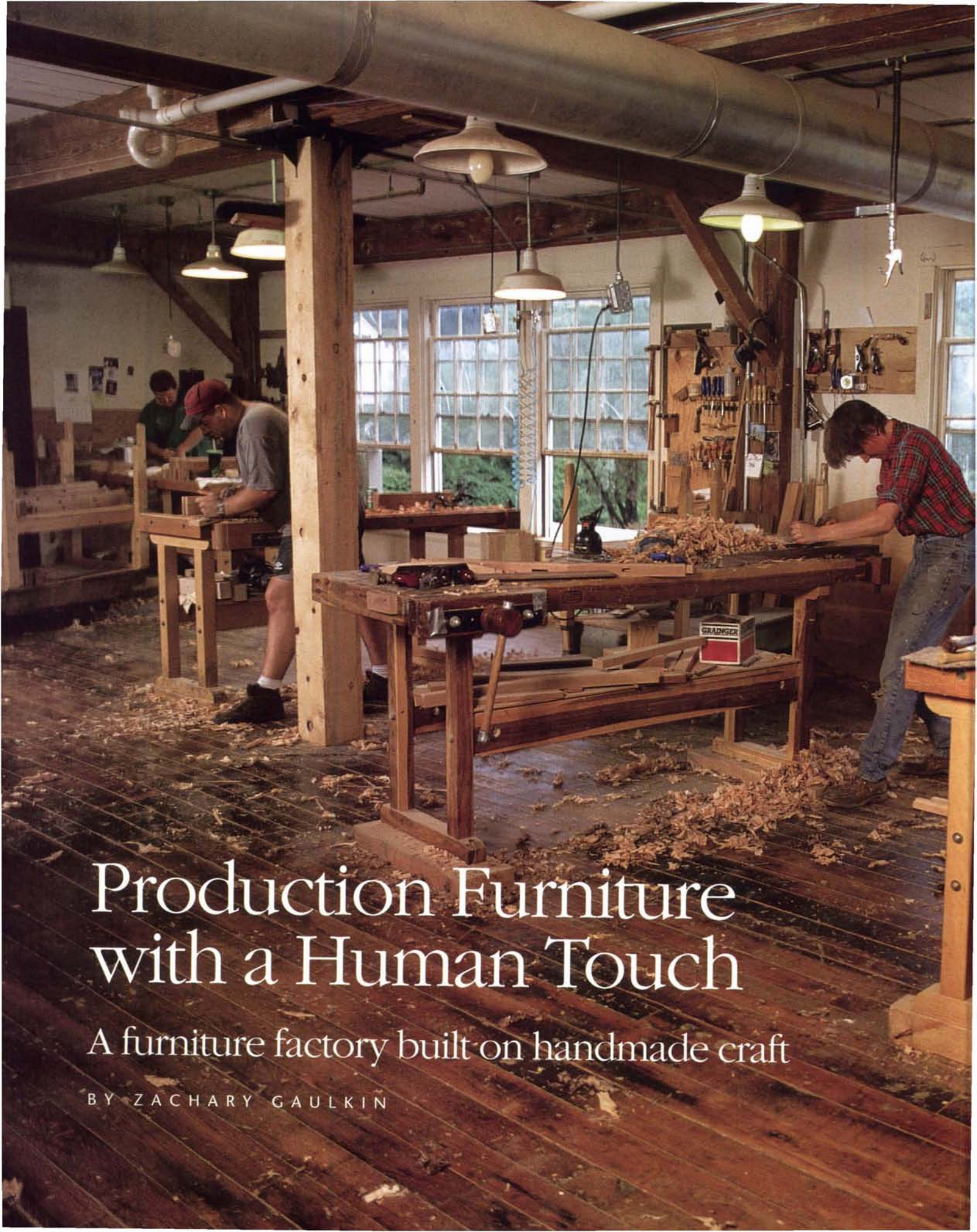
Finally, trace over the previous drawing. Add the details and leave out the construction lines.



scratch, and I can keep individual sketches to compare versions and show customers their options.

Keep in mind that these are sketches, not measured drawings. In time, drawing and dividing the cube first will become unnecessary. ■

Peter Dudley teaches furniture design at Parson's School of Design in New York City.



Production Furniture with a Human Touch

A furniture factory built on handmade craft

BY ZACHARY GAULKIN



to get an idea of the kind of furniture that inspires Charles Shackleton, look no further than a rustic children's chair he found on a recent trip home to Ireland. It's a gimpy little thing, charmingly askew, with whittled legs and a roughly woven seat. Beaming at his find, he says, "In order to have value, furniture must convey a human feeling, and this chair has as much feeling as finer work."

Shackleton's own furniture is the American cousin of that little Irish chair. More refined, perhaps, but unafraid to display the wanderings of the human hand. This—rather than flawless technique—is what makes objects desirable, he says, and lots of people seem to agree: The Shackleton shop builds about \$170,000 worth of furniture, retail, every month.

Humming with hand tools. The pace is hectic at the Shackleton shop, where traditional benchwork accounts for the bulk of the production process.

The goal of the craftsman, he adds, should not be to duplicate with the hand what machines can do better. It should be to boast those features that machines cannot duplicate—the errant line, the imperfectly flat surface, the subtle defects of the human touch.

Other furniture makers might critique the sometimes crude tool marks, but Shackleton is adamant about this essential ingredient in his furniture. "American woodworkers are obsessed with technique. I believe a customer decides whether they like something within the first three seconds of looking at it and touching it, not because they see a perfect dovetail joint and say 'Oh, how lovely.'" One veteran furniture maker who knows Shackleton says, "A lot of woodworkers make furniture for other woodworkers. Charlie makes furniture for the buying public."

WHY COMPETE WITH MACHINES?

Shackleton was born near Dublin, Ireland, and from an early age he pursued handcrafts as a profession. He went to



A lesson in craft. "Every furniture maker in America should...visit the shop where this chair was made," Shackleton says. It's crude, but he says it has as much value as finer work.

art school in England and learned glassblowing, then went to work for Simon Pearce, an Irish glassblower. Pearce soon migrated to America and opened a studio and shop in Quechee, Vermont, and Shackleton followed.

After a few years working as a glassblower, Shackleton left Pearce to build furniture. His first efforts were simple, Shaker-like pieces, but he realized early on that he could not compete with larger, faster and more experienced

makers. His solution was to scale down the level of polish, to enhance the handmade aspects of his work, the telltale flaws that made it clear the furniture was not made in a factory. Laboring to make a piece perfect also makes it look manufactured, at least to many customers, so why bother?

AN INSTANT DEMAND

Every craftsman needs a break to get started, and Shackleton's came from

his relationship with Pearce. One of Shackleton's first pieces was a bed for his sister-in-law, and Pearce asked him to make another for his showroom in Quechee. It sold immediately, becoming the first piece in what fast became a wholesale pipeline. More than 90% of Shackleton's furniture today is sold wholesale through Simon Pearce and other retailers.

In less than a decade, Shackleton's furniture shop has grown from a one-man basement studio to a 25-employee operation (including two full-time upholsterers) occupying three large floors of a historic mill in Bridgewater, Vermont. In the last two years, the shop has more than doubled in size. It now produces 60 different pieces—chairs, cupboards, beds and tables—each carefully planned to be made quickly and yet still display the mark of the hand tool.

Amid this rapid growth, Shackleton's approach to building furniture remains the same. Recently, when some customers marveled at the rippled surface of the rounded, hand-planed headboard of a sleigh bed—a "second" that was not quite up to scratch—Shackleton realized again that rough is sometimes better than smooth. His workers now leave the facets made by the hand plane rather than spending time to make the surfaces perfectly round.

The hand-hewn style of the furniture seems appropriate to the designs—a blend of New England "country," Shaker and English Arts and Crafts. The sparing forms often are decorated with simple carvings—another opportunity to infuse the personality of the maker. The furniture also is thoughtfully designed for large-scale production. Chairs are made with interchangeable parts (like seats), and accessories are designed to recycle offcuts into new products. Everything is made of domestic hardwoods—cherry, walnut, red oak and ash. Figured woods play no role, in part because of the difficulty of building multiples with unique grain patterns.

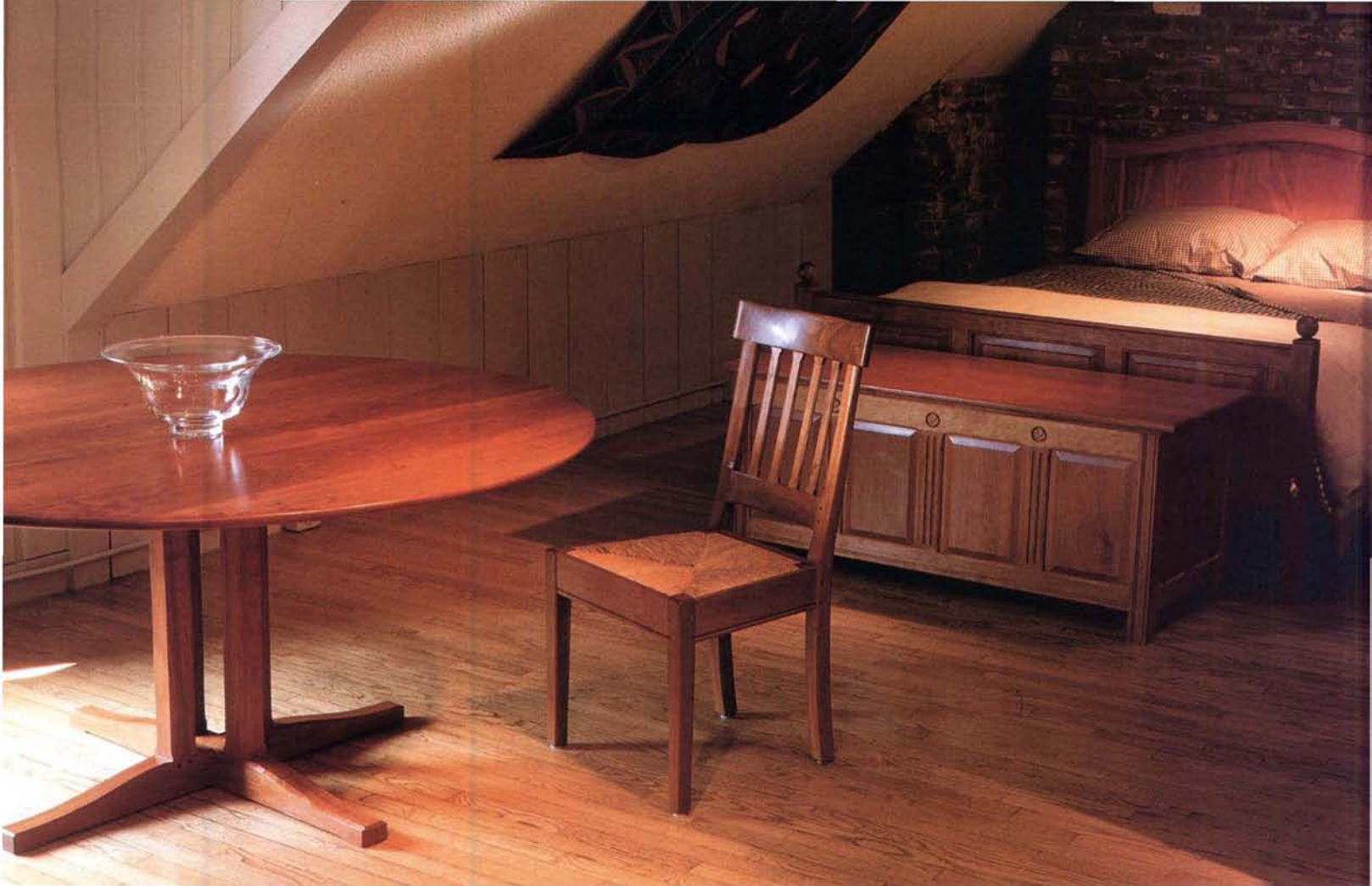


Old building, young shop. Anton Belov is one of many newly trained woodworkers in their 20s who occupy the Shackleton furniture shop in Bridgewater, Vermont.



MODERN SHOP WITH AN OLD FEEL

The human touch of Shackleton's furniture, which he describes as a piece's "wandering feel," should be something that is pleasing for a person to own in part because it was enjoyable for the craftsman to make. Most of the parts are roughed out by machine, but they come to life locked in a bench vise, where a young furniture maker attacks them with hand tools: carving,



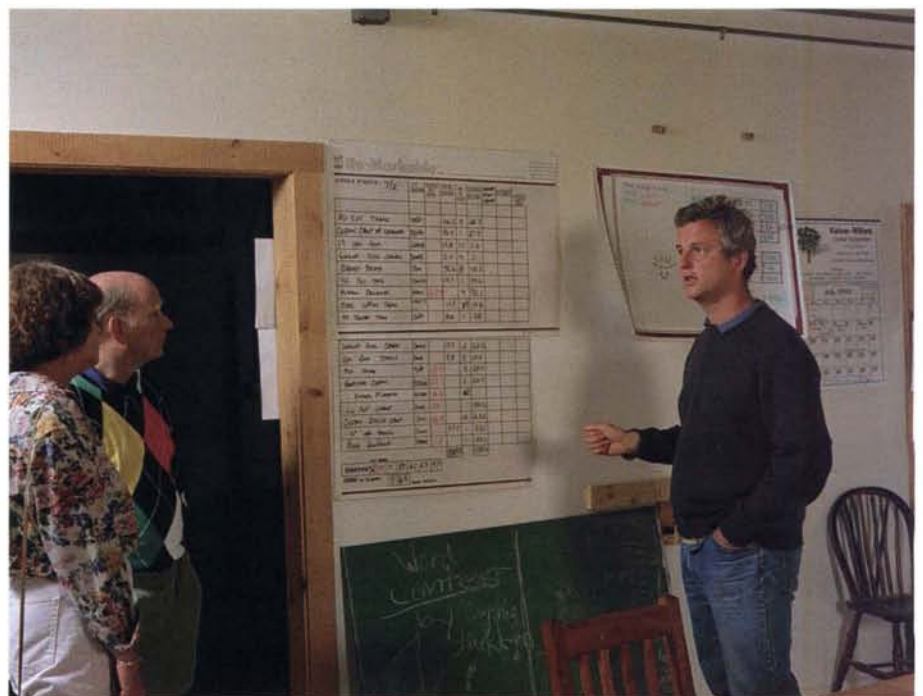
A wholesale pipeline. Shackleton started by selling his furniture through Simon Pearce, a chain of retail stores specializing in blown glass and other handcrafts. The pieces shown here are in the Quechee, Vermont, showroom of Simon Pearce, a few miles from Shackleton's shop.

The books are open. Production deadlines as well as profitability are posted and open to all. Here, Shackleton explains the company to customers visiting the shop.

gouging and planing so that no two pieces will ever look the same.

The second floor of the shop buzzes with young people at traditional workbenches surrounded by in-progress furniture. Like a farm team for budding furniture makers, all but three of the woodworkers are in their 20s, and most had little or no woodworking experience when they arrived.

The furniture is built in production teams, with a leader who oversees the



whole project (it could be one cabinet or 20 chairs). Each team leader is responsible for getting the pieces done on time and enlists other furniture makers to help at various stages. The person who's in charge of the run signs every piece.

In a business that depends on volume, deadlines are critical. A large bulletin board lists all the pieces under construction, how much time is allotted for each and the actual time it took to build. To keep on schedule and preserve the bottom line, employees have an incentive to work fast. If a run of furniture is made faster than planned, the added profit goes into an employee fund, which is often used for buying personal tools.

It is a kinetic, sometimes crushing pace, and the furniture makers work hard for a modest wage. On the other hand, there are few opportunities elsewhere to learn how to build furniture and get paid at the same time. In fact, Shackleton views the shop as a kind of school (novices get a diploma after their first year working in the shop). He loves to teach, and his employees get to see every aspect of the business, which means opening the books for anyone who is interested. They work in the office, order materials, respond to customer requests and are encouraged to come up with their own designs and production techniques for the continually evolving line of Shackleton furniture. New employees often move up quickly through the ranks, from sanding furniture parts to organizing an entire production run. Shackleton somewhat bashfully admits that many of his employees have become better at making his furniture than he ever was.

HOW BIG CAN YOU GET?

Shackleton now spends most of his creative time designing new pieces—one of the benefits of running a production business. "Having ideas is the whole battle," he says, and everyone takes part, especially the customer.



Handwork is the essential ingredient. Bill Tastleton, 20, carves the trademark curl in the headboard of a sleigh bed. "Furniture should be fun to make," Shackleton says.

Specialty work often turns into a prototype for a new chair or table, which is then modified and marketed; it's difficult to walk through the shop without tripping over something new. "I happen to like making lots of the same thing," which means plenty of opportunity for refinement if an idea doesn't sell.

There are some drawbacks to having a shop largely composed of novices.

Mistakes are made, and Shackleton sells the "seconds" sometimes at a discount. But there is also a corresponding vitality, a youthful vigor that shows in the work. "It's a bit like a school," Shackleton says. "You've got to allow for things to go wrong, but fundamentally I think things will go all right." ■

Zachary Gaulkin is an associate editor at Home Furniture.

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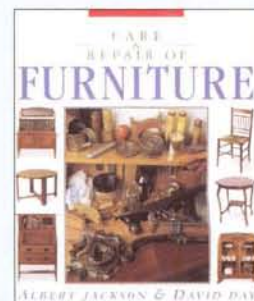
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how they did it

Some furniture makers in this issue have developed unusual or innovative techniques that are important to the success of their projects. How They Did It illustrates those techniques.

COOPERED DOORS REQUIRE A GOOD JIG

There are two secrets to making the coopered doors on my “Mahogany Federal Sideboard” (p. 66): a core of quartersawn wood with consistent grain direction for easy planing, and a good jig for the glue up.

The simple clamping jig uses a filler piece on one end and opposing wedges on the other end to press the staves of the coopered panel together. The jig consists of $\frac{3}{4}$ -inch plywood clamping stations fixed to a base of flat plywood (or MDF) at 8-inch to 12-inch intervals.

I bandsaw clamping stations in a stack to create identical forms for the outside curvature of the staves. The clamping stations must be parallel to each other, so I lay out their positions on the base and screw them onto the base from underneath.

The curvature of the jig depends on the final shape of the doors and the width of the staves. If you want to be precise, check out your setup by making a full-size drawing that includes the actual stave width. To further ensure a tight fit in the cabinet, however, I find that it is much better—and easier—to trim the rails and top and bottom of the case to the door, rather than trimming the door to fit.

The size of the door on this sideboard required only two clamping stations. Larger doors with longer staves might demand more stations. Also, as shown in the photo,



The cooper's art. Coopering is taken from the craft of making wooden casks and tubs. Coopered doors for the sideboard (left) were made in a simple, two-station form (below).



I doubled up the plywood for each station, but that was overdoing it.

The door started with an $8\frac{1}{4}$ poplar board, which I jointed and surfaced to $1\frac{1}{4}$ inches. I ripped it into $\frac{7}{8}$ -inch staves, which are folded out in book fashion. The edges are then ripped to the approximate coopering angle and hand-planed to fit the form. The edge joints are all glued

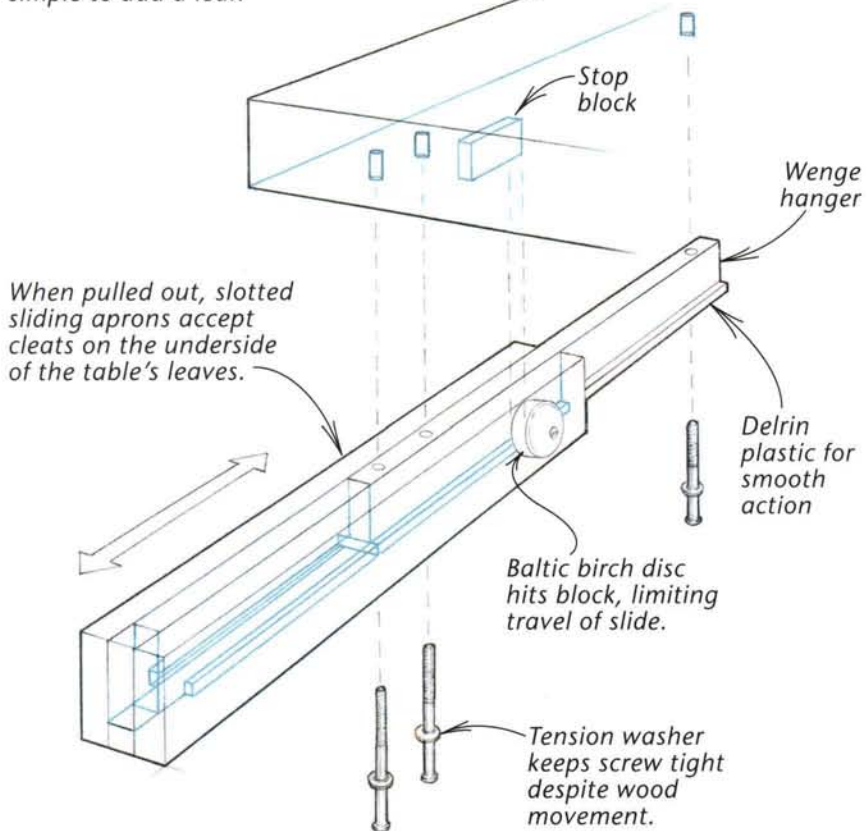
at the same time and are clamped with the aid of wedges at one end of the form.

After the glue sets, the outside of the core is planed with the grain and spokeshaved across the grain. The inside of the core is shaped and smoothed with a round-bottomed scrub plane and spokeshave.

—Lance Patterson

CUSTOM SLIDES FOR AN EXTENDING TABLE

Strong, smooth-sliding mechanism makes it simple to add a leaf.



CUSTOM SLIDES FOR AN EXTENDING TABLE

A dining table's leaves come out of hiding when the whole family gathers, so there's a bit of ritual around the act of putting them in place. Unfortunately, the act is often an ugly one, with people tugging in vain at opposite ends of a table, diving to hold up a suddenly

unsupported expanse of mahogany, or groping for hidden cam locks. I wanted to make the act of adding a leaf to be a pleasure, so I designed an extension system for my "Wenge Trestle Table" (p. 83).

To avoid all the problems of a table that splits in the center, I decided to add a leaf at both ends. I arrived at the idea of having a pair of cleats screwed



Simplified table leaves. The leaves on this table drop into slots in the sliding aprons to make the table longer.

to the underside of each leaf. Each cleat would fit snugly into a slotted sliding apron. I had been working with extruded metal U-channel on another project, and it occurred to me that I could make the same shape in wood and achieve the strength and rigidity this job demanded. I made a long, T-sectioned hanger, which is screwed and glued to the underside of the table, and a mating slide with a T-shaped channel. When the slide is pulled out, the leaf's cleat drops right into it. I fitted the slide with a stop and an end block, both very carefully positioned, so the leaf is a pleasingly snug fit.

I made adjustable stops to limit the travel of the aprons. Each stop had a block screwed and glued to the underside of the table, and a disk of Baltic birch screwed to the apron. I put the screw through the disk off-center, so it acts as a cam to permit

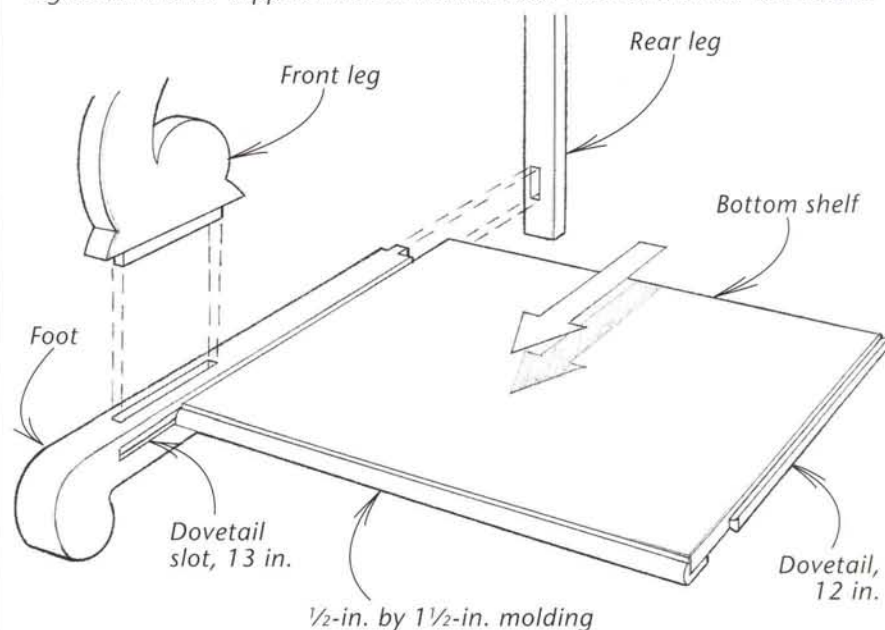
fine-tuning. I glued leather to the block where the disk made contact.

I made all the visible parts of the mechanism of wenge. However, for the crossbar of the T, a thin piece that must glide smoothly and take a lot of stress, I used Delrin, a tough, slippery plastic akin to Teflon but very dense. I've also used phenolic in this application, but Delrin is easy to plane, drill, saw and even joint with woodworking tools. I used tension washers, which are slightly cone shaped, to make certain the hanger screws would stay tight.

—Scott Schmidt

WASHSTAND SLIDING-DOVETAIL ASSEMBLY

The shelf slides into the dovetail slot on the foot. Then the rear leg is attached to the through-tenon on the rear of the foot board. The front leg tenon is then slipped into the mortise near the front of the foot board.



SLIDING DOVETAILS ALLOW FOR MOVEMENT

The original antique washstand that I used as a model for my "Victorian Washstand" (p. 80) was badly cracked on the top and the shelf because the maker did not allow for seasonal wood movement. To allow for wood movement, I used a twofold approach. First, I made the wide top relatively thin— $\frac{5}{8}$ inch—to reduce the amount of shrinkage and the force required to restrain cupping. I then used conventional tabletop hardware to allow for movement.

For the lower shelf, which cannot

hide such hardware, I made it even thinner than the top— $\frac{1}{2}$ inch. To give the appearance of thickness, I used a piece of molding across the front edge of the lower shelf. Then I used sliding dovetails to provide for movement across the width of the grain (see drawing above). I made the dovetail on the side of the shelf 12 inches long. With an extra inch in the dovetail slot—it is 13 inches long—the wood can expand in summer humidity and contract with winter dryness. The dovetails on the lower shelf also keep the stand from racking.

—Robert Gravell



No cracks here. The author planned for wood movement by keeping his surface boards thin and by using a sliding dovetail joint.

MAKING A DOUBLE-TENON BRIDLE JOINT FOR DOOR FRAMES

The double-tenon bridle joint is an attractive joint and stronger than the more common single-tenon bridle joint because of the added gluing surface. It's also more complicated to cut on the table saw, particularly when the doors are curved and the rails are stepped, as they are in my "Bowfront Ash Credenza" (p. 42).

Cutting the tenons on a table saw requires shims, or spacers, to index the various cuts. (I made my spacers out of Masonite, cardboard and wide masking tape.) For the curved rails, you'll need to make a special curved block to keep the pieces properly aligned (see drawing below).

This can be a dangerous technique if not done properly. Although I did not do this myself, I would highly recommend using a tenoning jig (you can make one that slides along the



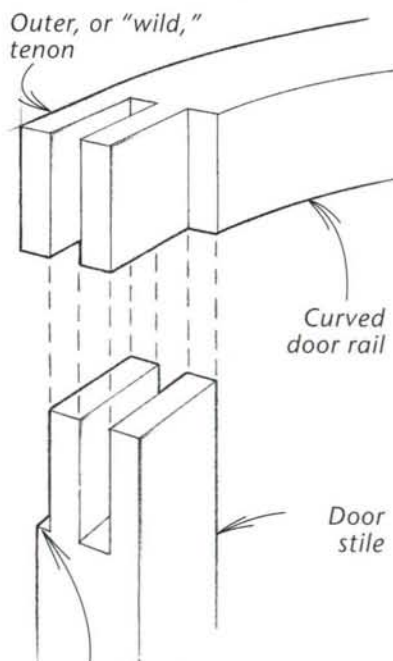
A strong door joint. The double tenons on this bridle joint increase the gluing area and strengthen the bond.

fence) to hold the workpiece, the curved block and the shims securely.

Here's the sequence of cuts: I set the saw fence so that the first pass defines the shoulder and one side of the tenon. (This cut also determines the amount of the reveal, or step.) For the

DOUBLE TENON BRIDLE JOINT

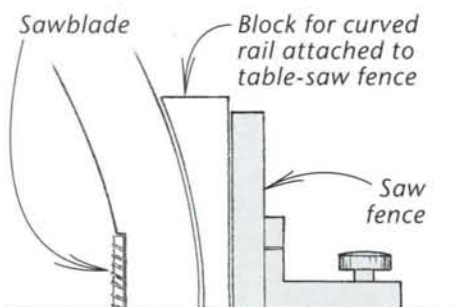
Twin tenons add gluing surface, making this a strong joint.



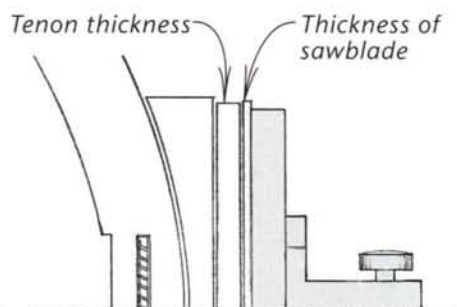
Outside shoulder is narrower than mating tenon, producing a step in the door frame.

USING SHIMS TO CUT A DOUBLE TENON

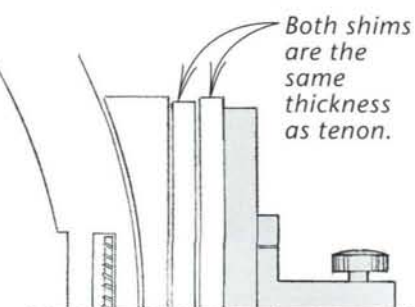
First cut defines shoulder of inside tenon. A tenoning jig (not shown) can be made to hold block and shims in place.



For second cut, two shims are added. Saw fence and blade height are unchanged.



The final cut establishes the open mortise and the outside, or "wild," tenon.



second cut, I placed a tenon spacer and a saw-kerf spacer between the workpiece and the fence. The third cut is made with two tenon spacers, leaving the remaining outside, or “wild,” tenon (see drawings on p. 101).

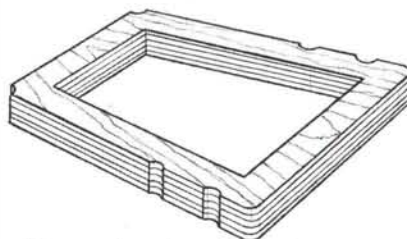
If you are going to do this yourself, keep in mind that all the cuts on each piece are done with the same face registered against the fence. Also, if the inner face of one piece (a rail, for example) is against the fence, then its mating piece (the vertical stile) should be positioned the opposite way, so that the outer face is against the fence. To keep the joints consistent and to avoid building twist into the doors, I cut both ends of each piece before changing the setup.

—Nicholas Goulden



A seat stronger than solid wood. A frame cut from plywood gives this chair's upholstered seat extra rigidity.

BALTIC BIRCH SEAT FRAME



Plywood makes a seat frame with greater structural integrity.

A STRONG SEAT FRAME CREATES A RUGGED CHAIR

My “Armchair in English Chestnut” (p. 68) relies on its seat frame to lock the parts together into a rigid structure. So I needed a strong, stable frame that wouldn't be weakened by the bolt holes I would drill through it. Instead of making a traditional stile-and-rail frame of solid wood, with joints right where I needed bolt holes, I laminated three pieces of Baltic birch plywood together and cut the frame shape from them.

I made a template of ½-inch medium-density fiberboard and then used a shaper with a flush-cutting bit to cut out the pieces of plywood. Then I glued the pieces together in a stack, making a ring several inches wide and 1½ inches thick.

I coved the frame where each of the legs crossed it, letting in the legs part way to achieve maximum contact. Then I installed threaded inserts (Rosann nuts) in the legs and put cap head screws through the plywood frame and into the threaded inserts. Leather upholstery over the top and sides keeps the frame hidden.

—Thomas Throop

AN OFF-CENTER TURNING FOR A SPLAYED FOOT

The method I used to make the splayed foot on my “English Library Stool” (p. 64) is an easy one and can be used to add a lively, unexpected twist to any type of leg (see photos below and on the facing page).

I started by turning the round tapered center of each leg, leaving the top and bottom square. The top section remains square for attaching the aprons. On the bottom square, I



A lively leg. Splaying the feet makes the legs on this stool more animated.



Foot is off center. The center part of the splayed leg is turned on the lathe. The rest is cut out on a bandsaw and shaped by hand.

drew the shape of the splayed foot and roughed it out on the bandsaw, removing as much material as I could.

The final step was to shape each splayed foot with a spokeshave. I finished all of the feet with a rasp and sandpaper.

—Mario Rodriguez



Dressing the foot. The author uses a spokeshave to give each foot its final shape.

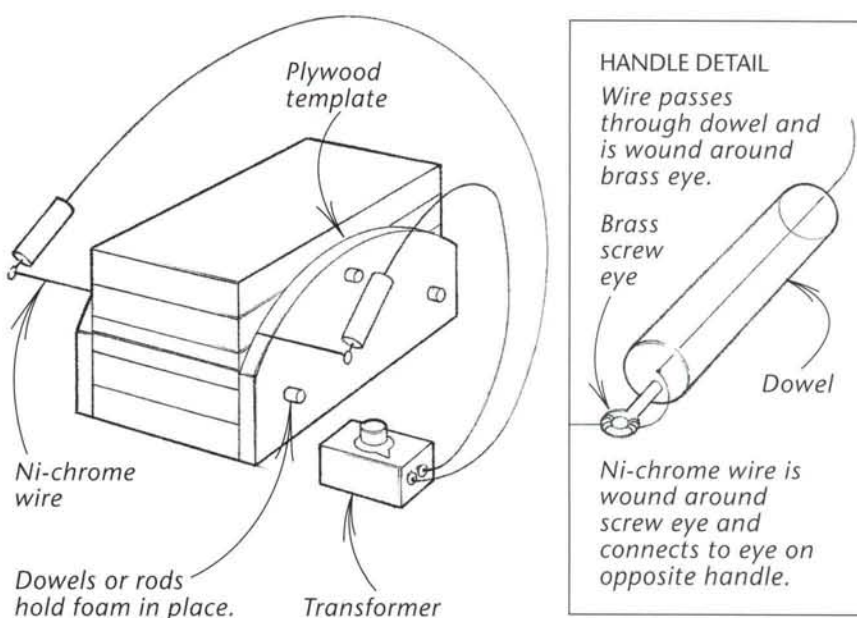
FOAM FORMS FOR COMPOUND BENDS

To achieve the unusual shape of my “Tiered Container for Small Carvings” (p. 56), which is curved on every surface but the bottom, I laminated veneers over a positive form in a vacuum bag.

But how to make the form? Instead of stack-laminating a lot of wood and laboriously shaping it, I made my form with ordinary blue board—stiff Styrofoam insulation. First I glued up a stack of blue board with contact cement (water-based so that it doesn’t melt the blue board). Then I made a foam-cutting device from a traditional wooden-frame bow saw. I replaced

HOT WIRE CAN SHAPE A CURVED FORM

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the blade with a ni-chrome wire and ran insulated leads to a low-voltage transformer (the type used for model trains).

You can make a simpler device by stretching a length of ni-chrome wire between wooden handles (see

drawing above). Drive a brass screw eye into the end of each handle and attach one end of the ni-chrome wire to each screw eye. Then run wires from the screw eyes to a model train-type transformer. Use just enough juice to cut a scrap cleanly without great resistance.

I made a pair of mating plywood patterns and pinned them to both sides of the block of glued-up blue board. Then, with the ni-chrome wire taut, I simply dragged the wire along the patterns.

—E.E. “Skip” Benson



Odd shapes call for unusual measures. To make a bending form for a complex shape, like this container’s, you can use Styrofoam insulation cut with a hot wire.

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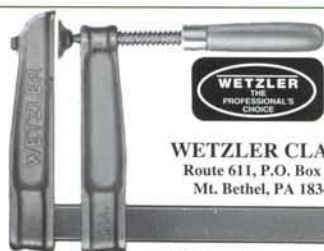
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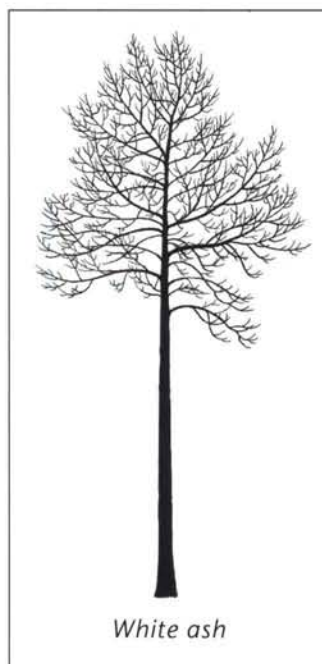


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WHITE ASH

After many years of hiking, canoeing and botanizing in the forests of the Yucatan peninsula in Mexico, I now find that all this time I should have been stuffing my pockets and boots with ash leaves. They're guaranteed to ward off snake bites, it is said. Although I've neglected to stuff my boots, I've never been bitten. Perhaps that's because I was often thinking of the ash. It is a tree of many tales—an ash is said to have been the original yule log—and of many species. All told, the world's population of ash trees exceeds 70 species, most of them growing in the Northern Hemisphere. In the United States there are 17 native species of ash, two of



White ash

which predominate in the marketplace. These are white ash, *Fraxinus americana*, the most plentiful species in the United States, and green ash, *F. pennsylvanica*. Because green ash has properties similar to white ash, the two species are combined and marketed as white ash. Other ash species also are frequently mixed in and sold as white ash, so it is difficult to know what species you are buying unless you can follow the tree from stump to sawmill. With this in mind, I'll describe the characteristics of the true white ash.

White ash trees have light-gray bark, which is covered with deep fissures and interlacing ridges. These stately trees,

2 to 4 feet in diameter, often have straight and clear boles rising 80 feet or more before branching, as if to say to lumberjacks, "Here are some *real* saw logs." The pinnately compound leaves each carry about seven leaflets. An ash makes a beautiful ornamental tree for street, park or garden.

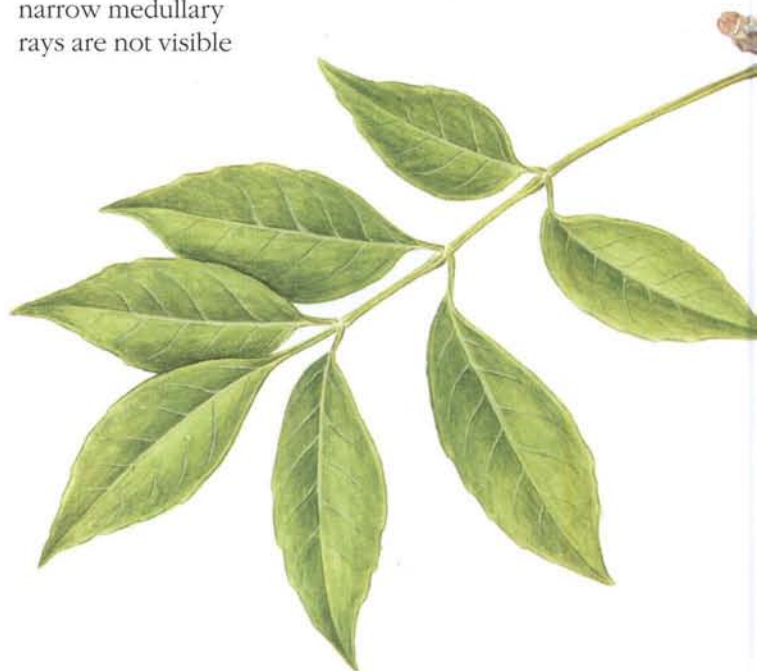
The wood of the ash is prized for its strength, hardness and stiffness. It also has excellent shock-resistance and bends exceptionally well. Ash is ring-porous like the oak, and if you are looking through a pile of rough lumber, ash and oak often look very similar. But ash differs from oak because its extremely narrow medullary rays are not visible

to the naked eye. Look at the end grain, and if you see any rays, you've got oak, not ash.

Ash is a pleasure to work. It can be planed to a glassy surface and takes glues and finishes very well. The uses of ash are many. It is used extensively for furniture and cabinets and has long been a favorite material for the handles of farm and garden implements; the way it wears smooth with use makes it especially attractive for this application. Along with hickory, it makes great baseball bats. Because it has neither taste nor odor, it is useful for food containers and wooden kitchen utensils. When green, it can readily be



Bark of an ash. Interlacing ridges and deep fissures characterize white ash bark.



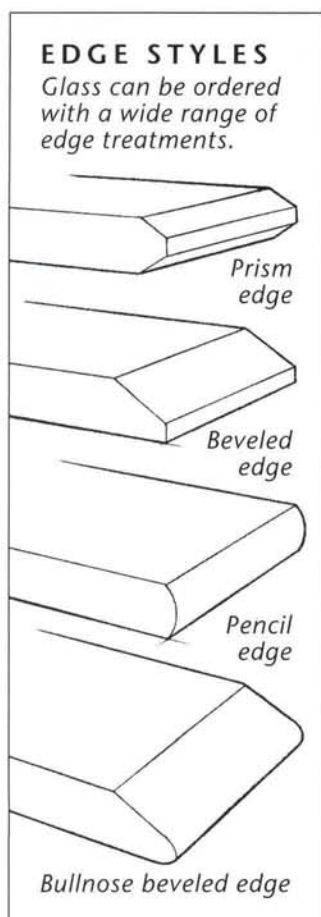
split for making baskets and for the seats and backs of country chairs.

Ash is admired abroad as well as at home. I recently watched a mountain of sawlogs flowing through a big mill in Indiana destined for the European market. But not to worry. There is plenty of ash to go around, as it reproduces well naturally and is also cultivated in plantations.

James H. Flynn keeps in touch with fellow dendrologists from his home in Vienna, VA.

TOPPING OFF A TABLE WITH GLASS

You use a glass top on a table when you want to see the base. But that doesn't mean the craftsman can look past the glass. The glass tops I used on my tables (p. 58) are surprisingly important to the appeal of the pieces. Whenever I show my tables, people always come up to them and feel the edge of the glass. I have the glass made with a pencil polish edge—a chamfer buffed to a high polish. One place I've found that consistently puts a good edge on the glass is **Fabricated Glass Specialties, Inc.** (P.O. Box 335, Talent, OR 97540; 503-535-1581). If I were getting a piece of glass with a flat-



polished edge, I would buy it locally.

When buying glass, I've found it important to give the glass vendor a solid pattern. I've tried paper, and I didn't get the shape I wanted. I make patterns with 1/4-inch Masonite or medium-density fiberboard. When buying by mail, I prepay and insure the shipping myself; that way, if the glass breaks, there's no problem getting reimbursed.

—Mason Rapaport

INLAYING METAL

To make thin string inlay, it's often easiest to use veneer turned up on edge; veneer 1/28 inch thick gives you a line 1/28 inch wide. I borrowed this idea for the brass inlay on my tables (p. 70). I bought brass in sheets, cut it into strips and epoxied the strips on edge into narrow grooves. I got the brass at a local metal supply house that sells 4x8 sheets of many metals in a variety of thicknesses. I bought sheets in three thicknesses, so I could vary the line weights of the inlay design. Even though I also used sheet brass to cover the shelves of the tables, I still didn't need anything like a full 4x8 sheet. The folks at the metal supply let

me nose through their scrap bin and buy what I wanted by the pound.

I've also tried this inlay technique with copper and pewter. I found that all three metals could be worked with woodworking tools (sometimes with metal-cutting blades), but it took some doing. Pewter was easily the most forgiving of the three, and brass the least. Even when I had to lay pewter into tight reverse curves, it went in easily and followed any slight irregularities. I cut the grooves for the brass inlay with micro end-mill bits chucked in my router. These bits are available from machinist supply catalogs.

—Jane Swanson



Brass beauty. Sheet brass inlaid on edge makes a sinuous line.

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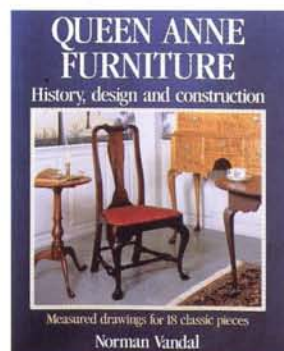
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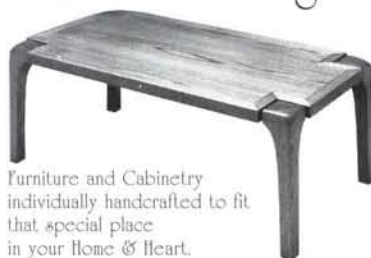
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about the furniture makers

Home Furniture prints the addresses and telephone numbers of the furniture makers featured in each issue, unless the maker requests that they be omitted.

PETER VAN BECKUM

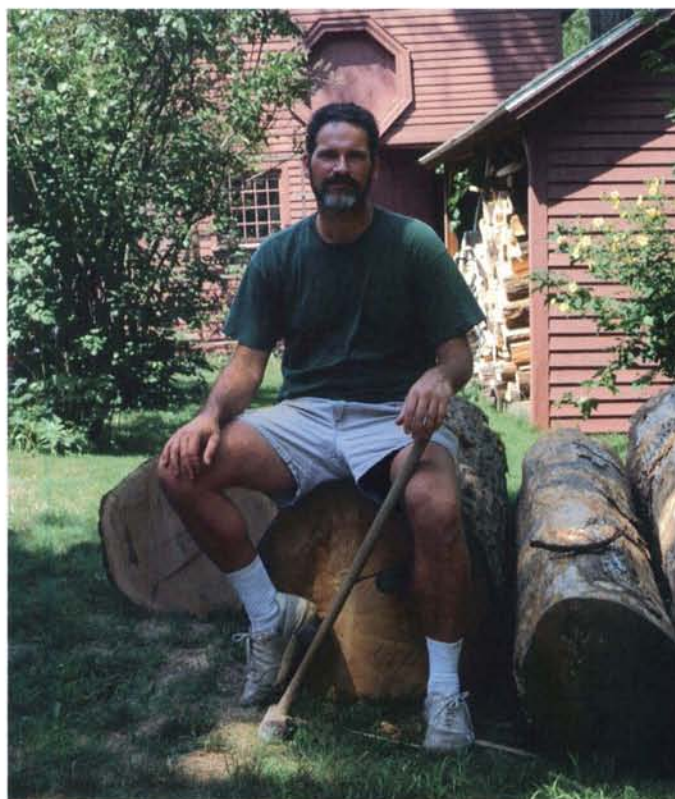
(right) makes custom and period furniture in the barn behind his house. A graduate of the North Bennet Street School in Boston, he was introduced to furniture making by his grandfather, a carpenter and cabinet-maker (20 Elm St., Unionville, CT 06085; 203-673-8431). "*Sheraton Armchair*" on p. 44.

E.E. "SKIP" BENSON

founded the wood design department at the California College of Arts and Crafts, where he taught from 1976 to 1985. Since then, he has been making furniture in his one-man shop (59 Mountain St., Camden, ME 04843; 207-236-6564). "*Tiered Container for Small Carvings*" on p. 56.

BILL BRACE

began his 10-year professional career in wood after spending three decades as a professor of geophysics at the Massachusetts Institute of Technology (49 Liberty St., Concord, MA 01742). "*Coved Walnut Display Cabinet*" on p. 46.



CURTIS BUCHANAN

has been building Windsor chairs since 1983. He learned the craft on his own, with tutoring from Vermont chairmaker David Sawyer. In a program funded by the Woodworker's Alliance for Rainforest Protection, he is helping establish a chairmaking shop in Honduras. He also conducts chairmaking workshops (208 E. Main St., Jonesborough, TN 37659; 423-753-5160). "*Birdcage Windsor Side Chair*" on p. 52.

BRUCE BULGER

was trained as an illustrator and continues to do figure drawing and landscapes, along with furniture making. He has been making furniture since the mid-70s. His shop is in an old school house, where he also has his studio and an art gallery (Seamark Designs, Box 118, Deer Isle, ME 04627; 207-348-9955). "*Built-In Bookcase*" on p. 61.

CARL CLINTON

built architectural millwork before enrolling in the cabinetmaking program at the North Bennet Street School in Boston. After a three-year stint with Walter Raynes in Baltimore, Clinton has been building reproduction furniture and cabinets (5901 40th Ave., Hyattsville, MD 20782; 301-699-3408). "*18th-Century Card Table*" on p. 50.

CHRISTOPHER FRANK

studied industrial design at Domus Academy in Milan, Italy, and has been designing furniture for five years. He teaches at the California College of Arts and Crafts and is co-owner of Cipra and Frank with Amy Cipra (2707 Eighth St., Berkeley, CA 94710; 510-654-7789). "*Maple and Metal Bed*" on p. 48.

RICHARD FROST

was teaching in Costa Rica when he realized how passionate he was about woodworking. Surrounded by great wood but lacking the tools to work it, he vowed to try woodworking as a career when he returned to the United States. He now designs and builds boats and furniture (33 Johnson Road, Falmouth, ME 04105; 207-781-2961). "*Demilune Tables*" on p. 54.

NICHOLAS GOULDEN

built custom homes before studying furniture making with James Krenov at the College of the Redwoods. He now builds custom furniture (Soaring Productions, 1528 Joan Dr., Petaluma, CA 94954; 707-765-2516). "*Bowfront Ash Credenza*" on p. 42.

ROBERT GRAVELL

is a retired mechanical engineer with a lifelong interest in woodworking. He operates a one-man shop, where he designs and builds custom furniture (1896 Willis Hollow Road, Shawsville, VA 24162; 540-268-5569). "*Victorian Washstand*" on p. 80.

DON GREEN

studied sculpture at the Philadelphia College of Art. He has been designing and building furniture for six years and operates a one-man studio (22 Prospect St., Delhi, NY 13753; 607-746-7095). "*Painted Redwood Bench*" on p. 74.

HANK HOLZER

has been building custom furniture since 1981. He worked as a chemist before pursuing his grade-school interest in woodworking (625 Western Ave., Seattle, WA 98104). "*Walnut Chairs and Dining Table*" on p. 78.

ANDREW PATE

is a mostly self-taught furniture maker who has been working at his craft for 25 years. He works alone in his 4,000-square-foot shop (Box 199A, RD3, North Road, Greenwich, NY 12834; 518-692-7676). "*Contemporary Bed with Her-ringbone Panels*" on p. 76.

LANCE PATTERSON

is an instructor of cabinet and furniture making at the North Bennet Street School and a furniture maker at a six-member cooperative (Fort Point Cabinetmakers, 368 Congress St., Boston, MA 02210; 617-338-9487). "*Mahogany Federal Sideboard*" on p. 66.

MASON RAPAPORT

studied furniture design as an apprentice to Roger Heitzman, a furniture maker in Scotts Valley, California. Then he moved back to the East and opened a one-man custom furniture-making business in an old mill building with other woodworking shops (One Cottage St., Easthampton, MA 01027; 413-527-8973). "*Curved Legs for a Coffee Table*" on p. 58.

WALTER RAYNES

has been designing and building furniture since 1978. His study of classical forms and techniques gained through conservation work on 18th- and 19th-century American furniture has influenced his designs and their construction (4900 Wetheredsville Road, Baltimore, MD 21207; 410-448-3515). "*18th-Century Card Table*" on p. 50.

MARIO RODRIGUEZ

is a cabinetmaker and teaches woodworking and antique restoration at the Fashion Institute of Technology in New York City. He offers workshops in 18th-century woodworking tools and techniques at his shop and is a contributing editor to *Fine Woodworking* magazine (Warwick Country Workshops, P.O. Box 665, Warwick, NY 10990; 914-986-6636). "*English Library Stool*" on p. 64.

SCOTT SCHMIDT

has been making custom furniture for 20 years. After attending art school, he restored Colonial houses and began making furniture (The Button Factory, 855 Islington St., Portsmouth, NH 03801; 603-436-6555). "*Wenge Trestle Table*" on p. 83.

JANE SWANSON

worked for several years in Philadelphia for other furniture makers, including Jack Larimore, before spending two years at the North Bennet Street School. She now runs her own furniture-design business (1102 E. Columbia Ave., Philadelphia, PA 19125; 215-425-1735). "*Side Tables Inlaid with Brass*" on p. 70.

THOMAS THROOP

was a restoration carpenter for four years. Then he spent two years studying furniture design at the John Makepeace School for Craftsmen in Wood in Dorset, England. He now operates a one-person furniture-making business (Black Creek Designs, 328 Governor St., East Hartford, CT 06108; 203-282-9094). "*Armchair in English Chestnut*" on p. 68.

PETER TISCHLER

is a cabinetmaker and chairmaker who specializes in solid-wood construction with traditional joinery. He is a graduate of the North Bennet Street School and contributes to *Fine Woodworking* magazine (4 Barnet Road, P.O. Box 744, Pine Brook, NJ 07058; 201-244-0703). "*Mahogany Dresser with Carved Pulls*" on p. 72.

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	LIST	SALE
Delta Sidekick 6-1/2"x40T5/8"	\$149	\$ 89
Sears 8-1/4" & Delta 8-1/4"x60T5/8"	\$170	\$ 99
Hitachi 8-1/2"x60T5/8"	\$179	\$109
DeWalt 8-1/2" & Ryobi 8-1/2"x60T5/8"	\$179	\$109
Delta 9"x80T5/8"	\$204	\$119
Ryobi-Makita & all 10"x80T5/8"	\$207	\$129
DeWalt, Makita, B&D, Hitachi 12"x80T1"	\$229	\$139
Ryobi-Makita 14"x100T1"	\$266	\$179
Hitachi 15"x100T1"	\$277	\$189

For good general purpose cuts use Woodworker II 30T & 40T or Woodworker I. Use small stiffener where possible.

WOODWORKER I - For TABLE and RADIAL SAW

This trim and crosscut ALL PURPOSE blade gives scratch-free polished cuts on all materials RIP or CROSSCUT UP TO 2".

- ALL 60T AND 3/32" THIN KERF 30° ATB and 5° face hook on 10" diameter and under. 12" and 14" are 20° ATB 1/8"K.
- DOUBLE HARDER and 40% STRONGER carbide.
- THIN KERF: Saves 1/3 wood loss on each cut, radial or table. Feeds easy when used for moderate rip and crosscut on table saw. Reduces "JUMP IN" for better "PULL CONTROL."
- Practically eliminates bottom splinter on RADIAL CROSSCUT.
- Totally stops ALL bottom and top splinter on ply veneers in push-cut mode on RADIAL.
- Our STIFFENER STRONGLY RECOMMENDED AGAINST outside blade for best cuts. Made and serviced in U.S.A. for your benefit.

	LIST	SALE
14"x60T1" 1/8"K	\$224	\$159
12"x60T1" or 5/8" 1/8"K	\$198	\$139
10"x60T5/8" 3/32"K	\$162	\$129
9"x60T5/8" 3/32"K	\$156	\$119
8"x60T5/8" 3/32"K	\$150	\$109
8-1/4"x60T5/8" 3/32"K	\$150	\$109
7-1/4"x60T5/8" 3/32"K	\$150	\$109

RYOBI RA200
SEARS TS200
MAKITA 500B NBA
HITACHI PSM8
PORTER CABLE 368-1

**SPECIAL COMBO SALE
EXTRA 10%-20%
OFF**

BUY 1 BLADE OR DADO AT **10% OFF** SALE PRICE, OR
BUY 2ND BLADE AT **20% OFF** (EQUAL OR LESSER VALUE)
15% OFF DADO AS SECOND CHOICE.

WOODWORKER II

With this one ALL PURPOSE blade you can RIP & CROSSCUT 1"-2" ROCKHARDS and SOFTWOODS resulting in a SMOOTH AS SANDED surface. PLY-VENEERS of OAK and BIRCH will crosscut with NO BOTTOM SPLINTER at moderate feed rates.

- DOUBLE HARD and 40% STRONGER C-4 CARBIDE
- Ends blade changing
- Ends scratchy saw cuts
- Ends second-step finishing
- Ends cutting 1/16" oversize to allow for RESURFACING
- BUY AND SHARPEN 1 BLADE INSTEAD OF 3

5/8" holes, boring thru 1-1/4" add \$7.50. Larger at Time Basis—Shipping \$4.50

WOODWORKER II	LIST	SALE	10%	20%
14"x40T1"	\$215	\$149	\$134	\$119
14"x30T1"	\$195	\$139	\$125	\$111
12"x40T1"	\$183	\$129	\$116	\$103
12"x30T1"	\$162	\$119	\$107	\$95
10"x40T1/8" or 3/32"	\$156	\$119	\$107	\$95
30T 1/8" or 3/32"	\$135	\$ 99	\$ 89	\$ 79
9"x40T	\$146	\$109	\$ 98	\$ 87
30T	\$125	\$ 99	\$ 89	\$ 79
*8-1/4"x40T 3/32"	\$136	\$ 99	\$ 89	\$ 79
8"x40T 3/32"	\$136	\$ 99	\$ 89	\$ 79
30T	\$115	\$ 89	\$ 80	\$ 71
7-1/4"x30T 3/32"	\$112	\$ 69	\$ 62	\$ 55
**6"x40T 3/32"	\$136	\$ 89	\$ 80	\$ 71

*NEW for Sears & Makita Table Saws **New For Saw Boss



**THE ONE BLADE THAT
LEAVES A SMOOTH-AS-
SANDED SURFACE!**

BUY OUR BEST SELLER 10" X 40T
FOR ONLY \$119 PLUS EXTRA
10%-20% OFF FOR COMBO SALE!

RECEIVE WITH EVERY
FORREST BLADE OR DADO LISTED,
9 SHARPENING COUPONS WORTH
\$5.00 EACH!

Outperformed 36 other premium blades,
both foreign and domestic!
WOOD® Magazine test, Sept. '93, pg. 45

ONLY
\$62 or \$50

NET COST TO YOU AFTER
USING SHARPENING
COUPONS

TRY A FORREST
CARBIDE BLADE
TODAY!

The Proof Is In the Cutting

Both Woodworker II blades performed very well, whether cutting through butter-soft 3/4"-thick pine or iron-hard 1 1/2"-thick ash. The 20° positive hook angle and 15° alternate top bevels give the blades an aggressive attack; we maintained a brisk, uniform feed rate while ripping a variety of woods on the powerful Unisaw and experienced no discernible resistance or slowing. On the smaller saws, switching to the thin-kerf blade allowed very similar feed rates, again with barely noticeable resistance.

Although we've used blades that cut faster, their cut quality couldn't touch what we got with the Forrest blades. On solid stock, ripped edges came off our saws jointer-finished, smooth and slick with no visible teeth marks—good enough to edge-glue without additional machining.

Crosscuts came out crisp and clean with no fuzzing or tiny splintering.

The Bottom Line

Performance of the Woodworker II is impressive enough that you could bolt this versatile, general-purpose blade on your saw and use it for virtually all of your cutting operations.

SHOP TEST, Woodworker's Journal
Nov./Dec. '95 pg.78

NEW DELUXE DADO-KING!



C-4 Carbide Tips — 4 on each chipper with special negative face hooks.

	LIST	SALE	10%	15%
6" D. 5/8" Bore NEW	\$299	\$269	\$242	\$229
8" D. 5/8" Bore	\$321	\$289	\$260	\$245
10" D. 5/8" & 1" Bore	\$389	\$349	\$314	\$297
12" D. 1" Bore	\$499	\$449	\$404	\$382

(Bore up to 1-1/4" Add \$25 — Plus \$5.50 S&H)

DURALINE HI-A/T FOR TABLE & RADIAL SAWS ALL FLAT FACE

Faster feed rates & absolute splinter control. Stops splintering on OAK/BIRCH PLY VENEERS & MELAMINE.

SIZES AVAILABLE	LIST	SALE	SIZES AVAILABLE	LIST	SALE
7-1/4"x60T3/32" K	\$149	\$129	12"x100T1-1/8"K	\$253	\$215
8"x80T1/8" & 3/32" K	\$202	\$169	14"x80T1"	\$232	\$197
9"x80T1/8" & 3/32" K	\$207	\$179	14"x100T1"	\$266	\$226
10"x80T1/8" & 3/32" K	\$207	\$159	16"x80T1"	\$262	\$223
12"x80T1-1/8"K	\$212	\$181	16"x100T1"	\$294	\$243

**SPECIAL COMBO SALE
EXTRA 10%-20%
OFF**

Above 1" bore standard.
CARBIDE IS THE HARDEST OF THE
C-4 GRADES AND 40% STRONGER, NOT WEAKER!
FOR 50% TO 300% LONGER LIFE.

Standard C-2 Carbide (below, left) and FORREST still sharp Oxidation and Corrosion Resistant Sub-Micron C-4 Carbide (below, right). Each shown after cutting 3,500 feet of MDF. Similar results obtained cutting particle board, melamine, and plywood.



**STILL SHARP
AFTER 3,500 FEET
OF CUTTING!**

BLADE DAMPENERS-STIFFENERS

FOR BETTER CUTS on all brands of blades, use our large 1/8" DAMPENERS-STIFFENERS against one side.

- Parallel and flat to .001
- Stop vibration, flutter, cutting noise, and blade ring
- Tryable and returnable for full cash refund.

4"	\$21
5"	\$24
6"	\$25

7" AND LARGER AVAILABLE
FULL RANGE OF OTHER INDUSTRIAL SIZES
REDUCES NOISE 50%-75%

WE RECOMMEND OUR FACTORY SHARPENING as some local sharpening creates problems with MICRO-CHIPPED EDGES reducing blade life & cutting quality.
3-5 DAYS ON THESE AND ALL MAKES OF FLAT FACE & CONCAVE CARBIDE TIP SAWS. Ship via UPS. Typical 10x40T \$15.00, 60T \$17.75. Add return UPS \$5.00, \$1.00 each additional blade.

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Fine American saw making & sharpening since 1946.

DEALER INQUIRIES WELCOME

home furniture

A sampling of the pieces featured in this issue.

