Fine Woodworking

Checkered Bowls

Winter, 1975, **$3.00**

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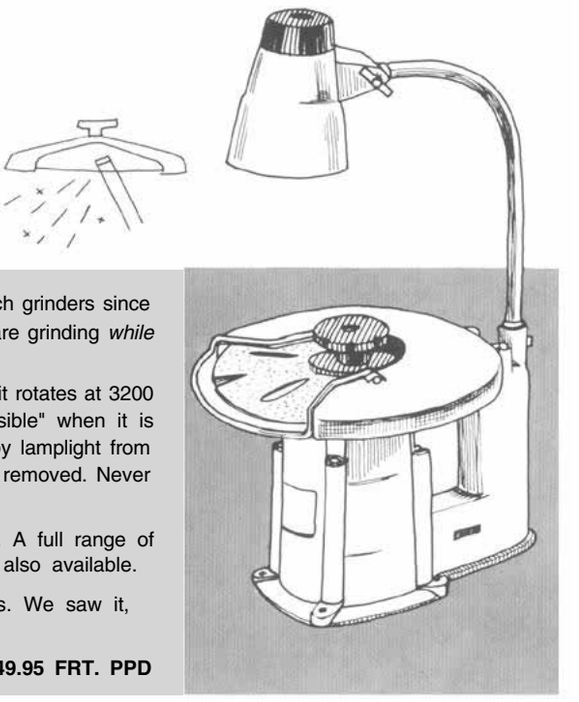

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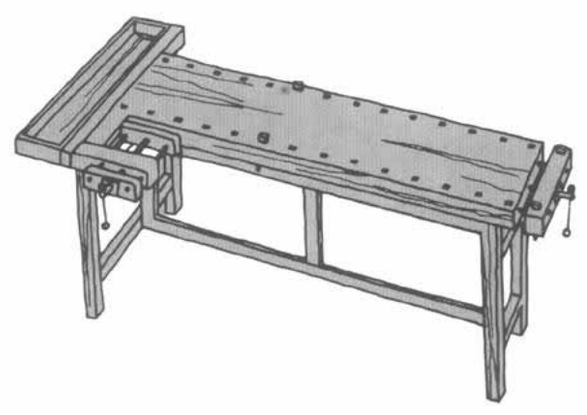

Fine tools, like other evolutionary processes, develop and improve with time. The Lervad model 610 is one such tool.

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610 - Lervad Woodworking Bench $279.00 F.O.B. Cleveland, shipped FRT. COLLECT

The Reisinger Carver's Knee and Carver's Screw was the idea of good friend and customer, Dutch Reisinger. The manufacturing is by Conover Wood Products of Parkman, Ohio.

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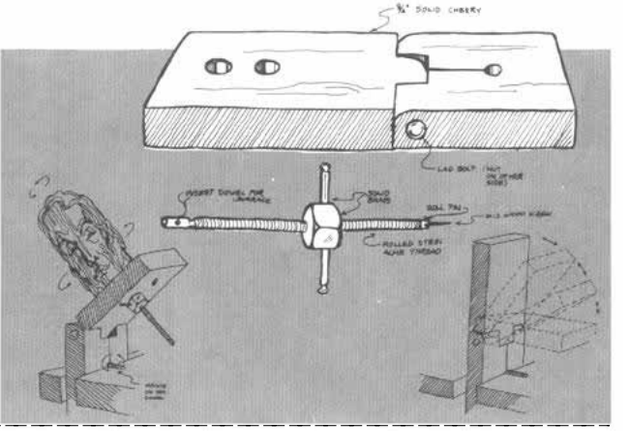

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Fine Woodworking

Winter 1975, Volume 1, Number 1

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Masterworks in Wood

Portland Museum builds Bicentennial theme around it

The Portland Art Museum is marking the nation's bicentennial anniversary with a year long series of exhibitions centered around the theme, "Masterworks in Wood." The Oregon institution chose wood because the state has no colonial heritage as such and because it wanted to point up the importance of wood, Oregon's principal natural resource, "as a medium of human expression of the highest order."

The exhibitions, which are the most ambitious in the museum's 83-year history, are bringing to Portland wood master-works representing some of the world's greatest sculptural traditions.

The series is in five parts, the first of which was held this fall and featured key sculptures in wood from the twentieth century.

During the Christmas season, the "Christian Tradition" will be the theme, with religious images in wood from the 12th century to the present included, as well as altar pieces, saints and religious events.

Late winter will see an exhibition on the woodcut print, and during the summer there will be a selective invitational exhibition of sculptures in wood and furniture by artists of Oregon and Washington.

The final exhibit, scheduled for late fall of next year, will explore the use of wood in Oriental art from the Han dynasty to the early nineteenth century, and will include 50 Japanese and Chinese masterpieces in wood.

Buffalo Craftsmen Mount 'Language of Wood' Show

Some 29 North American designer-craftsmen displayed their recent work in a wide ranging show called the "Language of Wood." It was jointly sponsored by the Buffalo Craftsmen, Inc. and the Charles Burchfield Center at the State University Campus at Buffalo. The show was held in late October and November.

Among the exhibitors were Wesley Brett, D.L. Valenza, Tage Frid, Alphonse Mattia, Sam Maloof, William Keyser, Doug Sigler, C.R. Johnson, Walker Weed, Wendell Castle, Nelson Delavan and Dennis Dorogi.

Buffalo Craftsmen is a large and active craft organization with workshops, exhibitions and services for professional and amateur artists, designers and craftsmen.

Students Build Drying Shed

Woodworking students at Rochester Institute of Technology near completion of a shed in which to air-dry furniture hardwoods that will be milled from trees found in the area.

Pine logs for the beams were squared on site, using an Alaskan mill attached to a large chain saw; floors and sheathing are red oak. Traditional barn joinery—pinned tenons and large dovetails-was used throughout. Begun in the spring of 1975, the entire project cost less than $3,000. Several students now plan to build their own homes by similar methods.

Wood Carvers Association Membership at Record Level

The National Wood Carvers Association now has a record 10,200 members according to its president, Edward F. Gallenstein.

The organization was started in 1953, but in 1965 still had only 470 members. By 1970, it had jumped to 3000, and now, over 10,000.

Annual dues are $5, which also includes a subscription to "Chip Chats," an informative bimonthly publication, now 40 pages long.

The wood carvers are organized into chapters covering practically every state; some states have more than one. The chapters vary as to activeness.

Each August the wood carvers sponsor an International Wood Carvers Congress jointly with the Great Mississippi Valley Fair in Davenport, Iowa. Last year a total of 127 carvers representing 34 states and Canada submitted 383 carvings for judging, a record participation.

For further information about the NWCA, contact Gallenstein at 7424 Miami Avenue, Cincinnati, Ohio, 45243.

Marquetry Society Exhibits at Metropolitan

The annual exhibition of the Marquetry Society of America was held this year in the 81st Street Gallery of the Metropolitan Museum of Art in New York. Some 140 pieces were submitted and 89 picked to hang in the gallery during the month of November.

The society was formed in 1972 by a group of enthusiastic marquetarians who wished to establish a forum for the exchange of ideas, techniques, and experiences. Since then the society has grown to several hundred members from all over the country.

Membership dues are $10 a year and include periodic publications and access to a growing library of over 300 marquetry patterns.

The society holds monthly meetings at Constantine's, which has been giving the society active encouragement during its formative years.

For more information, write the Society at 2050 Eastchester Road, Bronx, N.Y. 10461.

LETTERS

To our readers:

We don't intend to make a regular practice of this, but as this is the first issue, we thought we might get a word in before we let our readers take over (and judging from our pre-publication mail, we'll have no dearth of suggestions and criticism, both helpful and otherwise).

There are three things we'd like to say. First, we're delighted to be publishing this magazine. We thought there would be a positive response, but not the enthusiastic one we've received. So thanks for your interest and encouragement. We trust you'll not be disappointed.

Secondly, we hope there will be much more advertising than you see in this first issue, not only because of the revenue for us, but also because if it's informative and done well, it can be a valuable service to you.

Lastly, we hope you'll let us know when you hear of something your fellow woodworkers might be interested in. We're always open for article ideas and, indeed, articles themselves, because we're relying almost entirely on you, our readers, for them. Naturally, we pay for the articles we use. What we're looking for primarily is expertise-the writing usually has a way of working itself out. So do drop us a note if you have the germ of an idea, or more.

And now it's our readers: turn, some asking for help:

Good luck folks. I hope you succeed . . . It sounds like a good chance for craftsmen to exchange technique and appreciation for wood-beauty, strength, texture . . .

John O'Meara, Bedford Hills, N.Y.

I am anxiously awaiting your first issue . . . As a carpenter-cabinet-maker here in New York City, I have been disappointed in not being able to enjoy a fine magazine in my field of work. As you probably already know, there are none.

Best of luck to you and your staff in your much appreciated efforts to bring a top-notch publication to the professional woodworker.

Charles Glackin, New York, N.Y.

I do not know how you got my name; however, I am delighted that you did . . . It is about time-no, past time—that serious woodworkers, who desire to be this century's fine craftsmen, have a magazine for them rather than just another do-it-yourself, arts and crafts publication . . .

Robert N. Lominack, Jr., Norfolk, Va.

. . . May I offer a few comments on what I would like to see in your magazine? (1) Features on other craftsmen and their work. (2) Plans for fine furniture and projects. (3) Out of the ordinary woodworking projects and ideas. (4) How about a plan swap or lending service? (5) Tools (especially hand tools)-how to use and make. (6) Keep it directed toward the advanced wood craftsmen. The field of home repair and simple craftsmanship has been and is being covered adequately by other periodicals . . .

J.E. Dunn, Columbus, Ohio

. . . I hope that someone can help me with locating a hand-held veneer taping machine. I am looking for something that would dispense the tape, butt the edges of the veneers to be taped together via skew pressure rollers and apply heat (an electrically heated pressure roller) to set the tape. Does such an item exist?

John Marovskis, Bronx, N.Y.

I am just beginning to collect old tools, particularly wooden planes. Few books are published on old tools, and these don't offer any information as to cost, what to look for or what is really old. Could you supply me with a list of books which may assist me in this endeavor?

John Hitt, Lincoln, Nebraska

. . . There are two problems which have intrigued me over the years but I have never been brave enough to tackle them, because I'm not sure of exactly what to do. They are: (1) Jewelry or knife boxes. What type of joints and what kind of tools are recommended . . . Recommendations for clamping these little monsters. Most of my clamps would be larger than the box. (2) Foxtail joints. Most books . . describe the basic fundamentals. However, I would like to know what actual dimensions are recommended for wood such as maple, cherry, honduras mahogany or plain pine. Please cover the single and double wedge arrangements . . .

Earl B. Lichten, Riverwoods, Illinois

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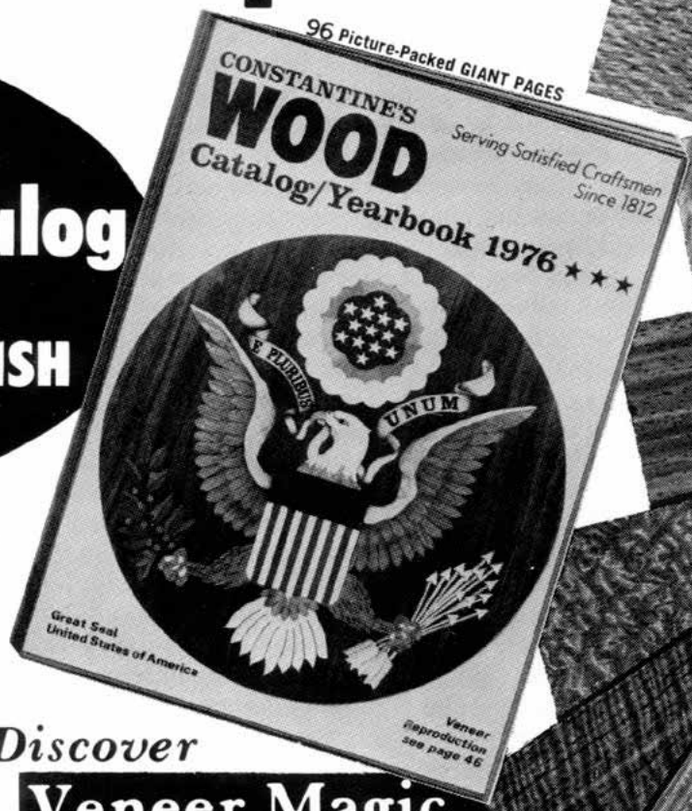

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A Change of Pace

Furniture is fun, but banjos are better

by John Kelsey

About 2-1/2 years ago, after more or less struggling for six years to earn a living as a designer and maker of furniture, Richard S. Newman returned to his first love: the banjo.

"I'd tried to make musical instruments before and failed-my skills weren't up to it. Twice I had made new necks for old banjo rims as many people do. So I got all the materials together for a guitar and then decided to do a banjo instead. I figured I could do it now. I would make the whole thing, the neck, the rim, most of the metal parts.

"And suddenly it was an obsession and I was riding the crest of it. I was alive, together, for the first time in years. I couldn't believe how well it was coming out. I felt possessed by the spirit of an 'old-timey' instrument maker and my first banjo came out better than I ever dreamed it could."

Since that first banjo, which sold for $1,000, Newman has completed two more fine instruments and is starting to produce a line of banjos to sell from $600 upwards. He has cleaned up his woodworking shop, an old coachhouse near downtown Rochester, N.Y., to make room for production while still retaining the capacity for furniture commissions.

Newman, 29, is an almost-graduate of Rochester Institute of Technology's furniture design program. But he thinks most contemporary furniture is "primitive stuff," and has long been dissatisfied with his own work. "I had looked at classical pieces and I didn't think I could ever do it. The carving and the inlay was so difficult and so superior to anything I could do.

"But my banjo stood up well against traditional instruments, and I saw I could make musical instruments at the level I wanted to reach. It sounded good and it played well."

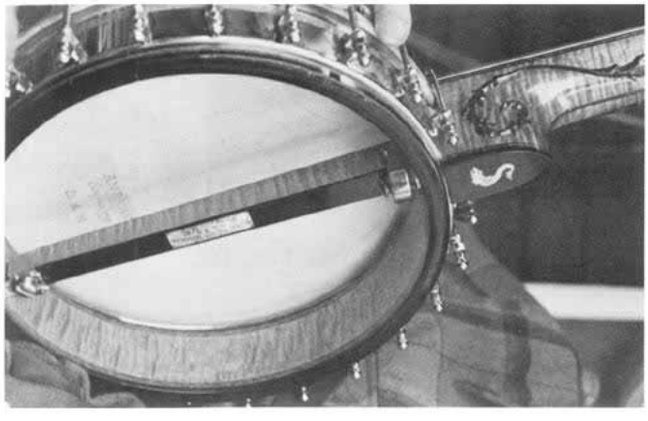
The round part of a banjo consists of a seven-ply circular rim, about 3/4 inch thick, surmounted by a heavy brass tone ring over which the skin is stretched. Commercial rims are made of crossbanded basswood that has been clamped around a circular form. They usually aren't circular, the face veneer can't match the neck, and the process of turning them round to accept the tone ring often means cutting through to expose the crossbanding.

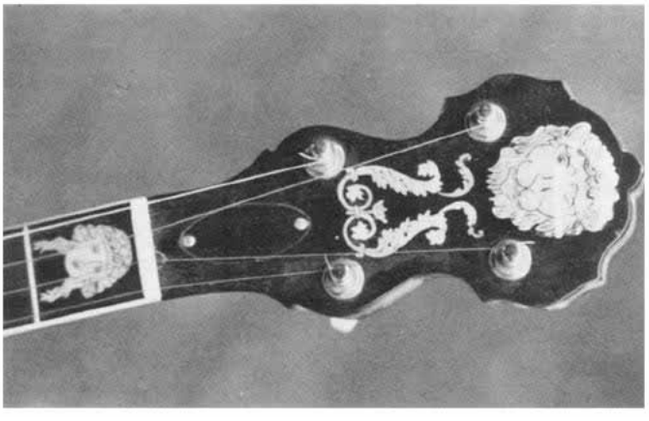
Newman and his assistant, Ken Parker, formerly a tool maker in a clock factory, developed a cast aluminum ring in which to form the rim. The laminates are steamed and pressed into the form by a series of segmented cores. A veneer press pushes a conical plug into a tapered hole in the core, forcing it outward. A nichrome heater quickly cures the glue line. The rims come out perfectly round, with the facings cut from the same curly-maple stock that makes the neck.

The tone ring atop the rim resonates to generate the banjo's sound. Newman has a local foundry cast heavy brass blanks, which he and Parker machine to dimension. To scallop the edge, Parker has devised an ingenious jig to mount the tone ring on the lathe ways and index it past a milling cutter mounted in the chuck.

Newman also makes the metal shoes that hold the skin to the rim; he buys only strings and tuning pegs. "I don't make everything, only what I can make better," he says.

A banjo neck, which carries the ebony fingerboard and the strings, is bandsawn from two solid pieces of curly maple and laminated with numerous layers of ebony, satinwood and cherry veneers for stability and decorative effect. It has a metal core to counteract the tension of the strings; it must not wind or twist. A fine instrument has delicate carving at





Banjo making requires precise skills for laminating rims, carving necks, and inlaying fingerboards.

Newman strummin' on his new banjo. Rim was made with jig in which laminates are pressed outward by conical plug pushed into the center of segmented core with tapered hole.

the bottom of the neck, and complex mother-of-pearl inlay along the fingerboard.

For Newman, the neck is the most difficult. He compares it to making a camera: "micrometer work with no tolerances at all. The hardest part is setting and engraving the mother-of-pearl flowers and butterflies and lions heads."

Newman's banjos are not copies of traditional banjos. He proceeds directly from the old "white lady" style and makes changes where he thinks they will be an improvement "from where the old-timers left off 40 years ago."

He has introduced his own esthetic in the carving and inlay, and is planning some delicate structural changes. But, he says, "you couldn't make a far-out banjo like you can make a chair-nobody would buy it. People want the regular old style. In furniture there's a lot of innovation for its own sake and I don't like it."

Serious musicians will pay a lot for a fine old instrument and there aren't enough old ones to go around. Newman believes he can make as fine an instrument as has ever been made; musicians who have played them agree.

"Banjos are magic because they make music," he says, "for a real player, his instrument is closer to him than anything else he owns. On the other hand, furniture to most people is something that fills a space. The buyer is rarely excited, or fleetingly excited, about a piece.

"I don't see a radical separation between making furniture and making banjos and I'm not through with furniture yet. Banjos are like furniture in that you start with a pile of material and an idea, do some precision work and end up with what you want. It's the same in a banjo, except for the infinite variety of processes. And everything has to be perfect. There are no tolerances, no sloppy bottoms."

AUTHORS

John Kelsey ("The Woodcraft Scene") is a veteran newspaperman who's now studying woodworking at the School for American Craftsmen at the Rochester Institute of Technology. After graduation he hopes to make a living designing and crafting in wood . . . **Irving Fischman** ("Checkered Bowls") is another convert. He just received his PhD in physics from MIT but is now looking to make woodcraft his career . . **Helaine Fendelman** ("Tramp Art") is an antique dealer who has now turned to writing and lecturing as a result of her four-year immersement in re-discovering the age of roaming chip carvers . . . **Timothy Ellsworth** ("Hand Planes") is just finishing up at the School for American Craftsmen, and hopes to combine his love of woodworking with a business career . . . **Robert Buyer** ("Carving Design Decisions") practices, teaches and studies carving and sculpting when he isn't doing technical writing in the computer industry . . . **Tage Frid** ("Woodworking Thoughts") is Professor of Industrial Design at the Rhode Island School of Design and the teacher of many of the present generation of wood designer/craftsmen/teachers in America . . . **Peter Rose** ("Marquetry Cutting") is a cameraman in the graphics art industry when he isn't doing marquetry . . . **Robert Sutter** ("Which Three?") gave up a 25-year career in the graphic design field in New York to open a cabinet-making shop where he makes furniture and does museum restoration work . . . **Alastair Stair** ("Library Ladders") has a soft spot for tricky devices of wood. He's also a leading New York and London antique dealer with the largest stock of 18th century English furniture in the world . . . **Lionel Kay** ("A Veneered Tray") is happy to keep his cabinetmaking and veneering on an amateur level. His business is sales in the men's furnishings field . . . **Stanley Saperstein** ("Stamp Box") works for the State of New Jersey but hopes to make cabinetmaking and carving a full-time profession . . . **Brian Considine** ("All in One") is a cabinetmaker and designer from Post Mills, Vermont, specializing in Shaker and early American country furniture . . . **Bruce Hoadley** (Books) is a wood carver who's also Associate Professor of Wood Science and Technology at the University of Massachusetts.

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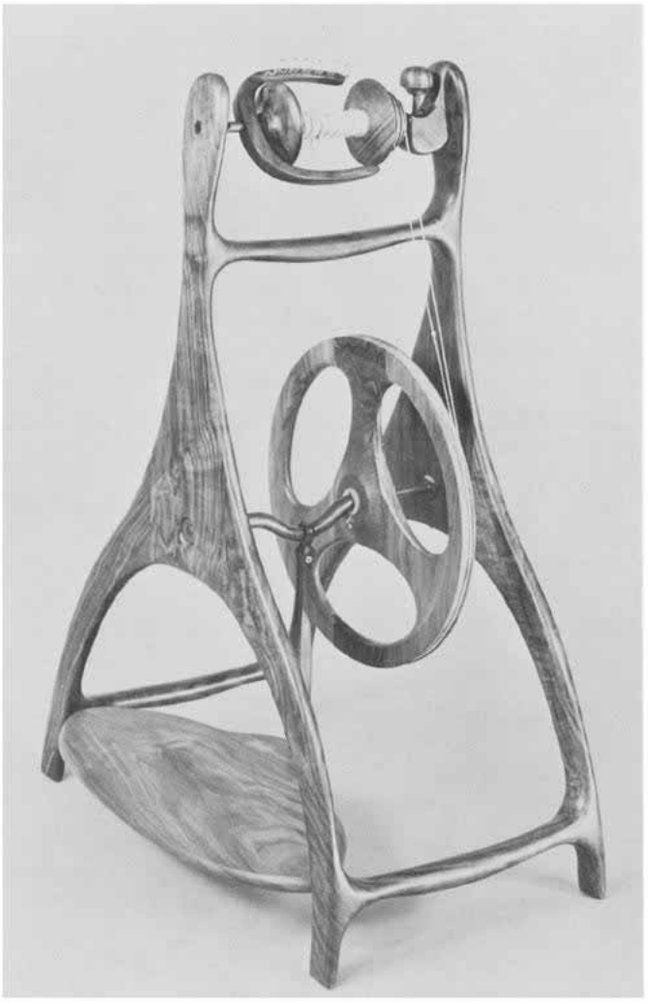


Spinning wheel, walnut, Steven A. Foley, Lake Oswego, Ore., 35 inches high, $450.

Arm chair, walnut, Robert C. Whitley, Solebury, Pa., 39 inches high, $425.

The Renwick Multiples

A chance for many Americans to see woodworking of today

The average American rarely gets a chance to see what's going on in contemporary American woodcraft. For some reason the potters, the weavers and the jewelers have been holding center stage, and the woodworkers the walk-on roles at best.

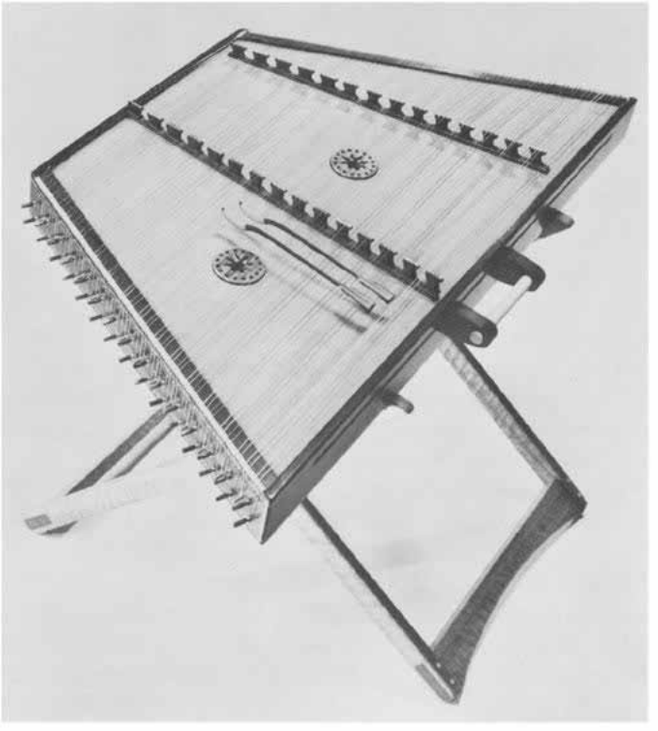
But slowly this is beginning to change. The burgeoning interest in craft fairs and shows continues, and increasingly, woodworkers represent a larger share of the exhibitors.

Moreover, the date of 1976 seems to have re-awakened an interest in our colonial woodworking heritage.

Whatever the reasons, Americans are becoming more wood conscious and are beginning to get a chance to see contemporary woodcraft.

One boost in this direction is the current Renwick Craft Multiples Exhibition. The Renwick Gallery of the National Collection of Fine Arts is a branch of the Smithsonian Institution in Washington, DC, which has been showing a strong interest in both the practical and decorative arts. For example, three years ago, its director, Lloyd Herman, organized a show called "Woodenworks" which featured the work of five contemporary woodworkers.

The current show covers all the crafts—ceramics, fiber,



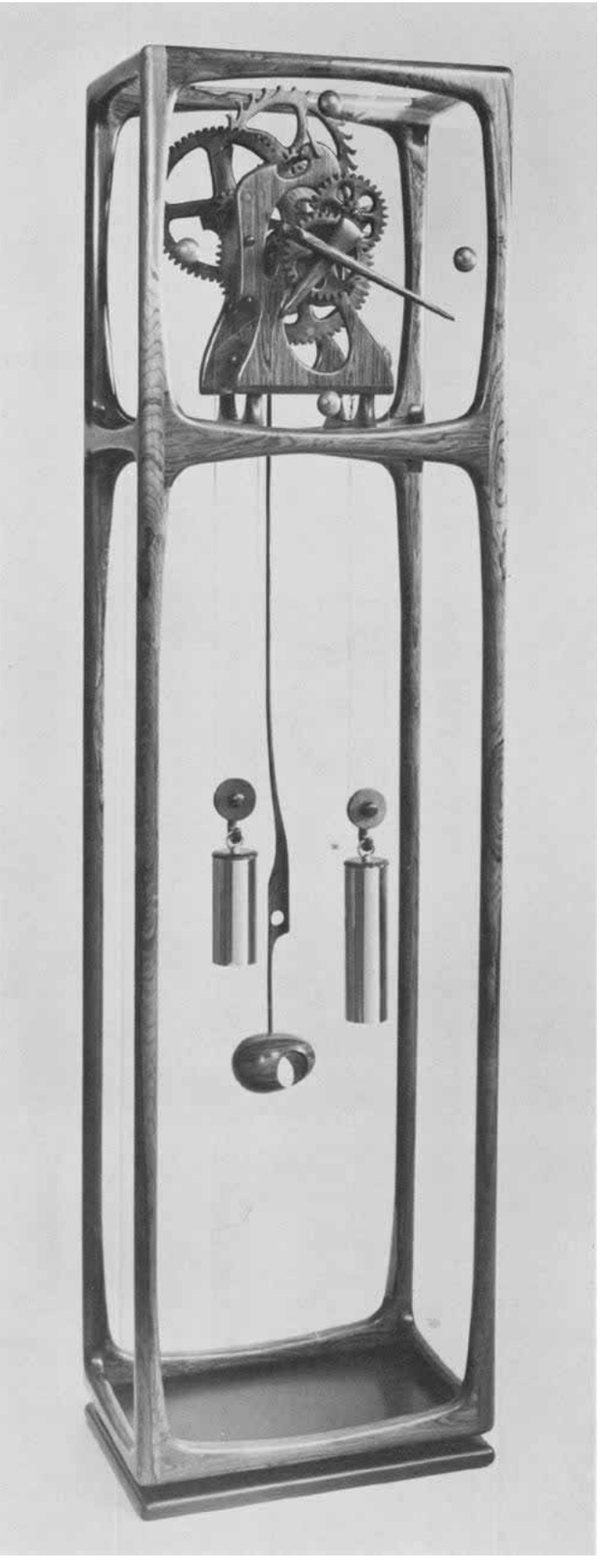
Bowl and servers, teak, Bob Stocksdale, Berkeley, Cal., 10 inch diameter, $45. Dulcimer and stand of hardwoods, Sam Rizzetta, Barboursville, Va., 36 inches wide, $675.

glass, and metal, as well as wood-and is unusual in two respects.

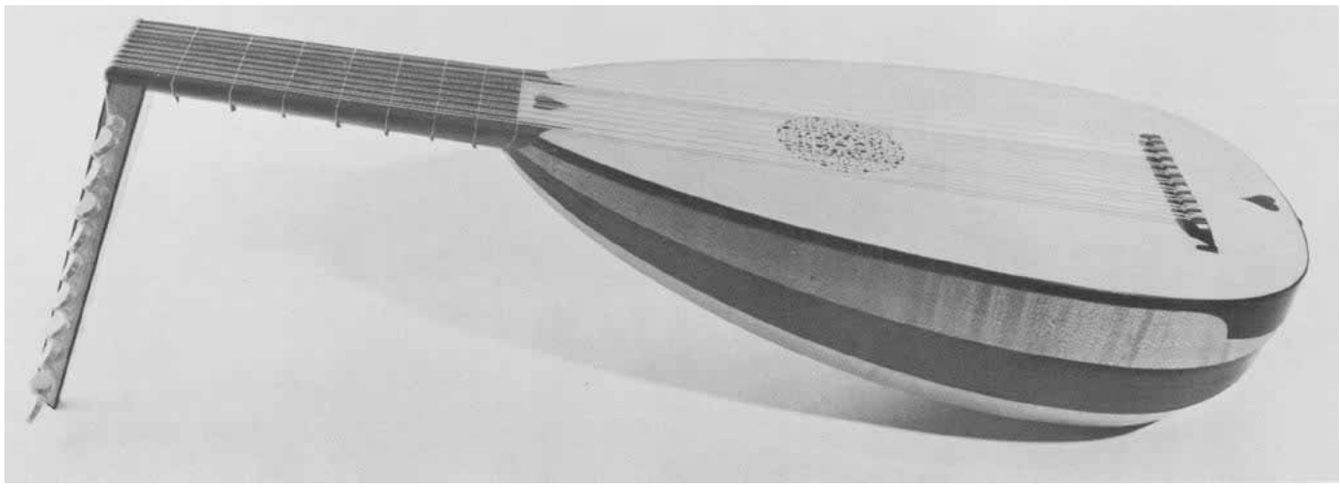
First, the show is one of "multiples." That is, the designer-craftsmen entrants agreed to produce the piece in an edition of ten or more (but not all at once).

Secondly, after the show closes in Washington in February, it will tour the United States for three years, but only to towns with a population of under 50,000.

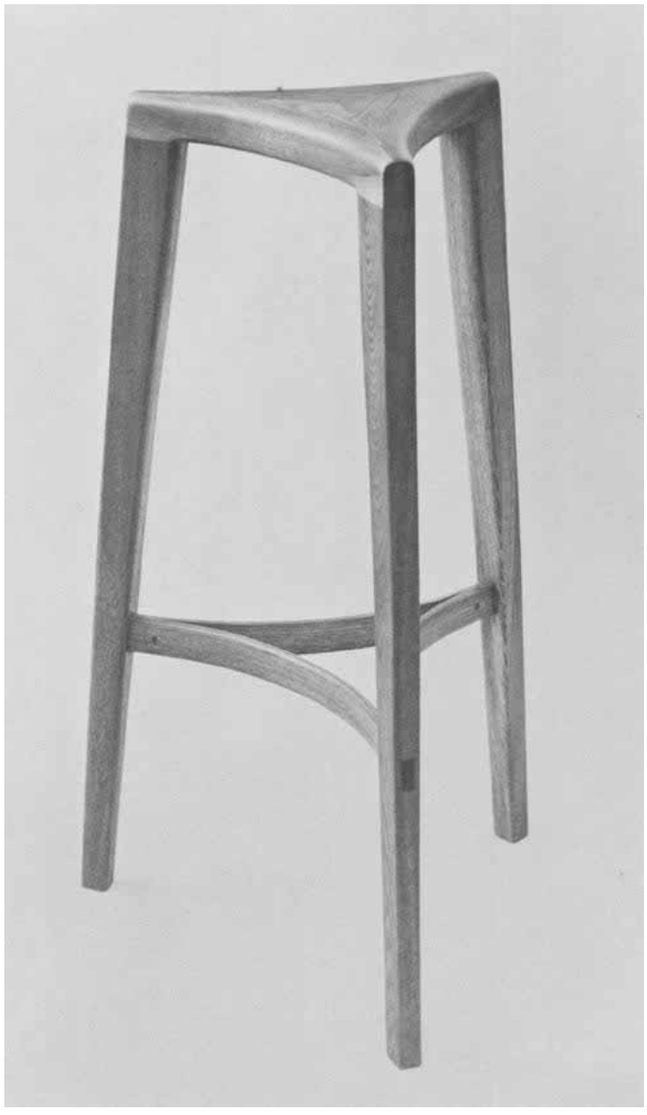
So for once it will be the hinterlands (where much of the creativity in wood seems to be anyway), rather than the large cities which will get to see what's going on.



Floor clock, rosewood and glass, John Gaughan, Los Angeles, Cal., 70 inches high, $3250.



Lute, maple and rosewood, Lyn Elder, San Francisco, Cal., 32 inches long, $1000.



Stool, ash and maple, Christopher Sabin, Greenfield, Mass., 29 inches high, $100.

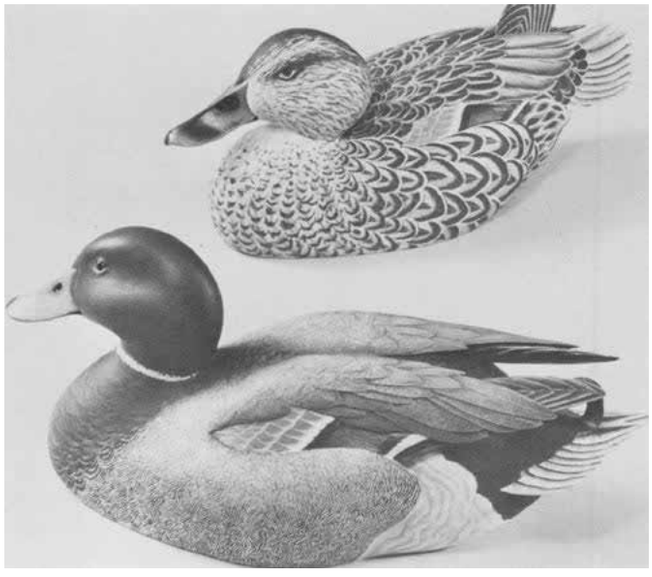
The three-year itinerary has yet to be worked out, but the show will begin in the midwest in March, circle the country and end up probably in New England in March of 1979.

The entries were chosen by national competition. Some 2300 craftsmen submitted photographs of their work, and 126 were picked, 33 of them wood craftsmen.

The majority of the craftsmen are in their 20's and 30's, almost half earn their living from handcraft production, and over half live in rural areas.

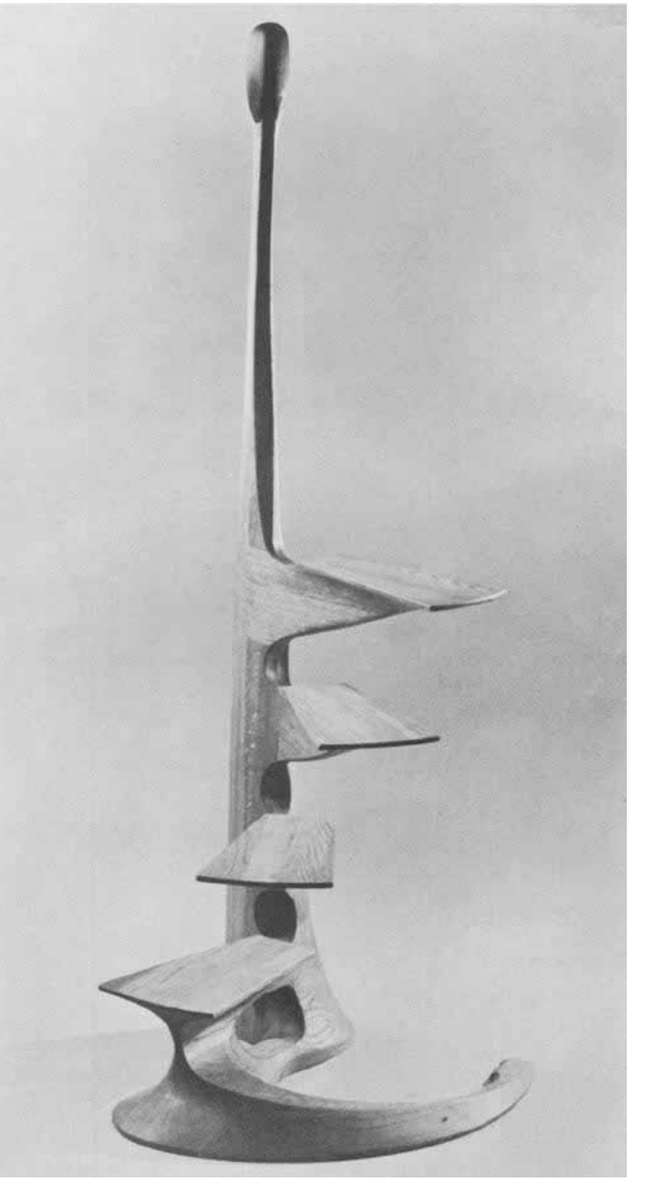
Renwick director Herman says the show was organized "to reaffirm the validity both of traditional design that continues to have an appeal today and of the new expressions, created for the moment, that may become part of a future heritage."

In the area of wood, the selections do just that. Although extremely light in carving and marquetry, there is a wide range of woodwork-from a ten-course Renaissance lute to an



Mallard duck decoys, balsa and pine, painted, Donald C. Briddell, Dallastown, Pa., 16 1/2 inches long, $150.

Mirror, walnut and maple, Kenneth Nelsen, Maryville, Mo., 10 inches long, $60.



Ladder, oak and rosewood, Edward Livingston, Bly, Ore., 61 inches high, $450.

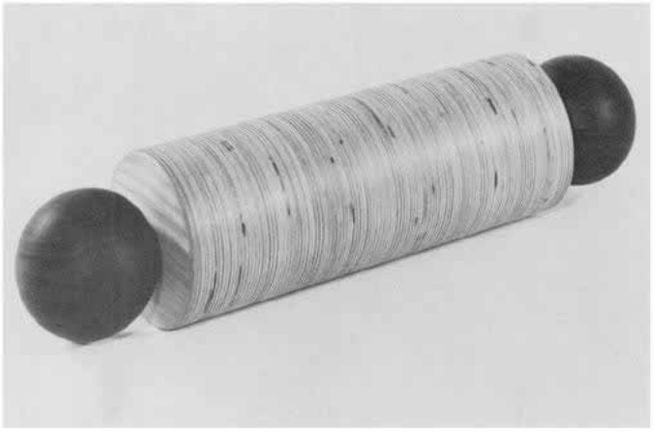
Adirondack guide boat and a pair of duck decoys, to a highly contemporary clock and spinning wheel.

In talking with some of the wood craftsmen represented, it's apparent that the "multiple" aspect has not affected their woodworking techniques. These are essentially pieces made one at a time, with little or no jigging for a production run. For example, Robert Whitley finds it easiest to shave the spokes for his chair by hand, to turn the legs by eye, and to scoop the seat with an old adze-like gouge created generations ago for Windsor chair seats.

And the dovetails for Paul Buckley's gateleg table are all made by hand—and by eye, without the aid of layout lines (except for spacing) because he's made so many of them.

Lyn Elder's lutes are made using both contemporary and traditional methods—for example bending the 1/16-inch thick rosewood and maple segments over a form to get the

Table, oak, Paul Buckley, Brookline, N.H., 61 inches open, $300



Rolling pin, solid birch plywood and walnut, Lee A. Schuette, Durham, N.H., 20 inches long, $25.

Bowl, solid birch plywood, Rude Osolnik, Berea, Ky., 7 inches high, $100.

Music rack, walnut and ebony, Richard R. John, Santa Cruz, Cal., 44 inches high, $450.

gourd-like shape. He uses modern yellow glue for the permanent joints, but traditional hide glue for the parts that may have to be taken apart later for repairs. Elder believes the results are more important than the techniques.

So does John Gaughan whose rosewood clock has a wooden movement. Gaughan cuts the gears three at a time (held between plywood) on an indexing lathe: The teeth are cut with a router using a specially shaped bit. For the dog-legged escape wheel, Gaughan uses the router in the more traditional pattern-cutting technique.

Edward Livingston's slender library steps depend for their strength on the central shaft which is laminated in a twisting manner to incorporate each of the stair risers.

Robert Stocksdale's salad bowl is turned free hand from teak which he buys in two, three, and four-inch thicknesses direct from Bangkok (in thousand board foot quantities).

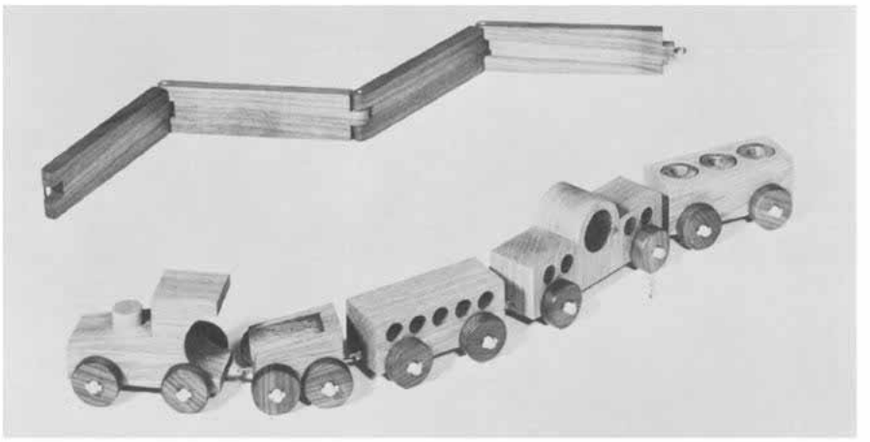
Steven Foley designed the spinning wheel on a commission, basing it on the less common four-legged Indian wheel design. But he had to learn how a spinning wheel works and in the process, developed his own tensioning device. His client did not know she was getting a contemporary design until she received it. (She kept it.)

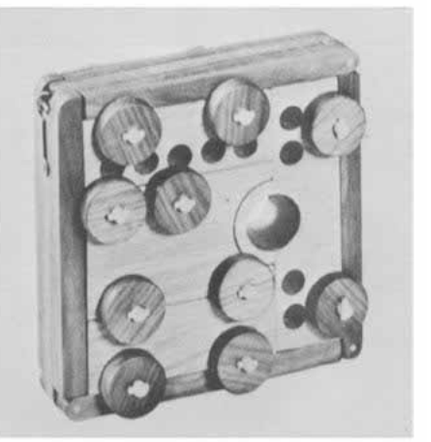
Kenneth Nelsen shapes and just about finishes the handle of his mirror before he laminates it with the maple and two other pieces of walnut into a one-piece back. He uses a router to shape the front frame that holds the glass in.

Philip Van Voorst's design interest is apparent in the nesting toy train he's developed. He cuts the train from one piece of oak on a bandsaw (but he has to cut and reglue to get the arch shape). He uses a multi-spur bit for drilling the holes and a plug cutter for the hollow cylindrical insets. The wheels are cut from a sheet of walnut rather than from dowels.

Finally, Rude Osolnik uses solid birch plywood cut up and reassembled into a cube with intervening walnut veneers for his bowl. But he uses high-speed tool steel to make his own chisels because of the hard wear from the plywood.

Catalogues of the complete "Craft Multiples" show are available from the Museum Shop, Renwick Gallery, Smithsonian Institution, Washington, DC, 20560. Cost is $4.75 plus .35 for postage and handling.





Toy train, oak and walnut, Philip J. Van Voorst, Maryville, Mo., closed 6 inches, $40.

Desk, walnut and cherry, Arthur Espenet Carpenter, Bolinas, Cal., 39 inches high, $1750

Checkered Bowls

Reinterpreting in wood the designs of the American Indian

by Irving Fischman

After turning bowls for several years, I have recently begun to explore the classic designs used since antiquity in pottery and basket making. I am now particularly interested in the pottery and basketry of the Indians of the Americas. Simple shapes-such as truncated cones or bells-are used to counterpoint intricate painted or woven patterns. I have tried to reinterpret this design approach into a different medium, wood.

One bowl in particular has a simple bell or trumpet shape and a checkered pattern of teak and black walnut, woods that are richly contrasting. To make this bowl, familiarity with lathe work and a supply of clamps, both band and deep throated, are essential.

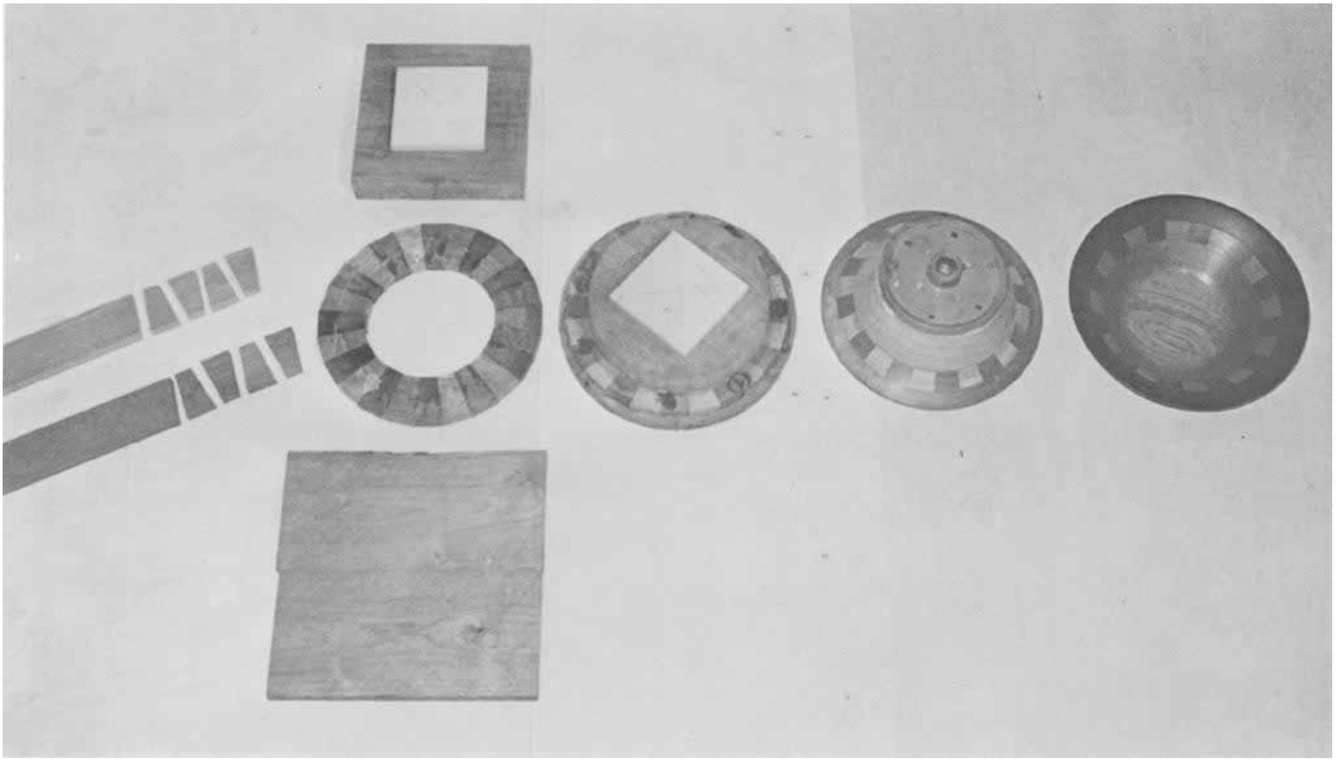
Basically, the bowl is made of three layers of wood. A 15 or 16-inch square of one-inch walnut forms the top layer of the bowl and an 11-inch square of two-inch teak forms the bottom. In between is a checkered ring of teak and walnut one inch thick. Both the top and bottom pieces should be planed or sanded flat and cut into a disk shape.

To provide a means of attaching the faceplate, I glue a piece of 3/4-inch Baltic birch plywood directly to the bottom of the teak. No sheet of paper is used between them because the mass is so large that the paper might fail during turning. I use birch plywood because it is far stronger than either fir plywood or solid wood.

The checkered ring in the center of the bowl is not an inlay as first observation of the completed bowl might suggest. It is a separate layer composed of solid truncated-wedge-shaped pieces glued together to form a ring. This technique is much easier than inlaying on the curved surface of a turned bowl and the pattern can be seen on both sides of the bowl-in the manner of Indian baskets.

The ring has twenty-four pieces, the smallest number that I felt would have a pleasing visual effect. Larger numbers of pieces are possible, but the accuracy of the angles of the pieces becomes correspondingly more critical.

Bowls in various stages of construction are shown in a flow sequence.



With 24 pieces the base angle of the wedge is 82.5 degrees or 7.5 degrees from the vertical. If the outside edge of each wedge measures 1-7/8 inches, the ring will have a diameter of approximately 14 inches (from the formula circumference equals pi times diameter; the circumference in this case is 24 times 1-7/8 inches).

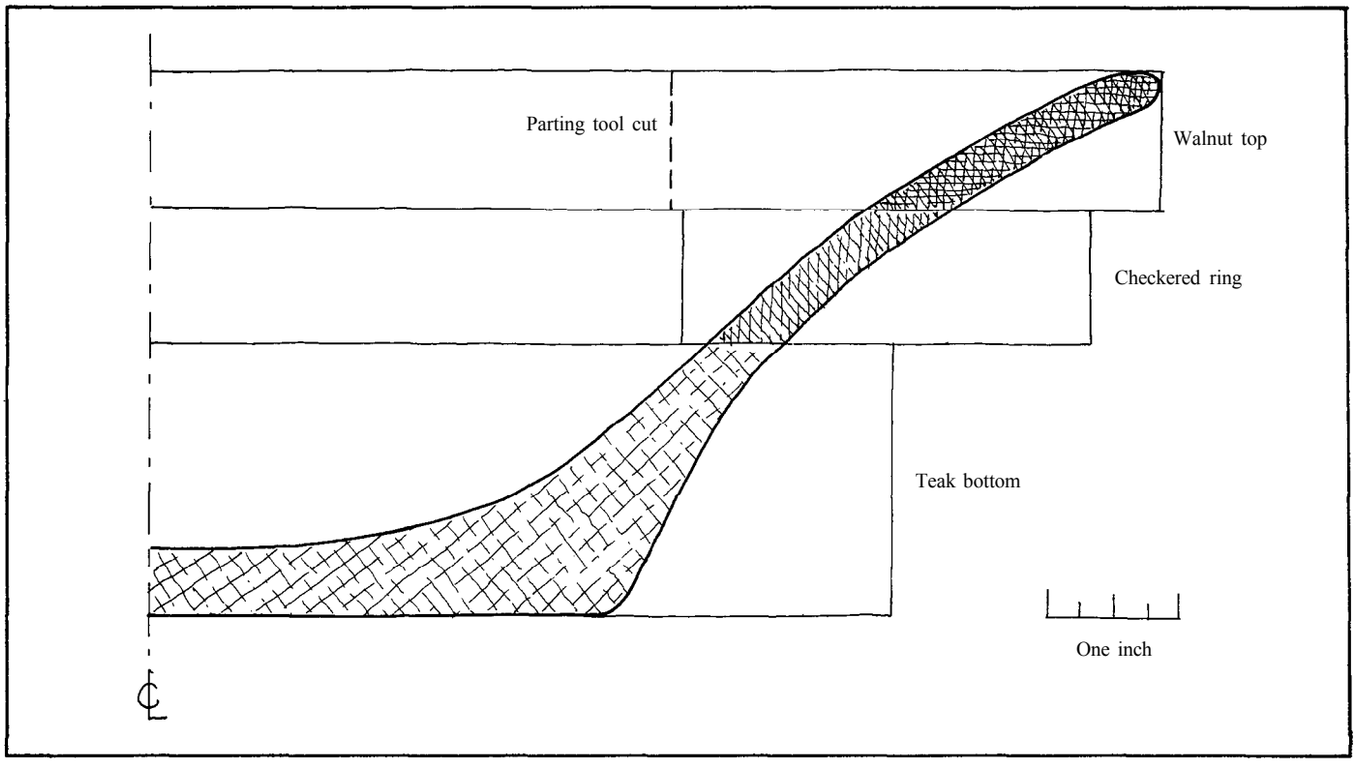
The wedges are cut from identical pieces of one-inch teak and walnut three inches wide by 27 inches long. In cutting the wedges on the table saw, the blade is kept vertical and the cross cut guide is set at 82.5 degrees. First, the end of the board is trimmed to this angle. Then the board is flipped over and the 1-7/8-inch base length is marked on the edge. This is used to set the distance between the fence and the blade. Because the crosscut guide is on the opposite side of the blade from the fence, using a fence for measuring each subsequent piece would cause the blade to bind. Therefore, we actually measure to a short hardwood block clamped at the front of the fence, which acts as a distance marker. Now we cut 12 identical pieces each of teak and walnut, flipping the board after each pass to get the wedge shape.

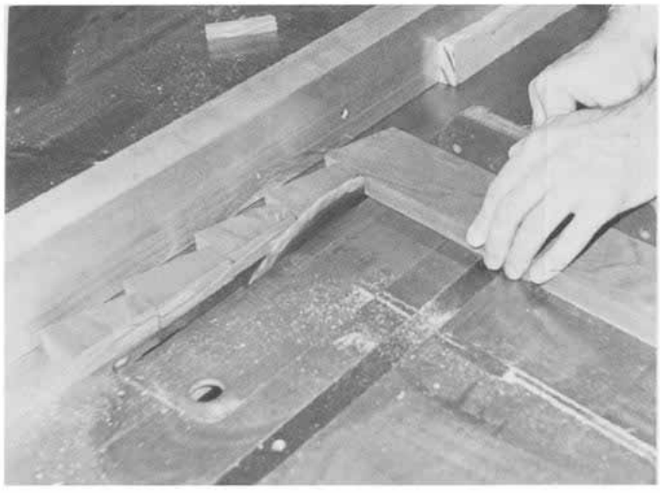
If the angle has been set correctly, the 24 pieces should form a perfect ring. This can be checked by clamping the pieces dry with the band clamp. Slight errors can be corrected by sanding.

Alternating the teak and walnut blocks, glue is applied to their edges and a belt clamp tightened around them. (A tourniquet could be used instead.) I simultaneously clamp the whole ring between two disks of 1/2 or 3/4-inch plywood, protected with wax paper, to assure that the ring is flat. I use yellow glue (aliphatic resin) throughout because it hardens and is stronger than white glue. Plastic resin, resorcinol, or casein are other possibilities. After allowing the glue to dry thoroughly, the ring is removed and touched with a sander or plane to make sure it is flat.

It should be noted we are gluing end grain which is not especially strong. However the ring will be glued between two

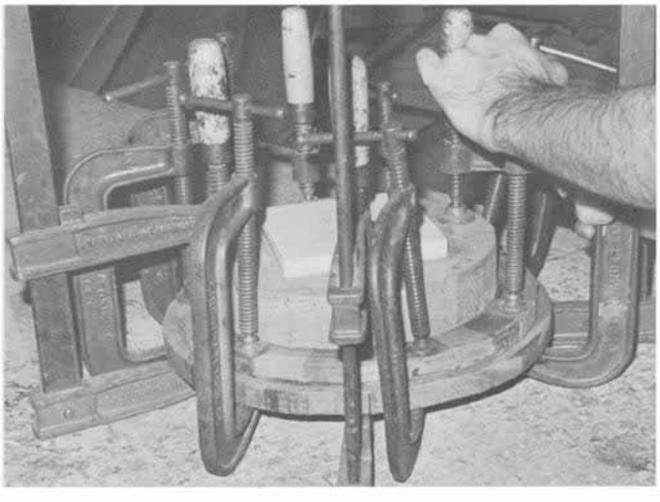
Approximate cross section of bowl showing placement of the layers. Bowls are turned by eye without templates.





Truncated segments are cut with the cross-cut guide set at 82.5 degrees for 24-piece ring. Block clamped to rip fence safely eliminates need for measuring each piece.

Tourniquet clamp holds glued segments together while two plywood disks protected by waxed paper are clamped to hold checkered ring flat between them.



Checkered ring is touched with sander to make sure it's flat; then it's glued between the two-inch teak base block and the one-inch walnut board that will form the top rim.

solid layers and we have the advantage of not turning end grain.

The entire turning block can now be assembled. The teak base (with birch plywood block already attached), checkered ring, and walnut top are glued together and clamped using many clamps to assure good contact. Concentric alignment is important and either circles or crossed diameter lines drawn on the blocks will help. The block is allowed to sit one or two days to assure that the glue in the interior is dry.

A faceplate is now attached to the birch plywood on the completed turning block. Because of its large size, the block must be mounted securely on the outboard side of the lathe. I use a heavy duty lathe with four speeds—600 and 1200 rpm for faceplate turning—2400 and 3600 rpm for spindle turning. The handrest is mounted on a moveable tripod.

With the lathe at its lowest speed, a heavy scraper is used to round the walnut top disk, both for balance and to determine the final dimension of the bowl. Then a gouge is employed to rough the outside shape. Starting at the bottom, material is removed from each of the three layers until there are no gaps between the layers and the tool cuts solid material throughout its path. Keep in mind that the three layers will cut differently—the easiest is the teak and the hardest the walnut. Also, teak is notorious for dulling tools and frequent sharpening and honing will be necessary. Final outside shaping is accomplished with a scraper, taking very light cuts. Any small tool can be used to apply the radius on the bottom edge.

At this point I usually sand the outside of the bowl completely since I can apply as much pressure as I like to the still solid block. In other words, I don't tackle the inside until the outside is completely finished.

The inside of the bowl is tackled with the handrest facing the top of the bowl. First I remove with a parting tool a central disk of walnut eight inches in diameter. This disk

Outside of bowl is turned and finished first with lathe set at low, 600 rpms. Top walnut board gives the bowl stability during this stage. The handrest is on a moveable tripod.

matches the hole in the checkered ring and has not been removed until now to assure rigidity during both the gluing and the outside turning process. Because the parting tool is not coming in from the side, be sure to widen the groove that it makes so that it doesn't get caught. When the cut is completed, the central disk is easily removed.

Now I usually remove some material from the center of the bowl, so that the handrest can be moved in to act as guide for roughing out the inside. I prefer the scraper for this operation so there is no chance of the tool catching in the wood.

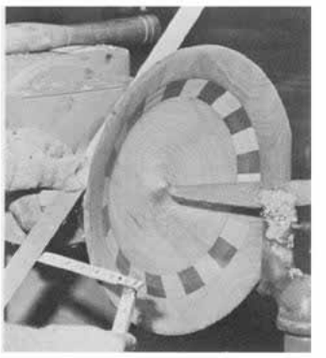
The bowl takes shape very quickly now. The sides, completed first, are made parallel to the outside and between l/4 and 3/16-inches thick. Don't make the sides any thinner or stability becomes a problem with these laminated bowls. The sides taper slightly at the rim and gradually increase in thickness at the base. A higher lathe speed should be used to finish the bottom. The bottom is left between 3/8 and 1/2 inches thick to give the bowl a solid feel.

The interior and rim of the bowl are now sanded. Teak sands very nicely, and I use only grits 60 to 120, wetting the surface occasionally to bring up the grain. The entire bowl can now be burnished with a clean rag if desired.

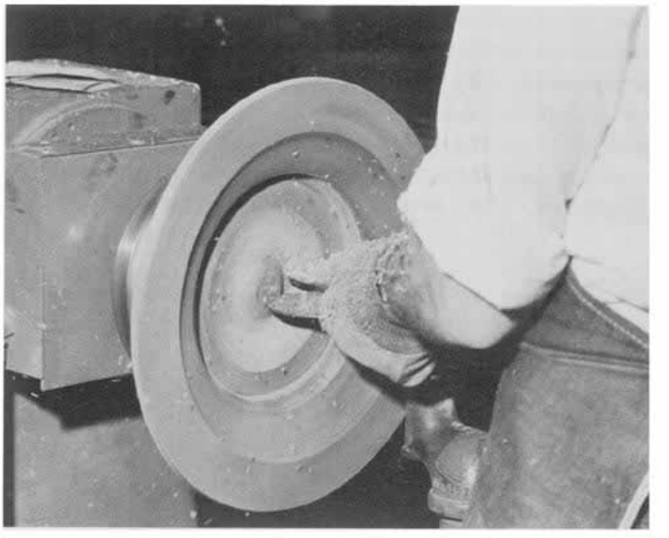
The completed bowl is split from the Baltic birch backing and the bottom is hand planed or sanded flat. Finally, I prefer to give the bowl a rich oil finish, but a glossier finish can be tried.

The finished bowl takes five hours to complete and about $10 in materials. The present design can readily be seen as a jumping off point for many variations. Contrasting veneers could be placed between the layers to form stripes in the finished bowl. Different numbers of pieces and different woods could create other patterns.

However, I feel that the basic design approach—using a simple shape to compliment intricate patterns—is essential to a satisfactory finished product.

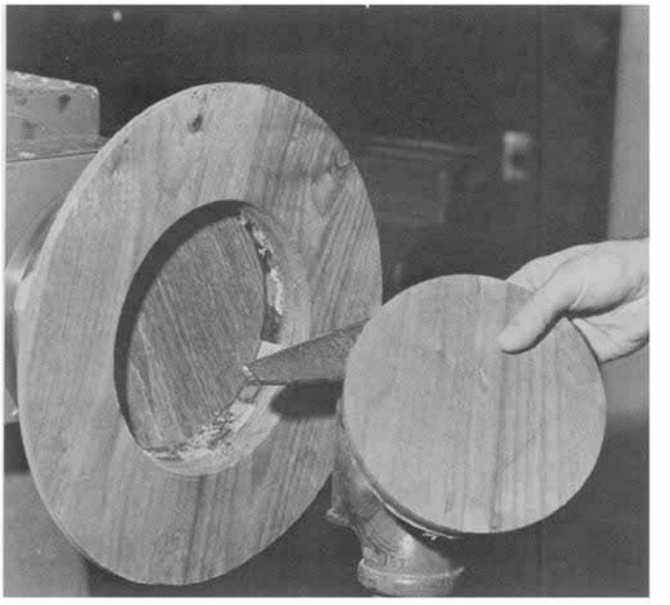


Thickness of bottom is measured and kept between 3/8 and 1/2 inches to give bowl a solid feel. Use a higher lathe speed for bottom. Author sells the bowls for about $80.



Inside of the bowl is now turned and completed. Sides are turned first parallel to the outside and no less than 1/4 to 3/16 inches thick in the interest of stability.

Once outside is completed, a parting tool is used to cut the central disk from the walnut top. Widen the groove so the tool doesn't get caught.



When cut is completely through, centrifugal force holds disk in place until lathe is stopped. The disk should be made smaller than the inside of checkered ring.

Tramp Art

When European chip carvers roamed America

by Helaine Fendelman

In the past few years there has been a great interest in the arts and crafts movements of the nineteenth century and early twentieth century. This is part of the burgeoning interest in Americana that has been growing as 1976 approaches. Forgotten names of history, little known events, and the work of anonymous skilled artisans have all slowly emerged to present a fuller, richer picture of the American cultural heritage. One of the more interesting art forms resurrected is a relatively little known form of folk art called "tramp art."

Tramp art, which was in vogue around the turn of the century, is chip, notch, or edge-carved pieces of wood that are layered to form decorative accessories such as wall boxes and jewelry cases, and even more importantly, pieces of furniture.

Because cigar smoking as a sign of masculinity had reached its zenith around 1900, cigar boxes were in great supply and were the primary source of woods. But fruit, vegetable, or packing crates were also often used. Labels from explosive boxes and apple and orange crates are still legible on some pieces.

Tramp art was not made only by the people that we think

of today as tramps, hoboes and bums. At the end of the nineteenth century, German and other European craftsmen such as brick layers, stone masons, and carpenters emigrated to the United States and Canada. Called *wanderburschen,* or wandering apprentices, these men—the trampers, popularized chip carving in the United States as they traveled the countryside in search of jobs or in pursuit of the vagabond life. They were not content to remain apprenticed to any one man for a long period of time, but stayed only long enough to complete their jobs.

Chip carving had been used as a method of decorating wooden objects in Europe almost since the beginning of time. By using any sharp-edged tool, but most often a pocket knife, small chips of wood were removed from a larger piece to form geometric patterns. In the United States it became commonplace for the trampers to use the ubiquitous pocket knife on the ever-present empty cigar boxes to fashion them into a gift for a friend, a barter for food or lodging, or as an exchange for money.

When the carver had access to them, other tools were used: a veining tool, a gouge for U-shaped notches, and a straight chisel for a strong zig-zag pattern. These three tools used separately or together with the pocket knife are the basic tools for carving tramp art.

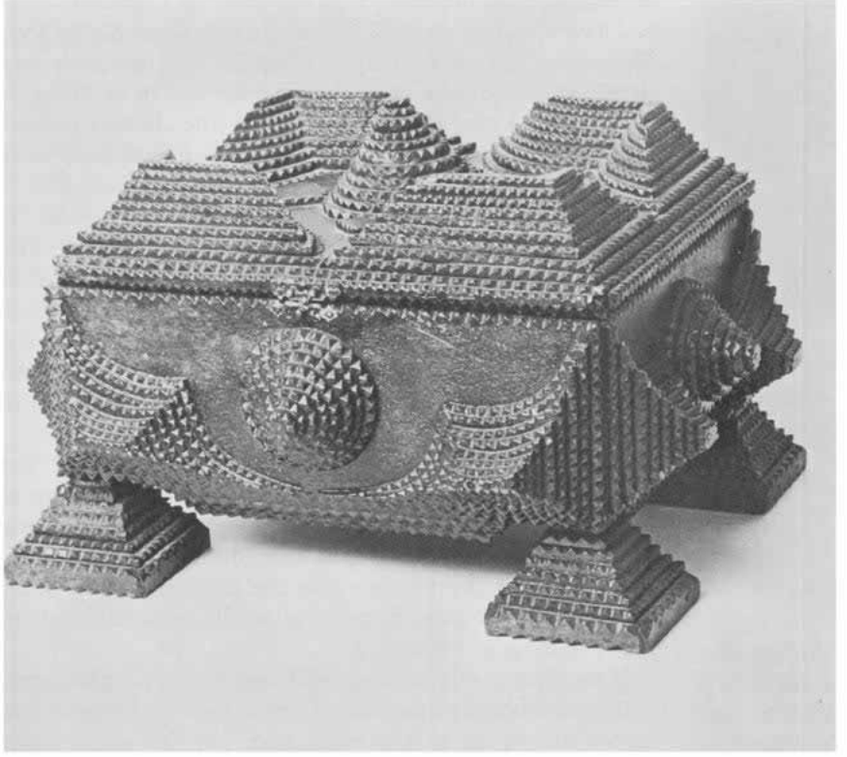
The pocket knife was also used to cut up cigar boxes into varying pieces of wood so that they could be layered into pyramids of increasing or decreasing size to form a second decorative feature. This layering of piece upon piece gives the effect of shingling on a house.

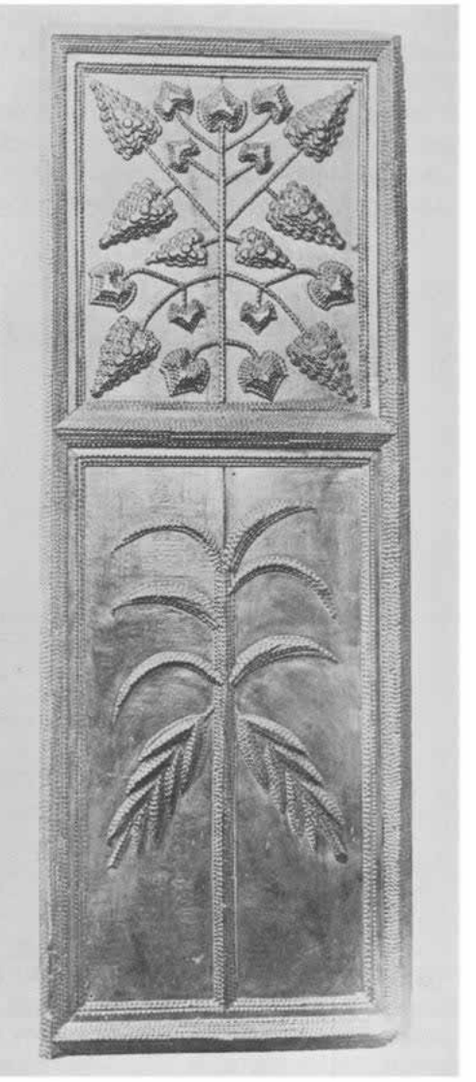
The common symbols that are evident in pieces of tramp art are whatever the artisans saw and knew in their own lives. Geometric designs of circles, diamonds, and squares were the easiest to carve with their tools, but birds, flowers, hearts, and stars were also within some artists' realm.

The methods of decorating tramp art also vary from piece to piece: from chip carving and layering, to dabs of paint, to whole multi-colored pieces. Another way was using found objects such as bits of fabric, stained glass, or porcelain or brass knobs. They also recycled hinges and even chair legs when they were available. And when the carver was able to have a jigsaw pattern made, this was often incorporated into his creation.

As cigar smoking waned after cigarette smoking became more fashionable, and as mass communication and entertainment replaced hand work, tramp art ceased to flourish. It was relegated to spare rooms, attics, and garbage dumps along with many other examples of America's past to await its rediscovery by art historians.

Three diverse examples of tramp art. The chip-carved pieces of the bed, which are nailed to the frame, were made from packing cases and stained brown. Headboard height is 37 inches. The six-foot-high side panel at right survives from a large cupboard found in an Ohio farmhouse. The lidded box below is only eight inches high, and painted. The illustrations are from the author's book, *Tramp Art,* just published by Dutton.





Hand Planes

The care and making of a misunderstood tool

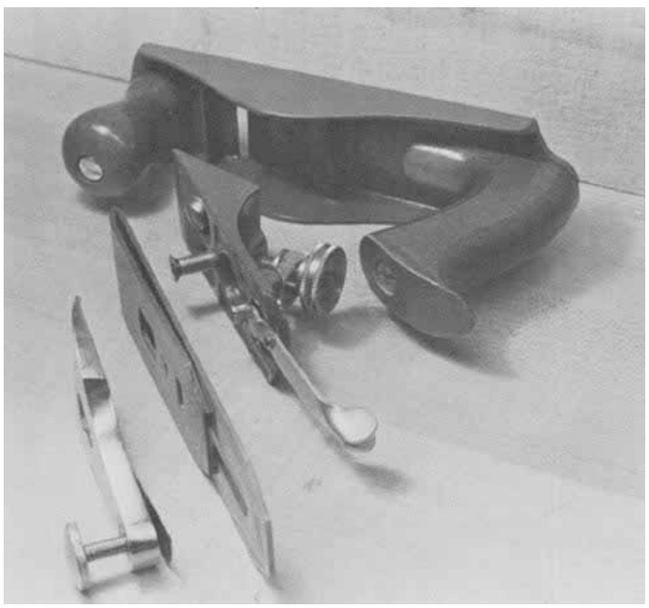
by Timothy E. Ellsworth

A plane is one of the most essential tools used by woodworkers and one of the most misunderstood. A simple examination of most modern planes on the hardware store shelf will be proof of this. The bottom will probably be warped and out of true by as much as 1/16th of an inch. There will be rounded edges around the throat or opening, and the chipbreaker will be very coarsely made.

The result is that a significant amount of remedial work is necessary to make the plane function. If the manufacturers don't understand planes or don't care about these potentially precision instruments, then how can the woodworker be expected to understand?

For those woodworkers who have been frustrated by planes or who have given them up completely, the following discussion might help. I am assuming some degree of familiarity with planes to the reader, but recommend *Planecraft,* published by C.P.J. Hampton, Ltd., Sheffield, England, for fundamental reading, as well as the booklet, *Planes,* published by Stanley Tools.

Let me begin by describing the qualities of a good metal plane, because that is what most people are familiar with. The bottom must be flat, really flat: no warp, no dips or hollows. There must be some provision for varying the opening, either by means of an adjustable throat (used in block planes) or a moveable frog (used in bench planes). The bearing surface for the iron must be flat and free of burrs and irregularities. There must be a cap iron or chipbreaker, except in the case of block planes. Adjusting knobs and lateral adjusting levers are normal on all but the cheapest planes. The steel in the iron must be of high quality, but this is rarely a problem.



A partially disassembled smooth plane. The all-important adjustable frog is between the iron and the plane body. In a block plane, there is no frog; the iron rests on the plane body and a moveable toe plate adjusts the blade opening.

Most of the planes that you will find in hardware stores will have uneven bottoms. There was a time when plane bottoms were precision surface ground, but cost cutting by manufacturers has, for the most part, eliminated this expensive process. The common practice now is to surface plane bottoms on abrasive belts. The result is a less-than-true bottom.

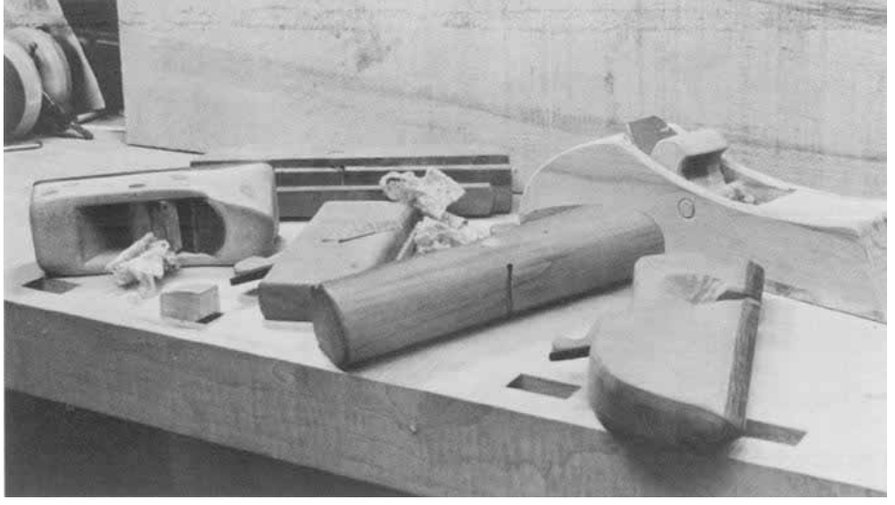
Truing and tuning your metal plane

The surface you are planing can be no truer than the bottom of your plane. You have two options in truing up the bottom. One would be to take the plane to a machine shop and have it surface ground. This might cost about $20 to $30. The second option is to lap it yourself. This process is very simple and requires a perfectly flat piece of 1/8 or 1/4-inch glass at least 12 by 12 inches and some fine abrasive powder such as silicon carbide which can be found at many auto-body shops or art suppliers. Get both 400 grit and 600 grit.

About one-half teaspoon of the 400-grit powder is sprinkled on the glass with about one teaspoon of water. The plane bottom is placed on the glass and a figure eight grinding motion is used, keeping even pressure on the plane all the while. Use the entire surface of the glass to keep the wear even. In a short while the abrasive will become worn out and it will be necessary to rinse the plane and the glass in water and start again.

After repeating the process several times, inspect the bottom of the plane. The dips and hollows will show up as shiny spots not yet touched by the lapping. Continue lapping until they are eliminated and the entire plane bottom is uniformly grey. At the same time the plane bottom is being ground, so is the glass. So try to grind the glass uniformly to avoid making it hollow.

If the glass was flat to begin with and the lapping uniform, your plane should be perfectly flat and true. At this point it is a good idea to lap once or twice more with 600 grit to bring



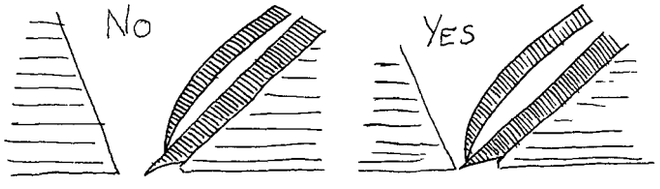
Once you've made your first plane, there's no limit to the different ones you can make. Here's a sample of those made by the author.

up a fine finish. Although it is not necessary, you can polish the bottom with jeweler's tripoli polishing compound. After this step, scrub off the tripoli residue with soap and water. I like to use a touch of parafin to lubricate the bottom as I plane, but this may cause problems later if you plan to use a water stain on the planed surface.

Sometimes the surface of the frog on which the iron rests will be very rough. In this situation lapping can be used to make it flat and help prevent the iron from chattering while planing hard woods.

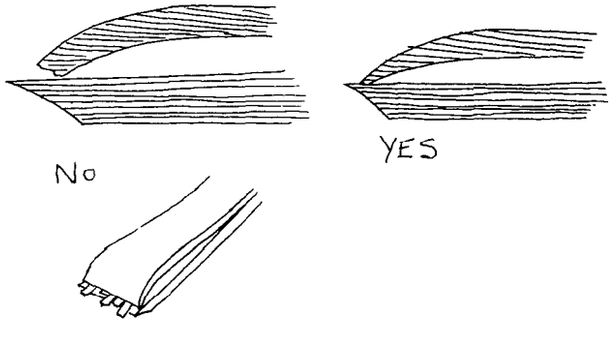
While I am talking about plane bottoms, I might mention the other maintenance which you can do from time to time. Quite often the plane bottom will get nicked, especially on the edges. File or lap off any of the burrs resulting from these nicks. They will show up as lines, even grooves, in planed surfaces.

With the plane bottom now perfect, you will need to set the opening, a most important step usually overlooked. With the iron sharpened, honed and set in the plane, adjust the iron to the maximum depth of cut you expect to make. The



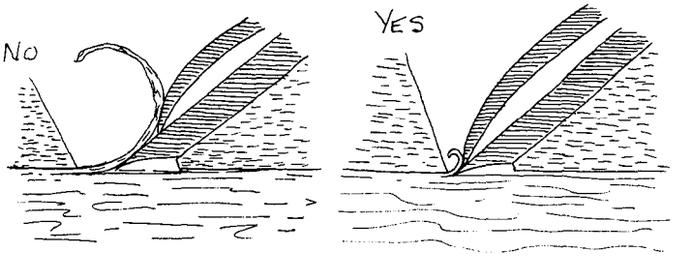
resulting opening in front of the iron should be barely enough to let the shavings through easily. If necessary, remove the iron, loosen the frog screws and adjust the frog. Check the opening again. This opening will be especially critical for very fine cutting in hard woods, curly grain, and for final finish work. Let me repeat that the opening should be as small as possible, but yet let the shavings through easily.

The next concern is the chipbreaker or cap iron. It must be



properly seated on the plane iron. First make sure that the flat side of the iron is just that: flat. There is a tendency when honing the flat side to round it over slightly at the edges. This will cause trouble. Once the iron is flat the chipbreaker should seat on it perfectly when tightened. If you hold it up to the light there should be no light coming through the joint. At the same time the chipbreaker should be sharp right to the point of contact with the iron so that no shavings can get caught or wedged up under it. It will probably be necessary to grind the chipbreaker on your oil stone to make it meet the iron properly.

The chipbreaker should be set back 1/64 to 1/16 inch from the cutting edge of the iron. The closer setting would be used for the very fine shavings on finish work and for hard-to-plane woods. Setting the chipbreaker back 1/32 to 1/16 inch would be for rough work and large shavings. The combined effect of the narrow opening in the plane bottom and the close setting of the chipbreaker causes the shaving to make such a sharp bend that it has no chance of propagating a tear-out ahead of the iron, and leaving a rough surface.



The problems associated with a block plane are not much different than those of bench planes. Because the block plane is used mainly for end grain, the iron is set at a lower angle and is flipped over so that the bevel is up. There is no breaker. The opening is not adjusted by moving the frog, but rather part of the plane bottom at the toe moves backward and forward. The bottom can be ground in the same fashion as the larger planes. One is then concerned only with sharpening the iron, setting the depth, and adjusting the toe plate to close up the opening, as was done for the bench planes.

The uses of planes

To describe the uses of the various planes requires some generalization as there is not much consistency between which planes different craftsmen use for different tasks.

The block plane has two main uses. One is planing end

grain. The other is any planing job requiring one-handed operation. With a low iron angle and the lack of a chipbreaker, the block plane has limited use on long grain because it tends to cause tear-outs.

There is much less consensus on what the specific uses of the various sizes of bench plane should be. There are four common sizes: smooth, jack, fore, and jointer, ranging in size from the smooth (as short as six inches) to the long jointer (24 inches and up). I would venture the following statement: The longer the plane, the less it tends to be affected by local hollows and high points and the easier it is to get a true surface. On the other hand, because of its size and weight, the longer plane tends to be somewhat unwieldy and tiring to use. For larger and longer surfaces it has its advantages. I have seen jointer planes used effectively for everything from six-foot edge joints to three-inch end grain surfaces.

As you might expect, the smaller bench planes such as the smooth plane are much lighter and easier to control, but affected more by the irregularities in the rough wood. Many craftsmen use them, as the name implies, to smooth the marks left by the larger planes. Some might argue that there is really no reason why the larger planes should not leave a smooth surface. In the long run, the individual will find his own preference. The best advice to a potential buyer of a first plane would be to get one of the mid-sized ones, the jack or fore, which are in the 12 to 18-inch range.

A final note on planes and hand tools in general deserves to be made. They are getting harder and harder to find. We have become so dependent on machines that the hand skills are fast disappearing. The manufacturers are responding by dropping many lines. The lines they keep are cheapened since they know that the unskilled public will likely not know the difference. It is sad.

What about wooden planes?

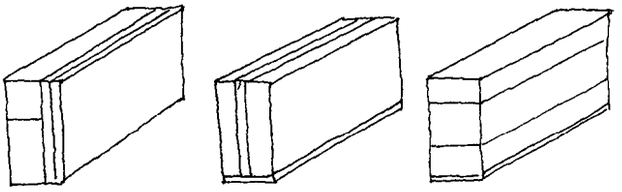
It is fulfilling to make objects of craft or art. To make the tools with which you manufacture the objects is exhilarating. This is the case with wooden planes. They are simply made and can enliven the planing process. As to function, handmade wooden planes can achieve results equal to the finest metal planes-some would say better. They can be made to fit the job: long, short, wide, narrow, curved, flat, or any number of specialized shapes. The plane body can be made to fit your hand and your way of planing. For those who like to work with wood, there is a joy in using a tool also made out of wood.

Are wooden planes better than metal planes? Just about the only factual thing that can be said is that the sole of a wooden plane is less likely to mar the wood being planed. But a wooden plane can't take abuse, so that one's frost plane, which does tend to get abused, should probably be of metal. Conversely, a metal plane must be kept tuned to perform right, so that the choice between metal and wood turns out to be mainly subjective.

Materials for making wooden planes

The materials needed to make wooden planes are relatively easy to find. In fact, it is probable that most of what you need can be found in your own shop.

The wood used needs to be a hard, dense wood. We are aiming for a solid blank to make the plane out of, but in most cases this will have to be glued up from whatever is available to you. Hard maple works quite well, as does beech. In fact, many of the old planes were of beech. Oak is hard enough,



but a little too coarse. Other native woods such as apple, pear, dogwood, iron wood and hickory are excellent, if you can find them. The best yet would be to use some of the extremely dense exotic woods to make a thin bottom to glue onto the main body of the plane. Lignum vitae, cocobola, bubinga, and tulipwood are excellent, but as with all good things, they are hard to find and expensive.

You will also need some 1/2 or 3/4-inch dowels, depending on the size plane to be made, as well as some 1/4-inch dowels.

For the plane iron and chipbreaker, there are a number of options. You can borrow one from your metal bench plane or you can find old ones at flea markets, junk dealers and garage sales. You can also get replacement irons for metal planes at some hardware stores or from the manufacturers. In some cases you might find irons without breakers, in which case it is possible, with a little ingenuity, to make the breaker.

I should note here that you may not have access to the machines mentioned in this project. In this event, planemaking will be a challenge, but still quite possible. You may have to adjust the dimensions and use your ingenuity to compensate for the lack of machines. I have made planes entirely with hand tools, but of course it required a lot of patience, bordering on endurance.

Making the plane blank

Measure the width of the iron to be used and add 1-1/2 inches. That will be the width needed for the blank. Much of the extra material will be lost in subsequent machining operations.

Determine how long a plane you want, add at least four inches (more if possible), and that will give you the length of the blank. In no case should the blank be less than ten inches or it will be awkward and dangerous to machine.

For larger planes the blank should be four to five inches high, and for smaller ones, three to four inches. It is best to err in the direction of making the blank too high. (For purposes of this article, dimensions have been standardized. Needless to say, innumerable variations are possible.)

Dimension the blank. In most cases it will have to be fabricated from two or more pieces of solid wood glued together. Once the glue has cured, the bottom should be run over the power jointer to clean up the bottom and to square it to the sides.

If a special hardwood bottom or sole is to be added, do it now. There is no limit to how thick the bottom can be as long as it is over 1/4 inch. Make it oversize in length and width.

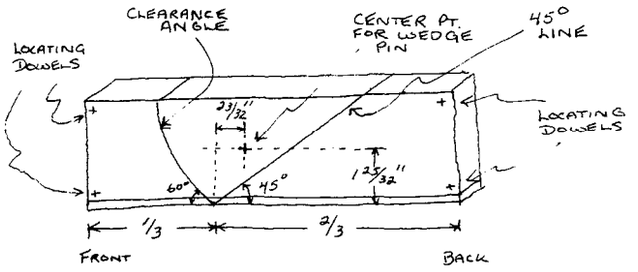
Glue the piece on, let the glue cure, and then plane off the overlapping edges.

With or without the special bottom piece, you should end up with a block that is surfaced and square in all dimensions.

Laying out the blank

Lay the blank on its side and make a mark on the bottom edge where the iron should come through. This should be 1/3 of the distance from the front. Draw a line from this point at 45 degrees toward the rear of the plane. Also mark in a clearance angle. This can be either a straight line at about 60 degrees to the bottom, or a curved line. It should intersect the 45-degree line at the plane bottom.

The center point for the wedge pin must be located, 23/32 inches back of the intersection of the 45-degree line and



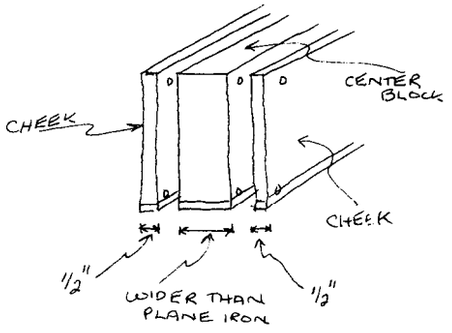
clearance angle, and 1-25/32 inches above the bottom of the blank. Also mark the position of the four locating dowels somewhere near the four corners of the blank.

Machining the blank

With the plane blank still on its side, drill 1/4-inch holes through the blank where the four locating pins go, and a 1/2-inch hole where the wedge pin goes.

At this point you should have a blank with five holes going all the way through it, and the 45-degree line and clearance angle lines drawn on it. I would transfer these marks onto the top and bottom of the plane so as not to lose them in subsequent operations.

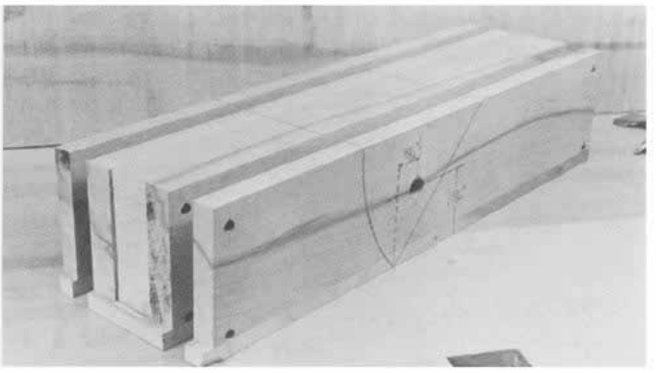
With the plane blank resting on its bottom on the bandsaw table, bandsaw or resaw a 1/2-inch piece off each side. These



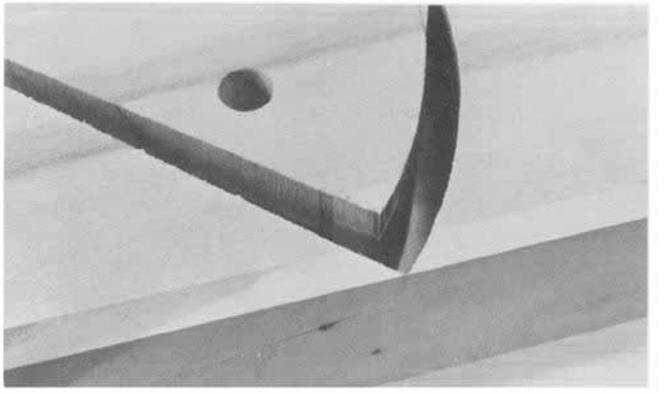
two 1/2-inch pieces are called the cheeks. This operation should leave a center block somewhat wider than your plane iron.

Thickness plane or joint to an even thickness the two cheeks to get out the unevenness left by the bandsaw.

Run one side of the center block over the jointer to get out



After the plane blank is glued up and the holes are drilled, the two cheeks are bandsawed off.



When bandsawing out the section of the center block, make sure you leave a feather of wood.

the bandsaw marks, and thickness plane the other side until the center block is 1/16 inch wider than your iron.

From the lines that you transferred onto the top and bottom of the blank, redraw the 45-degree angle line and clearance angle on the center block.

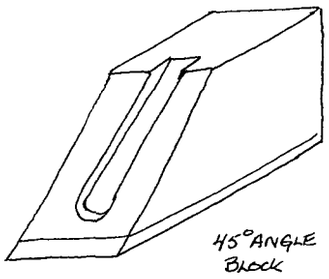
The next operation is to bandsaw out the section of the center block between the 45-degree angle line and the clearance-angle line. This middle piece (with the 1/2-inch hole in it) is the waste piece, and so the bandsawing must be on the waste side of the line. *Do not bandsaw through the bottom.* Rather, have the two bandsaw cuts meet exactly at the junction of the two lines, leaving a feather of wood connecting the two pieces which can be hinged and severed to separate the clearance-angle block from the 45-degree angle block.

If this is done properly, when the two cheeks are put back on and the locating pins put in, the resulting opening should be less than 1/32 inch. Also note not to discard the middle piece with the 1/2-inch hole. This will become the wedge.

At this point you can use any means at your disposal to clean up the surfaces of the 45-degree angle and the clearance angle. I prefer using a disk sander for the 45-degree angle, with the table set carefully at 90 degrees and a mitre gauge set at 45 degrees. To clean up a curved clearance angle, some kind of drum sander is helpful. Be careful to take away a minimum of material to prevent the opening from getting any wider than necessary.

A groove or slot must be made in the face of the 45-degree angle to allow for the cap screw on the chipbreaker. To

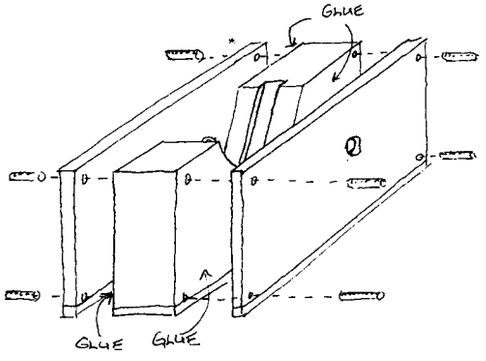
determine how deep and how far down the face toward the opening it must be, you will have to take measurements from your iron and chipbreaker. The slot can be made with a gouge, router, chisel, horizontal boring machine, or any number of other methods you might have at your disposal.



Assembling and adjusting the plane

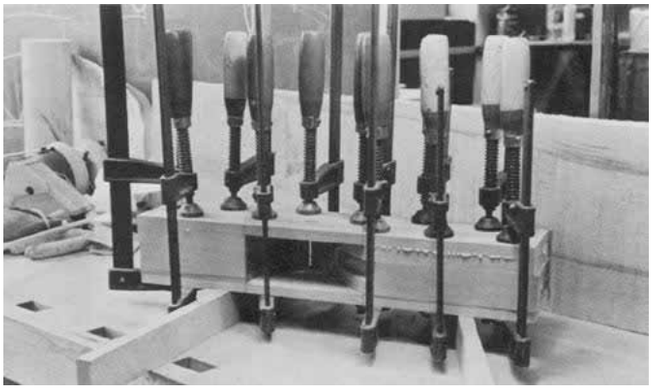
The pieces are now ready to glue back together. Have at the ready eight 1/4-inch locating pins about one inch long with chamfered ends, and plenty of clamps. The objective is to reassemble the plane blank as it was originally, save for the absence of the waste piece cut from the center block.

All in about five minutes time, spread glue on the same side of each of the 45-degree and clearance-angle blocks, position one cheek on, hammer in four of the pins, cut the



pins off flush (this makes clamping and handling easier), turn the assembly over, spread glue on the other side, position the second cheek, hammer in the pins, and cut them off flush; then clamp the whole works with as many clamps as possible, taking care to get tight glue joints on the sole.

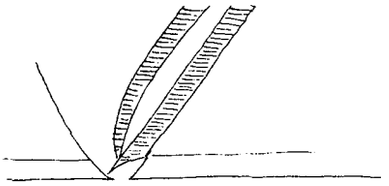
Once the glue has set, unclamp and carefully clean all the excess glue out of the area inside the plane.



After sawing out the center, reglue the cheeks.

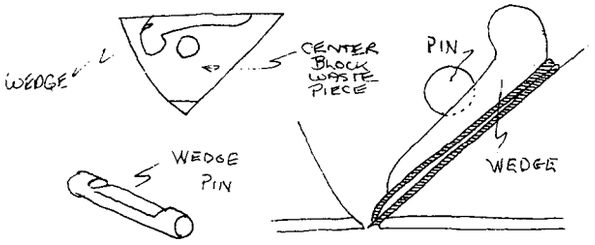
Plane all the locating dowels flush on both cheeks of the plane and lightly joint each side. Hopefully, if all has gone right, you should be able to slip the iron into the plane and it should *not* be able to come through the bottom.

Now, taking very light passes on the jointer, joint the plane bottom to widen the opening. When there is about 1/16 inch left to go before the iron can come through, *stop!* The rest will come off later with a little file.



Sand the bottom carefully by placing a full sheet of fine sandpaper on a flat surface and rubbing the plane back and forth on it.

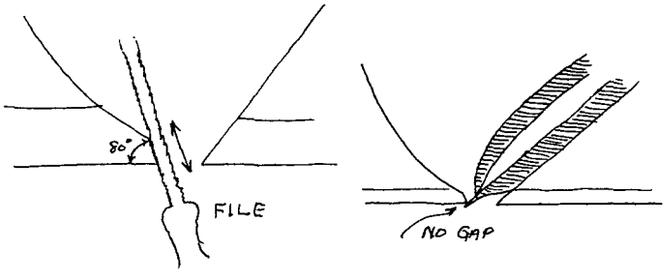
Before fitting the iron further, make a wedge out of the waste piece cut from the center block. It should not be so long that it blocks the shavings. It must also be narrow enough not



to be too snug against the cheeks. Cut a length of 1/2-inch dowel for a wedge pin, making it as long as your plane is wide. File a flat on it wide enough to accommodate the wedge. Insert the pin with the flat down, but don't glue it.

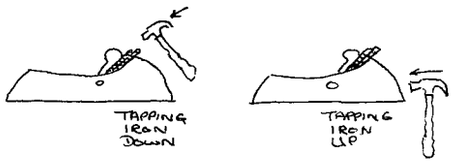
Adjusting the opening

The adjustment of the opening is the most critical step in the making of a plane. The thing to remember is that you want the smallest opening that will still allow the shavings to pass freely. Using a small, fine needle file, file the leading edge of the opening at about 80 degrees to the bottom until the iron just slips through with no clearance to spare. Be



careful, all the while, that the opening is even all the way across. At this point, a little bit more filing will begin to give the clearance needed to allow the shavings through. At this stage it's a good idea to seat the sharpened iron, chipbreaker and wedge, set the depth on the iron, and try a shaving or two.

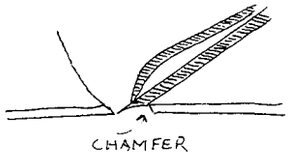
(Adjust the iron down by light hammer taps on the back end. Adjust the tilt by tapping the sides of the iron. Bring the



iron and wedge out by tapping the rear of the plane. The wedge should be tapped snug after adjusting the iron)

If the shavings jam up in the opening, then it needs to be wider. Take the iron out, file a little more, and try again. You may have to do this half a dozen times.

When you finally get it right, take the iron out and chamfer the trailing edge of the opening. This will prevent it from getting chewed up. It does not affect the plane's function.



At this point you are on your own to modify and shape the plane to your own special design and use to fit your own hands and function. The only points to consider are that the rear of the iron should project slightly to allow easy tapping. (Most of the time I shorten the length of the iron so it does not project up too far.) And some provision should be made for tapping the iron and wedge up to remove them. A flat on the rear of the plane or a turned button there work well.

Remedying mistakes and defects

There are many little problems and mistakes that can be made but overcome.

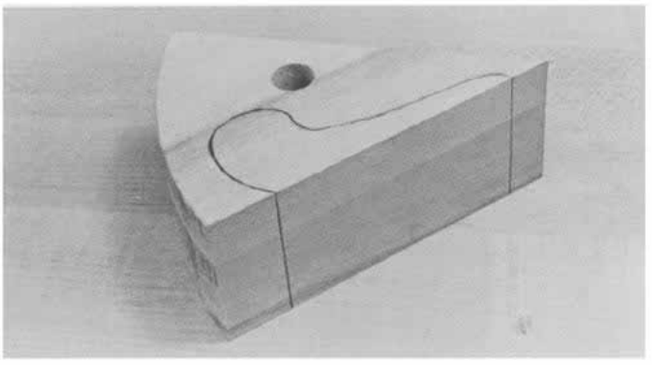
If the opening is too wide, make a new sole and add it on. Or cut out a section of the sole in front of the opening and replace it with a larger piece to close up the opening. Or move the 45-degree angle block forward before the glue up. Or use a thicker iron.

If the iron is too wide for the plane, grind it narrower.

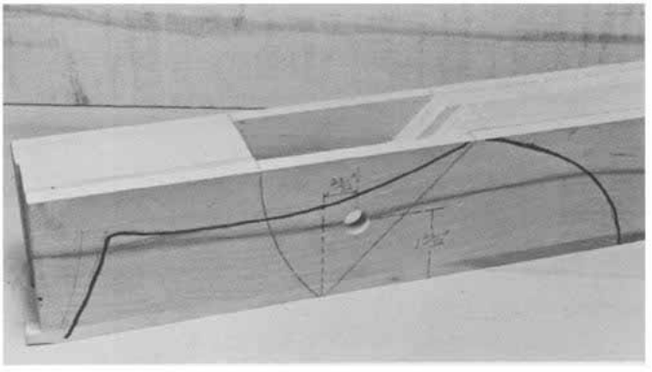
If the wedge or iron keeps slipping back, reduce the angle on the wedge, or roughen up the surface of the 45-degree angle block.

If the iron chatters when cutting, make the bottom side of the wedge concave to put more pressure down low on the iron.

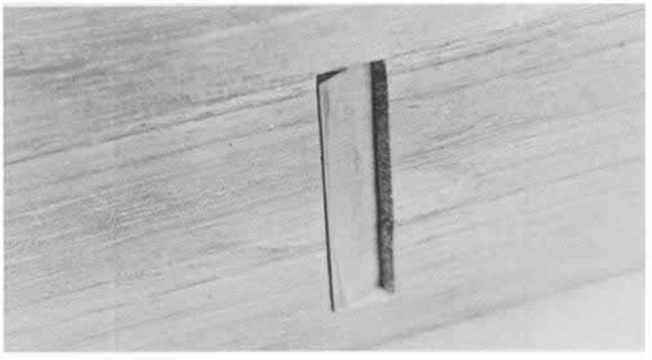
In the interest of space, I have not mentioned many of the options and alternatives available. But in demonstrating the process to students, I have seen so many different ideas, shapes, and methods of construction, and the like tried—most of which work beautifully—that I am convinced that the sky is the limit on how these planes can be made. Any number of different planes can be made with modifications of the techniques described: molding, flat, round bottom, compass, block, bullnose, rabbeting, to mention just a few. But that is a whole subject in itself.



The section cut out of the center is a handy piece to use for the wedge. The precise shape is up to you.



The plane is now ready for the critical adjustment of the opening using a jointer and needle file.



This is how the opening should look after it has been correctly filed. Chamfered trailing edge is not critical.

The finished plane, test shavings and all. Make the upper body shape whatever is most comfortable for you.

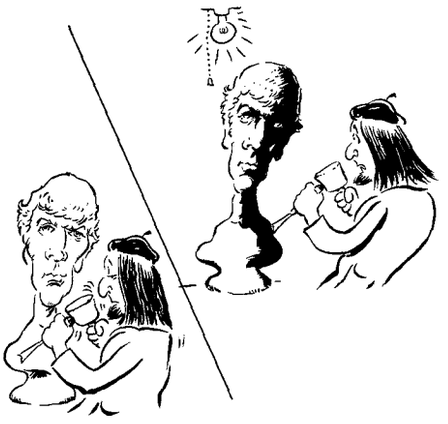
Carving Design Decisions

Questions to answer before taking that first cut

by Robert L. Buyer

It has been said that sculpture is the measure used by archaeologists to determine the cultural level of past civilizations. This statement always humbles me and makes me want to produce sculpture of the highest possible quality. Not that my woodcarving will ever find a niche in the great museums of the world, but I sincerely hope my work will be a reasonable statement of some of the concerns of the twentieth century. To this end the design phase of a woodcarving project takes on added importance.

From a practical standpoint, effort spent in the design phase is made up during the execution phase by eliminating mistakes and rework. Having decided to embark upon a woodcarving project, there seems to be a lot of emotional pressure to hurry into making chips. If the project is to be successful and fulfilling, however, some of this enthusiasm and energy must be channeled into the design effort. Some key decisions need to be made before the project is begun. How well we make those decisions could determine the effectiveness of the resulting piece. We are all familiar with sculpture and carvings that, although beautifully executed in certain respects, are lacking in design cohesiveness.



Light and shadow at the site can affect the attitude and dramatic quality of the carving. Cartoons by author.

Where do you begin designing a woodcarving?

If you are a professional woodcarver working with an architect, you receive sketches and specifications which describe the environment for the sculpture, the theme or message to be conveyed by the sculpture, and possible sketches suggesting the form of the sculpture. Unfortunately, most of us who are carving for our own enjoyment, or even for a specific exhibit, do not begin with architectural specifications. So we must begin by determining our own specifications, and that can sometimes be difficult to decide.

What's the theme or objective of the woodcarving? Is it to evoke smiles or to inspire some emotion? Where will it be placed? Should the carving hang from a wall or ceiling, or rest on the floor or on furniture? If we can determine a spirit and setting for the carving, we can then go on to make the first design decision: form.

What form should I use?

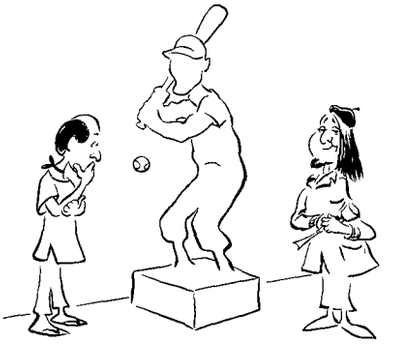
Knowing the site planned for a carving should suggest the general size and form to be used. If the site is a large wall, the viewing angle is limited to about 120 degrees, height is desirable, and the lighting is good, then a relief carving is suggested. High relief produces greater shadows, and so is capable of being more dramatic and realistic than low relief. Low relief is ideal for simplified or abstract carvings where the ambient light varies.

On the other hand, carvings in the round can be more dramatic and warmer than relief carvings because they can be proportioned similar to natural objects. Moreover, they can be viewed from almost any angle and in almost any light.

In either case, the size and proportions of the carving should be designed to harmonize with its eventual surroundings. Life-size or heroic-size sculptures require large, open display space. Miniature carvings decorate small tables or curio cabinets. Whatever the space available, make sure the sculpture is not crowded and that it stands apart enough to be contemplated separately.

What wood should I use?

Most professional carvers use mahogany and bass (linden or lime) wood almost exclusively. Mahogany is used where a wood-grain finish is required, and bass is used where the surface is to be painted or gilded. Both of these woods are commercially available in kiln-dried stock in a great variety of sites, and both are soft hardwoods;



"How did you carve that ball?" Your design must not only be esthetically pleasing; it must also be capable of being produced.

that is, they are relatively easy to carve, yet strong enough to survive.

Ideally, the wood should be selected, not from these two species alone, but from all the species available. Wood selection should be based on durability, color, figure, sizes available, ease of working, economic factors, and the finish to be applied.

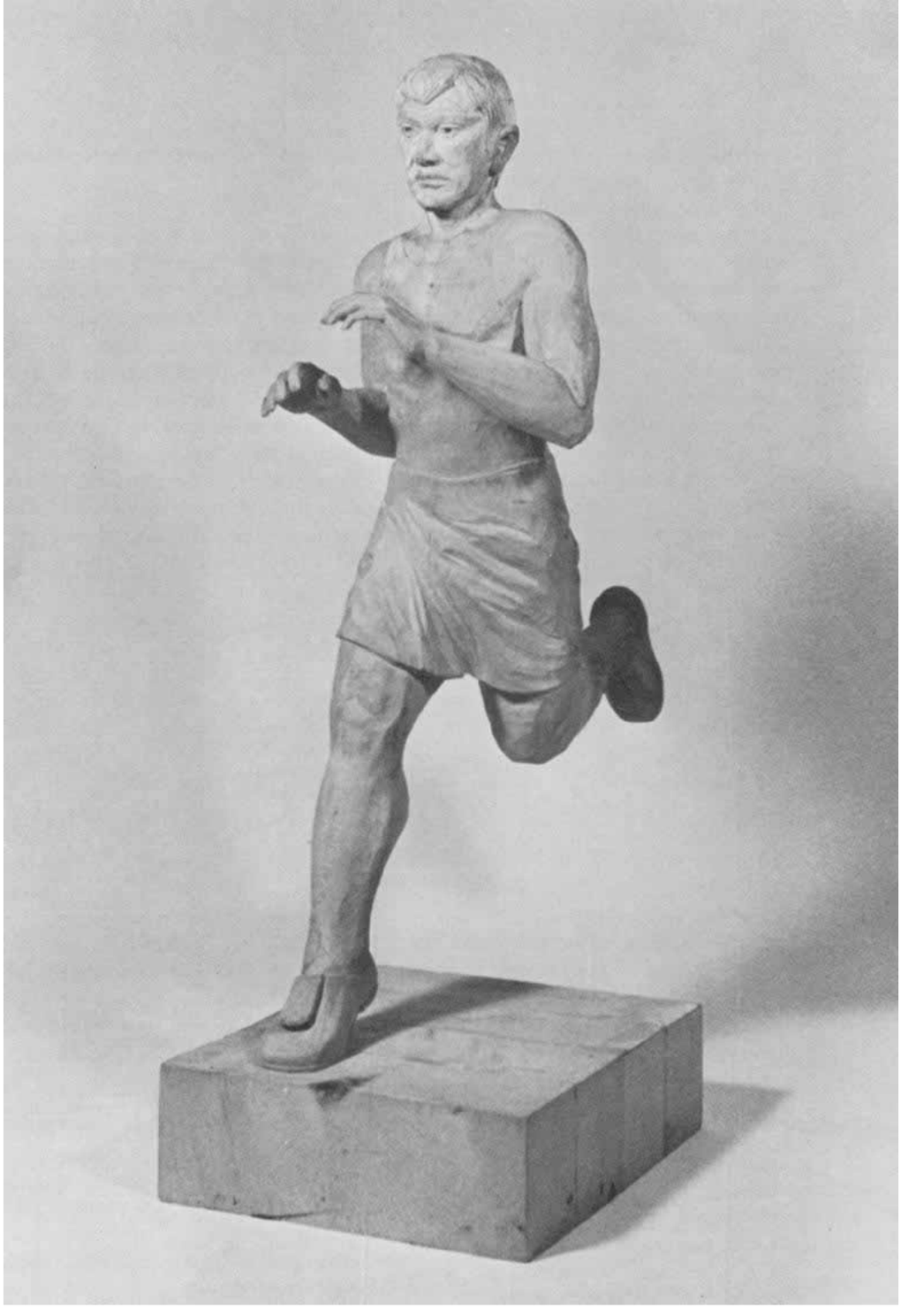
Almost any of the native fruit and nut woods are good—cherry, apple, pecan, butternut. Walnut is my favorite because of its beautiful grain and rich, dark color. I use cherry from time to time because it's a hard wood that has some beautiful grain and color variations. Pine is another wood I use frequently because it is soft, takes a stain well, and I can give it just about any flavor I choose. Fir and hard pine should be avoided because they are somewhat stringy and tend to sliver, making them hard to work.

The color and figure of the wood must harmonize with the theme and environment of the finished carving. The effectiveness of a finished carving often depends upon how it matches or contrasts with its environment. For example, you would not want a natural oak carving in a room that was paneled and furnished completely in mahogany. You might, however, want to make the carving in matching mahogany, or in contrasting ayous, sometimes referred to as blond mahogany.

The color and figure of the wood should certainly be considered for carvings receiving a natural finish. Dark woods shouldn't be used for an intricate piece with a lot of holes and incisions that show up only through shadows.

Large carvings in particular can be greatly enhanced by the selection of a figured stock. Crotch and burl wood, or quarter-sawed lumber usually have beautiful figure. Figured wood is usually a little more difficult to work due to changes in grain direction, but the results are worth the extra effort.

Esthetically, the grain pattern should not be so strong that it interferes with the lines of the sculpture. That is, if there is too much contrast in the media itself, it can detract from the lines of the piece. However, in a well-rounded, smooth piece you can add interest by having well-figured grain. In other words, make the grain work for you rather than against you.



Jim Thorpe, the World's Greatest Athlete, by R.L. Buyer. In the unfinished state, this 39-inch high sculpture suits the harsh life of this American Indian and leaves open the option of other finishes to suit the final site.

This is true in the construction sense, too. In fragile pieces the grain must be parallel to the direction of the most slender section of the piece to give maximum strength. This often means that a piece must be laid out irregularly or at an unusual angle rather than parallel or perpendicular to the edge of the stock. This is an important consideration in the mechanical strength of the carved piece and affects the carving technique and the size of the stock required.

What surface finish should be used?

First, the surface carving technique used, combined with the finishing material, will determine the reflective quality of the piece. A smooth surface reflects light and suggests sophistication or formality. A mottled surface absorbs light and can suggest crudeness or informality. Variations in surface treatment can be used to indicate hard, cold, smooth materials or soft, warm, mottled materials.

Next, there is the question of no finish versus natural wood color, or painted or gilded finish.

A raw wood finish, that is, no finish, gives a rough, crude, no-gloss appearance that works well in limited circumstances. The theme must require a coarse effect, the site should be protected so the wood doesn't deteriorate, and there should be good lighting because of the poor reflective quality of raw wood.

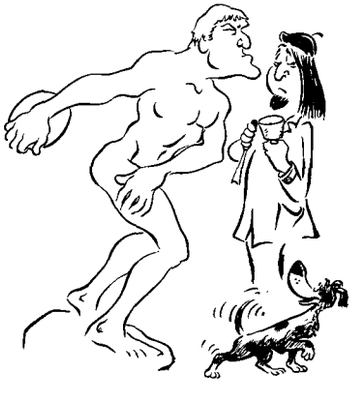
Natural wood finishes of oil, wax, varnish, etc., are my personal preference, for they offer the greatest variation in treatment, yet still show the wood grain. The choice is both technical and artistic—technical as to the protection desired, artistic as to the darkening and color desired.

With painted or gilded finishes, wood loses its character and identity. Nevertheless, paint or gild may be necessary when it's an outdoor piece that needs good protection. Gild is of course the strongest finish you can use outdoors. It's also good esthetically for contemporary pieces that need its high reflective quality and metallic look.

Paint is used when you need the multiple color to achieve true realism.

Finish also is affected by the wood carved. Hardwoods usually take a high polish whereas softwoods are more difficult to polish and are best used for stained, painted, or gilded carvings.

The choice of finish could also depend on the construction and holding methods used. The dovetailed or pegged legs of a carousel animal would need to be masked by paint, but the appearance of construction joints could enhance other subjects.



"Fetch!" The finish must be appropriate to the style of the carving and can vary in effect for realistic or abstract pieces.

How will the piece be held during carving?

Ideally, we want to design the piece so that it can be carved with minimum effort and without leaving holes or marks that must be covered up. Either we design the piece so the holding mechanism is an integral part or so it can be chopped off. An example of the latter is a relief carving that can be designed with tabs or other holding devices that can be removed by saw when the carving is completed. This eliminates clamp marks on the carving. If tabs are impractical, the relief carving can be glued to scrap stock with several intervening layers of newspaper. The scrap block can then be clamped in place during carving and separated easily from the carving afterwards.

Carvings in-the-round take special care, especially if a natural finish is to be used. The best way is to drill undersize holes where the final mounting will go and attach a piece of scrap wood with screws. The scrap wood can then be clamped in place during the carving. Upon completion, the scrap wood can be removed and the same holes redrilled to accommodate the final mounting.

Commercially available devices such as carver's screws or work positioners (universal joint devices) can also be used effectively. Carver's screws can be simulated by gimbal or hanger screws with wing nuts. The advantage of these is in the variety of screw lengths available and the added security of more than one screw support.

What support is required for the carving?

The base or mounting design is extremely important. This should not be left until the end of the project, but should be considered and designed as an integral portion of the carving itself. The base not only provides the mechanical support and balance for a carving, but also provides the transition from the carving to the surrounding area. A well-designed base will not detract from the carving and sometimes can provide an extension of information about the subject.

For example, the base for a bird carving can be a formal mahogany stand or can simulate the normal habitat or nesting area of the bird. Sculptures by Frederic Remington and Charles Russell integrate the figures into a base that characterize the terrain of the "Old West." Carvings of jumping or swimming subjects can be supported on one or more thin metal supports in a way that either simulates the natural environment or emphasizes the fact that the carving is suspended.

Development of the base along with the carving can also provide protection during the construction and carving phase. This is especially true of complex carvings such as birds where the legs must fit into precisely drilled holes. The pieces can be removed from the base for carving, then returned to it for protection between work sessions.

While relief carvings can be fitted with hooks or eyes on the back, larger carvings may require mounting-screw holes that should be concealed with carved plugs. Some of the carvings in the round, especially abstract pieces, can make effective use of overhead wire or chain suspension using ceiling eyebolts or wall-mounted arms.

Do the answers work together?

Now that we've asked all the key questions, do all the answers work together? And do you have the equipment, materials, and skills required to produce the designed object? If so, then launch the project. If not, then back to the drawing board.

Mother Nature sculpted from life. No two creative, expressive people working from the same plans will ever produce identical works of art.

Wookworking Thoughts

Some musings of a designer-craftsman-teacher

by Tage Frid

I have chosen to be a designer-craftsman. Most of my life I have concentrated on designing and working with wood only, and having spent more than 40 years with that one material, I am still learning through experimentation and looking for new techniques in forms.

The only trouble with designing and working in wood is that it has the advantage or disadvantage, however you look at it, of being beautiful in itself. It is not like metal; a piece of metal by itself is very cold and has to be hammered, shaped and polished before people will even look at it. A piece of clay, which is really dirt, must be shaped, fired, and glazed. But take a piece of wood; plane, sand and oil it, and you will find it is a beautiful thing. So actually, the more you do to it from then on, the worse it is going to get. Therefore, working with a material of such natural beauty, I feel that we have to design very quietly and use a simple form.

On being an apprentice

I was born in Denmark, so therefore my background for furniture design is a little different from that of most American furniture designers. That may be the reason that I view design from a slightly different angle, and. feel strongly about the background that a furniture designer should have. I started as an apprentice in a cabinet maker's shop in Copenhagen when I was very young. Because I was not what you would call an outstanding student in school, I decided that the best thing for me to do was to serve an apprenticeship.

When you become an apprentice in Denmark, you sign a contract for five years, which is binding on both parties. Those were five of the longest years that I have ever spent! The working hours were from 7 a.m. to 5 p.m., six days a week. At night from 7 p.m. to 9 p.m., I was required to attend technical school, where drawing and a knowledge of the materials were taught. Salary for the five years was $1 a week and the guarantee that I would be a journeyman at the end of five years. I did not learn very much about design, but I did learn a good deal about wood as a material—its strength, its limitations, and how it is put together.

Vocational education

Today people look down on vocational education because it has not inherited the prestige of the past generation in America. In Europe, the craftsman enjoys the recognition he deserves. There should be an effort made to put more respect into vocational training. A student taking vocational training is just as intelligent as a student enrolled in a college program, the only difference is that the student does not want to be an academician. I think it is better to be a good craftsman and happy than to be a doctor or lawyer and unhappy just to satisfy mom and dad.

I think we have to start with the teachers of vocational subjects in high schools by giving them a better background. Instead of teaching them a little of each craft and having them become jack-of-all-trades, they should be taught one craft so that it is mastered and they can teach students in that particular field. I think also that they should be furnished with a better design background themselves in order to be able to guide the student in making his own design. Now if a student wants to make a coffee table, he is told to go to Drawer 3 and pick a design, usually from some popular magazine, which certainly does not help the student to understand good design. The student in a vocational school should be instructed in mechanical drawing, materials and processes, design and art history.

In schools today we like to expose students to a little bit of everything. I think it is a good thing for them to be exposed to various media, but it should be for a limited time only until they make up their minds about which field they desire to enter. Educators today like to talk about the spiral where the students know a little bit about everything before finally reaching perfection. I think it would be much better to turn the spiral up-side-down and learn one thing well, and as you go on and improve, spread yourself out to other fields. However, I believe a student should make up his mind at an early point what will be his major and spend much more time in it. I'm afraid the teaching today where the student spends a few hours in one field and the next few hours in another only leads to confusion and he is unable to decide what he really wants to do.

Knowledge of materials

In 1948 I got off the banana boat and started teaching in the Crafts School. When I arrived at the school, the students and some of the teachers kept talking about the "freedom of the material." This sounded interesting and exciting to me, and I could hardly wait to find out what it was all about. It didn't take me very long to find out when I started teaching. They did not have control of the material; so many of the things made were actually accidents.

I do not think that all furniture designers should be craftsmen first, but I certainly am convinced that the designer should know the material in which he is going to design. I

really do not see how a designer can go in cold and design something in a material about which he has no knowledge, as it is extremely difficult even for a professional to switch from one material to another and do a good job.

Design and construction

If you combine technique and knowledge of the material, you certainly should be able to make some interesting and beautiful furniture—because if you have this background, you will automatically design around the construction, and not construct around the design. You will combine the two of them, as construction becomes second nature when you are designing. I am sorry to say that many times a different approach is used, and that is to construct around the design. Many students and designers are so worried about the looks and the sculpture of the piece, they first think about the beauty of the piece and later worry about how it is to be put together. I strongly believe that this is definitely the wrong approach to take when you are designing furniture. When people buy furniture, they are very particular, and want a chair they can sit in and a bed that they can sleep in. A customer may, for example, buy a sterling silver coffee pot that will tarnish and not be safe to operate—to show that he can afford expensive items, or for whatever personal reason. He may buy a vase for its beauty even though it may have a crack in it. But when he is buying furniture, he wants something he can use. It is very hard to design furniture because somehow it has to fit the contours of the body which haven't changed much since time began.

Furniture

I feel that furniture should be in proportion to the size of the buyer and reflect his own personality. I don't think that anything can make a small person look more ridiculous—and perhaps make him feel smaller—than disappearing into an oversized, upholstered chair; or the reverse of a large person sitting in a delicate chair in which the chair disappears, and the person seems to be sitting on four legs. Furniture should be proportioned to the person who uses it. There are certain requirements a chair must have when you design it. It should be designed so that it looks inviting to sit on, and when you do sit on it, the chair legs should not spread. You should be able to sit in it in various positions, and it should be able to take the weight of a person under stress circumstances.

I feel that the arms are too low in most arm chairs, and your arms are forced into your body—not very comfortable on a warm, sticky day. The arms on a chair should be high enough so that when you are reading, your arms can be at rest, holding the reading material at the proper distance. In this position, you will be more comfortable and the air can flow around the body as necessary.

The furniture I have been talking about is the more functional type, but there are others: for instance, the type that you are supposed to "discover." A few designers and craftsmen could make this type, but you could not start an industry based on it. A designer-craftsman would design this type of furniture because it would be so personalized that it would be impossible to make a working drawing, or to get anyone else to make it; but it would be very refreshing to have a few pieces of this furniture in your home. A limited number would be fine, because I don't want to spend half of my time trying to discover where I am going to sit in my own home. I am in favor of individualized furniture, do them quite often myself and encourage my students to do so. It is fun to make a piece of sculpture which you may also sit on.

When I talk about chairs, there is something that has always puzzled me. What happened was that in the beginning, we were all sitting on the ground. Later on some people who were more important were offered stones to rest upon. These were found to be too hard, and a piece of wood was substituted. Usually the important people in those days were the elderly, so then backs were added and armrests. Then, in order to make it movable, it had to be lightened, and this process has gradually become a chair. So now, of course, we are all important, and therefore all sitting on chairs! What happened to the rest of the world, like China and Japan? They are still sitting on the floor, and I'm sure they are just as important as we are. I don't want to go deeper into the history of the chair, but it is strange that half of the world is sitting-on chairs and the other half is still sitting on the floor.

Designer-Craftsmen

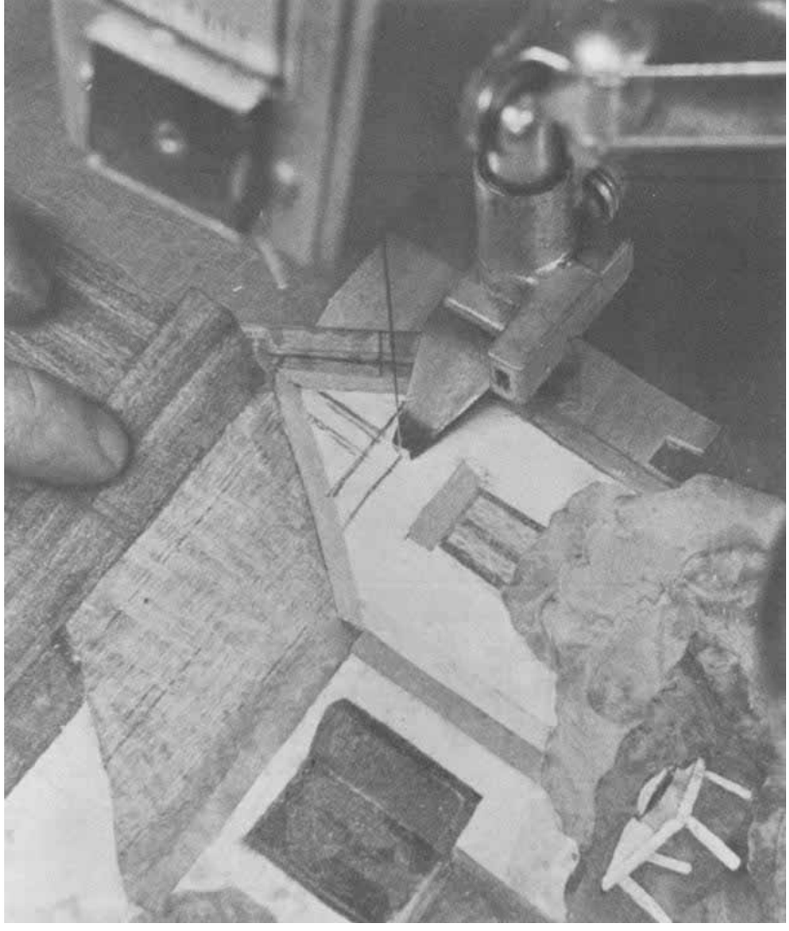
If you study the older furniture designers, you will find that they were craftsmen and they all designed around the construction. For that reason we still enjoy their furniture today, and it mixes very well with well-designed contemporary furniture. The good furniture designer of today uses the same techniques, and those pieces will later become the classical furniture. But, in many cases, the designs are copies, and in cutting costs, shortcuts are made, and this is how we have some of the miscarries we have today. Of course, I am fully aware of the high cost of material and labor, and the shortage of skilled labor which has a big influence on today's designs. But I still don't believe an inexpensive piece of furniture has to look cheap. The disappearance of the designer-craftsman was one of the prices we had to pay here in America for having mass-production. In Europe, they are specializing also, and a decline in the crafts field is noticeable. But it does not mean that it is dying. We don't need the large numbers we once had because of the machines.

Many people think that the craftsman makes everything by hand. Of course, he does not. He is taking advantage of all the machines and techniques that are available. Some people think it is "wonderful" that something is made "by hand". I don't care how it is made—he can make it with his feet or a machine—it is still the final product that counts. A craftsman is very flexible and it does not cost much to switch from one design to another; therefore he is able to combine the machine and hand work to get more individual pieces. Even in a small production line, each piece can still have its own individuality. Pricewise, I think a designer-craftsman can compete with factory-made furniture for the reason that people usually go directly to him, and the dealer's in-between costs are cut. Without the tremendous overhead the factory carries, the price will be pretty close to what a factory-made piece of the same quality would cost.

So I believe that there is a great opportunity and a great need for designer-craftsmen today, and that most clients are looking for something with a more personal touch and of better quality than is available.

Marquetry Cutting

by Peter L. Rose



The author uses the double-bevel-cut method on a jig saw to cut a horizontal beam. Veneer for the beam is taped underneath and is being cut simultaneously.

Woodworkers who have never tackled marquetry before have a variety of cutting tools and methods to choose from. Depending on one's patience and skill, some will work better than others. The aim, of course, is to have tight-fitting joints requiring no wood filler except for intentional esthetic reasons.

Basically, there are two ways of cutting veneers for marquetry—with a knife, and with a saw. The knife is good for pictures with many straight cuts and geometric designs and for cutting borders and miters. But it's difficult to cut sharp turns on the harder veneers, although there are some superior marquetarians who use a knife exclusively. Also it's difficult, if not impossible, to cut neatly through two thicknesses of veneer at a time with a knife.

The saw overcomes the disadvantages of the knife by allowing tight turns and the cutting of more than one thickness at a time. But it, too, can be difficult to handle, has limitations of size, and can run into much more expense if power equipment is chosen.

Knives to choose from

The knife most used in marquetry is the X-acto knife with a #11 blade, a blade that has an extremely sharp point. It is a comfortable knife to hold and the blade is sturdy, but frequent sharpening is required. The X-acto knife's main disadvantage is that because of the thickness of the blade, it makes a V-shaped cut, spreading the veneer apart at the top. Many marquetarians overcome this by cutting their pictures from the back using a reverse pattern. When seen from the front, the cuts will have a much tighter fit.

Another good choice is the scalpel or surgical knife, again with a #11 blade. This is a flat, slim knife that uses blades about the same thickness and sharpness as razor blades. Because the blades are thinner and sharper, the scalpel cuts the veneer more easily than the X-acto knife. However, the blades are fragile and break easily. They are usually replaced rather than sharpened.

Finally, there is the single-edge razor blade which is good only for straight cuts, as sharp turns require a much more pointed blade.

Saws to choose from

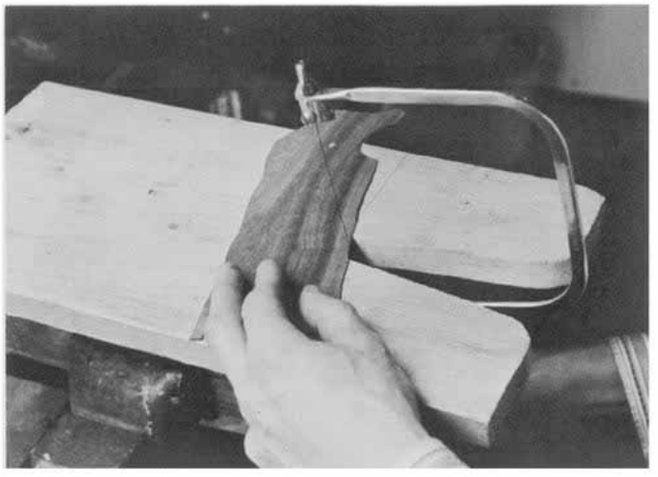
The main point to remember about saws for marquetry is that the thicker the blade, the cruder the cut and the wider the gap between pieces.

Thus the popular coping saw is definitely ruled out. Coping saw blades, which have pins at both ends, are too thick, but the coping saw frame cannot take the thinner but pin-less, jeweler's saw blades that do work. As a result, the most-used hand saw in marquetry is the fret saw. It has miniature clamp-like attachments for holding the pinless jeweler's blades.

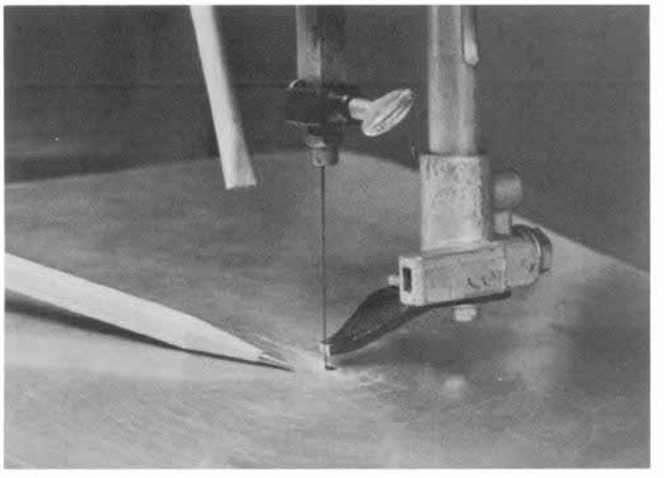
The blades are five inches long and come in various sizes—No. 6/0 being the thinnest at 0.008 inches and No. 1/0 being the thickest at 0.011 inches (although there is a thicker "J" series). The No. 4/0 blade, with a thickness of 0.009 inches and a width of 0.018 inches, is a good compromise between being thin enough to produce a fine cut, but not so thin that it is always breaking. But sometimes the thinnest blade is required for extremely fine detail, and the thicker blades must be used for unusually hard woods. In any event, all the blades are quite small : they fit through the hole made by a sewing machine needle, so breakage is always a problem, and much practice is required to minimize it.

Jewelers partially overcome this by using a saw that can be adjusted to hold the shorter broken blades. These jeweler's saws can also be used for marquetry, but their limitation is in their throat size. The average fret saw has a throat of about 12 inches, meaning that a pattern 24 inches in diameter could be worked on. Jeweler's saws usually have a much smaller throat (2-1/2 inches is a popular size), but this may not be a limitation for those working on small pictures.

Whichever saw is used, a jig called a "bird's mouth" must be made or bought. It is a board with a narrow "V" (about eight inches long and three inches wide) cut in one end. When attached to the workbench, it serves as a sawing



Fret saw cuts veneer held on a "bird's mouth." Cutting is done near the apex where there is good support. Jig would be tilted for a bevel cut.



Jig saw modified for bevel marquetry cutting. Original work hold-downs are gone. Thin metal sheet with small hole for jeweler's blades to go through is glued to original top.

surface. The blade of the saw (with the teeth pointed down) is placed close to the vertex of the "V". The saw is moved up and down in a stationary position as the veneer is fed into the blade.

The main disadvantage with the hand-saw technique is that it takes much practice to hold the saw with one hand and move the veneer with the other so that an acccurate cut can be made on the pattern line.

This disadvantage is overcome (at considerable cost, however,) by the use of a power jig saw. For marquetarians, the main requirements in such a saw are special chucks for holding the jeweler's blades, a tilting table, and a foot switch that frees both hands. To my knowledge, only Rockwell makes a jig saw that can be adapted to take jeweler's blades. The popular Dremel saw does not adapt; neither does the Sears. Another desirable feature is tension adjustment, but if this is not available, a weaker spring can be substituted above the top clamp to help keep the blades from breaking too easily. Average throat size is usually between 16 and 24 inches.

The various cutting methods

The choice of the cutting method is partially determined by the tools available. If a power jig saw is available, then any of the four basic methods can be used; but if only a knife is available, the so-called double-cut methods are ruled out.

The single-piece method

The simplest of the methods (but the most difficult to get a perfect fit) is the single-piece method. Basically, one Xerox or carbon copy of the pattern must be made for each piece used in the pattern. The pattern (or portions of the pattern) are taped or glued to each of the selected veneers. (If glued, cut the picture from the back or in reverse; otherwise the glue will impregnate the veneer and show as blemishes in the final picture.) As each piece is cut, it is laid on a master pattern, and the pieces are held together temporarily with masking tape. The fret saw or power jig saw is recommended for this method, but a knife can also be used. The obvious disadvantage of the method is the difficulty in cutting exactly on the lines to insure perfect fitting joints. Since each piece is cut independently of the others, a poor fit can easily occur.

The window method

A partial way around this disadvantage is through the so-called window method. Instead of cutting all the pieces independently of each other using many copies of one pattern, and then putting them together on a master pattern, the pieces are cut consecutively from a single pattern. The pattern is traced onto the background veneer using carbon paper. The background could be one or more pieces put together. (If the pattern is taped or hinged along the top of the background veneer, it will always be in register, should additional tracings be made onto the veneer.)

Larger pieces in the pattern are cut out of the background first. As each piece is cut and removed, a veneer selected for that part is placed under the opening and moved until the grain direction and figure are in their most pleasing and natural position. The piece is then taped temporarily on the back, turned over, and marked along the edge of the opening with a sharp pencil or knife. The veneer is then removed from the back and cut on the markings. It is then permanently placed in the opening and taped in place on the back side. Each part is done in this manner until the entire picture is completely cut.

The advantage of this popular method is that each veneer can be seen in position before it is cut, and both a knife or saw can be used. But the disadvantage, as with the previous method, is that accurate fitting is difficult because the pieces still are not cut simultaneously.

The pad method

A third method, the pad method, tries to get around this disadvantage by making a single cut; that is, by cutting all the pieces at once as in a jig saw puzzle.

Several pieces of soft waste veneer at least the size of the finished picture are stacked together into a "pad," and the good veneers are interleaved among them for the cutting. To

Veneer for house beam is taped in position to back of picture being cut by double-bevel method. Other tape is holding previously cut pieces that have been white glued.

Sewing needle is used to make hole along line of cut, Jeweler's saw blade will then be fed through and mounted on the jig saw for cutting out.

make up the pad, the good veneers are positioned on the waste veneer according to their place in the final picture and fastened with masking tape. Adjacent veneers are placed on different waste veneer layers so that there is no direct overlapping. In this way the pad is built up of alternate layers of waste and good veneers, and the assembled pad can be tightly compressed during the cutting. The top layer consists of a piece of waste veneer on which the cutting pattern is glued. The average picture may require a pad having six or so such layers.

During cutting, the pad is held together with the edges taped, stapled, or nailed. Power jig saws are recommended for this method and the blade used must be one of the thicker jeweler's blades, 1/0 or 2/0. Thinner blades would break too easily in cutting such a thick stack of veneers at one time.

This is the main disadvantage of this method: the thickness of the blade, slight as it is, prevents a tight fit. Another disadvantage is the wastage of veneers. But the main advantage is that once the pad is made up, the cutting goes quickly and the pieces all follow the same curve or contour because they are cut all at once. Ideally, if the saw blade had no thickness, the pad method would produce perfectly fitting joints.

After the cut is made, the beam is glued in place. Because the cut was made on a bevel, the pieces are not interchangeable. Notice difference in sizes of scrap pieces.

The double-bevel-cut method

This ideal can be reached by a fourth method, the double-bevel cut, but to do this, only two pieces of veneer can be cut at a time. By cutting the pieces at an angle, the gap caused by the blade thickness can be compensated for and eliminated in the final picture. The angle of the cut depends on both the blade thickness and veneer thickness, but usually an angle of 12 to 13 degrees does the job. If the angle is too great, the veneer tends to feather; if not great enough, the pieces won't fit tightly. The best way to find the proper angle is through experimentation.

Both the power jig saw or fret saw can be used with this method, assuming the jig saw table tilts. If a fret saw is used, the bird's mouth must be tilted and possibly modified to produce the same angle cut.

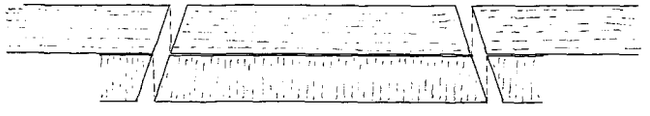
To start this method, proceed in the same manner as with

the window method. But before cutting out any piece of the background, tape the veneer that is to replace it to the back, in position. A sewing needle the same thickness as the blade and attached to a pin vise or handle is then pushed through both veneers on the cutting line. The jeweler's blade is passed through this hole (with teeth pointed downward) and then attached to the saw. The veneer is then consistently cut either in a clockwise or counter-clockwise manner, depending on which way the saw is tilted. The direction of the cut is very important because the cut pieces are not interchangeable. Again, it's best to experiment and then follow the results consistently. When the cut is completed, the new veneer will fit exactly in the place of the discarded veneer, even if the saw blade does not stay on the pattern line. The process is then repeated for the next piece in the picture.

After years of trying the various methods, I find the double-bevel cut by far the best method to use. It's also good with either hand or powered saws, so that expense is not a factor.

Most importantly, it consistently produces tight fitting joints requiring no wood filler. That frees my efforts for the more important aspect of marquetry: creating pictures that use the grain, figure and color of the woods to produce the most artistic and pleasing effect.

[Note: The fret saw and jeweler's blades can be obtained from Albert Constantine and Son, Inc., 2050 Eastchester Road, Bronx, N.Y. 10461. The scalpel can be obtained from the Brookstone Co., Peterborough, N.H., 03458.]



During cutting

Assembled

Photograph shows "pad" of veneers ready for assembly and cutting with pad method. Cross-sectional drawing shows how beveled saw kerf eliminates gap between pieces in double-bevel-cut method.

Which Three?

One man's opinion on the basic workshop

by Robert Sutter

Open the big double doors to my cabinetmaking shop in Rye, New York and you'll see an array of woodworking machinery. Right up front, where it's handy, is a ten-inch table saw and next to it, a thirteen-inch thicknesser. In a side aisle squats a heavy-duty, long-bed nine-inch jointer. Scattered about the shop where they fit in best are several sanding machines and an overarm router. And if you nose around a bit, you'll find a drill press and a two-spindle dowel borer.

In the center of the shop towering over all the other machinery is a twenty-inch bandsaw. It will cut through a 13-inch thick piece of hard wood. A heavy gauge one-inch blade will fit it comfortably. The upper and lower guides on this saw hold the blade firmly to make an unwavering cut. I have used my bandsaw to cut everything from a tiny Dutchman for a repair to a monster bowsprit for a forty-two foot schooner.

Once in a while I wonder which of these sweat-saving machines I'd choose to carry with me were I suddenly to be transported to a desert island and I could bring only three.

Now this is not as idle a thought as it may seem, especially for those who are just starting to build up a power workshop. In other words, if we are limited by money or space to three stationary machines, which should they be?

First choice: the band saw

My choices would be the band saw, jointer, and 6 by 48-inch industrial floor-mounted belt sander. With these three machines (and a boxful of hand tools) my aim would be to be able to accomplish almost anything in the way of classical joinery and cabinetmaking.

Now before you snort, "Doesn't he know that the tilt-arbor table saw is the heart of any shop?" stop and ask, "Who says so?" Consider that the circular saw was invented in 1810 by Sister Tabitha Babbit of the Harvard Shakers. And fine furniture was being made for a long time before that, using frame saws which could cut wood from log to finished shape.

For those unfamiliar with it, the frame saw is a wooden rectangular frame holding a narrow blade stretched the long dimension of the rectangle. Its teeth are oriented perpendicular to the plane of the frame. To use it, one straddled the board to be cut with the saw, which was moved up and down by grasping the side of the frame. It was a big job to rip a long board—so much so that water power was harnessed to it as early as the 17th century.

A band saw is really an outgrowth of the frame saw with the narrow, hooped blade now in tension around two

rubber-tired wheels. It will rip or cross cut depending upon the relationship of work piece to blade, just as the circular saw will. But the thinner band saw blade makes a smaller kerf, hence wastes less wood. Unlike the circular saw, the band saw will cut curves. It is safer to use for ripping thick wood because kick back is not possible. You can also cut very small pieces with greater safety.

What a band saw won't do

Now there are certain things a band saw will not do. It will not cut boards wider (or longer, depending on which way you are cutting) than its throat size—say 14 inches. But how many times does that happen compared to trimming off less than the 14 inches? And how easily could those odd occasions be handled with a hand saw?

If your band saw is of rugged enough construction to accept a wide, heavy-gauge blade, you can resaw thick lumber into thinner boards. But plane a one-inch board to one-half inch and you leave another one-half inch board on the floor as shavings.

I know the bandsaw does not always cut as straight a line as the circular saw. Do as the old timers did: Cut oversize and plane to exact dimension. Just be sure your bandsaw has provisions for a rip fence and grooves for a miter gauge to help guide cutting.

Now I'm not against table saws—I use mine constantly. What I am against is a table saw that is not heavy enough to do the different kinds of work it is meant to do. The kind of table saw I have in mind costs over $600; for a lot less, you can buy a good serviceable band saw. And later on, when you get more money or more room, get the good table saw you want. At that point you'll want a band saw anyway, and you'll already have it!

Second choice: the jointer

I would bring a jointer to my desert island because planing irregular edges and surfaces (left by a bandsaw) is what jointers do best. You should purchase a jointer with the biggest capacity you can afford, limited solely by your purse and the size of your shop. Not only will this tool square and smooth edges and faces of planks, but it will also dimension rough lumber, remove warp cupping and twist, taper legs and rabbet edges—a truly versatile tool.

For all its usefulness, however, the jointer is the only one of the three power tools chosen for which hand tools can be easily substituted. Careful manipulation of a hand-pushed 24-inch jointer plane will produce beautiful smooth, square edges suitable for gluing up. A jack plane and smoother plane will clean up the face of a board in short order. If you need a true face for gluing, then take a few swipes with the jointer plane to finish the job.

If you do choose to go the hand plane route, buy the best hand planes you can; wood or metal is up to you. A set of jointer, jack and smoother planes will set you back over $100, unless you make them, so consider your choice in this light.

Third choice: the belt sander

My third choice, an industrial quality stationary belt sander, will square cross cuts as well as sand edges and surfaces. Of course you can do this by hand, but considerable skill and patience is required.

When purchasing a sander, I recommend the 6 by 48-inch size rather than the 4 by 36-inch since belts for the former are easier to obtain. Make sure that the platen against which the belt runs is rugged. It will be the determining factor in getting a good result. Most sanders can be operated in either vertical or horizontal positions: the former for edge grain with table and mitre gauge which should be included as standard equipment, the latter for sanding surfaces and edges against a fence, likewise standard equipment. Open garnet cloth belts in grits 60 and 100 give good wear and sufficient variety for most work.

In case you're wondering, portable belt sanders are alright for flat surfaces, but almost impossible to hold square on narrow edges. Stationary disc sanders are fine for end grain, but death on faces and edges where they will leave scratches and gouges galore.

Smuggle in a router

That completes my triumvirate. But there is one other tool I'd like to take to this desert isle if I could smuggle it in somehow. It is the indispensible, all-purpose, hand-held electric router. A router rated under 7/8 horsepower will not be capable of the full range of tasks this versatile tool can perform. I prefer rack and pinion depth settings and a micrometer fence for accurate and easy control. It will help if you substitute a 12 by 5 by 1/4-inch piece of plexiglass for the black bakelite base that comes attached to the router. Since plexiglass is transparent, you can see what is going on, and the longer base adds stability. I use plain steel router bits in preference to carbide tipped ones, for carbide can only be kept sharp with an expensive diamond hone. Get used to honing your bits each time you use them, as dull one tend to chip, splinter, and burn the work.

The router will cut grooves and rabbets both straight and circular. It will bore clean, flat-bottomed holes and trim overhanging edges flush. With its help you can make mouldings and shape edges, set locks and hinges, and make lap, mortise and tenon, finger and dovetail joints. It is a versatile tool, the uses of which are as broad as experience and imagination permit.

Finally, for those of you who still have trouble swallowing the band saw over the table saw, maybe it will go down easier with a portable contractor's saw for those difficult occasions. But someday do get a table saw. And thank you, Sister Tabitha.

Library Ladders

How the British had their steps and hid them too

by Alastair A. Stair

The image of a little girl converting the Castro sofa into a bed has been a familiar one to television viewers for years. Convertible furniture however, is not an invention of the twentieth century. The idea of creating household pieces to function in two or even three different ways has challenged furniture makers for centuries. The English maker in particular has continually demonstrated a special ingenuity for combination pieces since the seventeenth century. English technical skill has spawned all manner of technical devices that today delight the collector of English antiques. One specialized form that clearly illustrates this fact is the English library ladder.

Library steps came into general use around 1750, and it is not a mere coincidence that this development was concurrent with the flowering of the Industrial Revolution. Various technical advances made at this time were instrumental in both instigating the need for library ladders and in influencing the forms they were to take.

Fostered by a favorable climate of conditions, the Industrial Revolution began in England toward the middle of the eighteenth century. One of its offspring was the quicker and less costly printing of books. A greatly increased production continued until 1798 when Earl Stanhope of London invented the iron press which made the work even more easy and rapid. As a result, more books were in circulation in the second half of the century than in the previous century, and more attention was devoted to the library and to furniture for it. Books were no longer locked away from view, and new prominence was given to the library breakfront bookcase that was often so tall that the upper shelves could not be easily

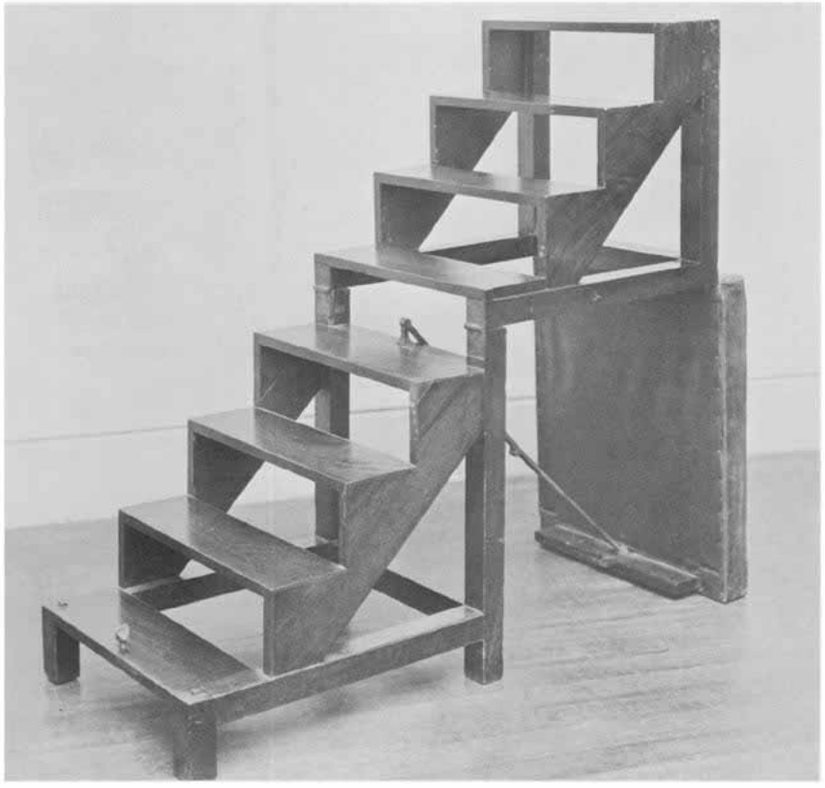
Convertible chair was commonly used in the Regency period. This chair is hinged at the seat rail so the back swings forward after a catch is released. The scimitar-shaped leg was quite popular, although other styles were also used. This chair fetches $1450 in the antique marketplace.

reached by standing on stools or chairs.

The ladders that were made to meet the need were often cleverly contrived to serve a dual purpose, with form and function uniting in most striking ways. Inspired by the new preoccupation with technical devices, English furniture makers of the eighteenth century, and later in the early nineteenth century, employed simple mechanisms which enabled chairs, stools, book stands and even tables to ingeniously convert into library ladders. Appearing along with straightforward step ladders and pole or "elephant" ladders of all shapes and sizes (sometimes even spiraling, like pulpits) these double-purpose pieces constituted a great variety from which the contemporary gentleman could choose. Playful, sometimes over-ambitious in its attempt to combine beauty of line with practical function, yet often quite elegant in design, the English antique library ladder has a unique appeal for the connoisseur.

One remarkable device of this kind is the library table that folds out into a step ladder. Sheraton illustrates two designs for this form in his *Drawing Book* (1791-4) and according to the famous designer, such steps were apparently first made for King George III. Thereafter they became quite popular because of their simplicity and ease of use. The steps can be put up in half a minute, and the whole can be taken down and enclosed within the table frame in about the same time. The hinged top simply folds out and down to the floor to reveal a series of sturdy steps, with the uppermost step resting approximately five and a half feet from the ground. The inner horse relieved by springs, unlocks, and becomes erect, along

An inlaid Sheraton library table was apparently first made for King George III; convertible stools and benches (below) came in various designs. The cane-shaped handle is held in a slot; everything else hinges. Because of their unusualness, devices like these don't stay long in the marketplace and bring from $1800 to $2800.



with the multi-hinged handrail. The whole is supported by four strong, square legs.

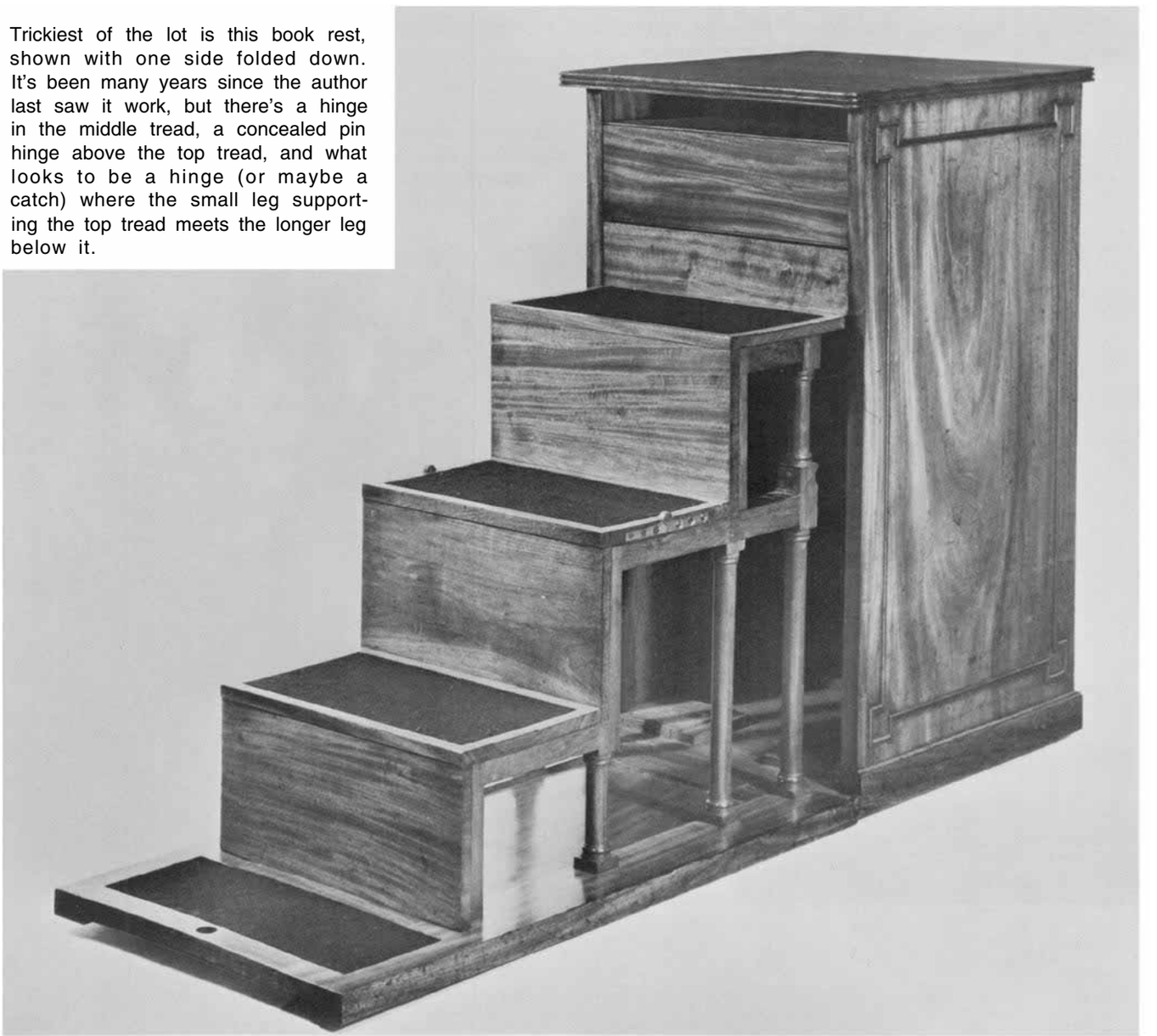
These ladders created marvelous architectural skeletons when open, and some display a very elaborate, often rhythmic handling of vertical, horizontal and diagonal effects. The visual aspect of the table when closed was considered as important as the function, and handsome woods were employed, often with decorative inlay and sometimes with painted ornament.

Another special type of library ladder is the convertible chair, used commonly in the Regency period. In the decades of the late eighteenth and early nineteenth centuries, archaeological excavations at Pompeii, Herculaneum, and in Egypt resulted in a lively interest in the furniture forms of ancient civilizations. One of the most popular chairs of this period possessed in-curving "scimitar" shaped front legs, wide arcing back uprights with reeded members curving in opposing directions in the manner of classical prototypes. This chair, with its graceful design, made a very attractive object when converted into a library ladder.

A third type is the library stool that can be adapted into a ladder. Of necessity rectangular, and usually rather long, these were most often upholstered in leather and make a quite handsome appearance. One such stool, with an elaborately inlaid case, has been attributed to Thomas Chippendale and dated c. 1770-1775. Over the years I have seen many examples of this type and they provide extra seating along with the additional advantage of a tool for saving space. It is easy for even a child to lift the upholstered seat and pull out the ladder or to carry it all the way down to the floor where the seat can act as an upright support.

A more rare article of cabinet work is the book rest, pedestal or plinth, on which one side opens to produce a series of steps. Intended to support large, heavy books or folio volumes, these provide the maximum of convenience in the smallest amount of space. The enclosing cabinets were constructed of the finest mahoganies and endowed with carved effects. They were usually mounted on casters.

As the draftsman's pen and the cabinet-maker's skill produced whimsical versions of ladders, much scope was provided for the contemporary metal worker and he was very adept in the art of forging the necessary hinges, springs, locks and metal mounts of all kinds. The metal worker of the Industrial Revolution enabled the designer and furniture craftsman to allow their imagination to run free in the pursuit of exciting, convenient and pleasing forms of ladders for use in the library of the eighteenth century gentleman of taste and distinction.



Trickiest of the lot is this book rest, shown with one side folded down. It's been many years since the author last saw it work, but there's a hinge in the middle tread, a concealed pin hinge above the top tread, and what looks to be a hinge (or maybe a catch) where the small leg supporting the top tread meets the longer leg below it.

A Serving Tray

How to use up waste veneers and please the family as well

by Lionel Kay

It is always a pleasure to find a way to use up what might be called "waste" materials around the shop. My wife had asked for a new serving tray, so I was able to fill her wish with this project and have a lot of fun for myself at the same time.

A classic pattern for laying veneers is known as the "X" design. It is a variation of the diamond pattern. I chose the "X" to use up a quantity of narrow mahogany veneer cut-offs left over from some previous project.

The narrow strips are trued up with edges planed and parallel. Ends are cut at an angle of 55 degrees, though this is optional. Different effects will result with different angles. Strips are then arranged to form rhomboids, whose dimensions conform to the size of tray desired.

The rhomboids (four are needed) are then cut and reassembled to form rectangles. These, in turn, are trimmed and taped together as one large surface ready for laying. For a diamond pattern, the right and left rectangles would be interchanged.

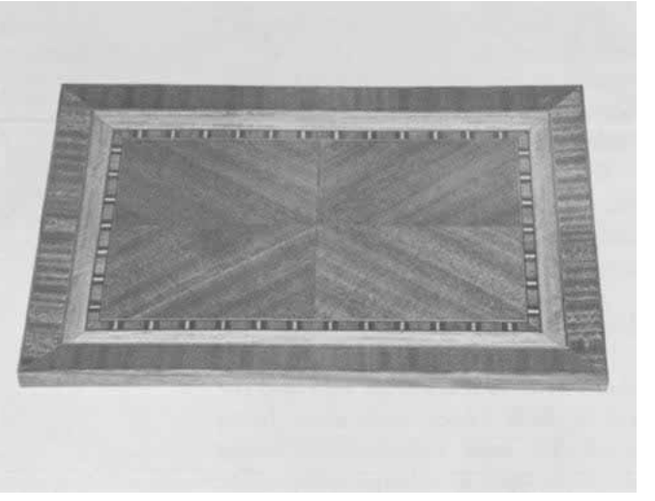
I had a strip of inlay to attach as a border and then added four strips of satinwood as an additional margin. Corners mitered and the whole taped together, the top was ready.

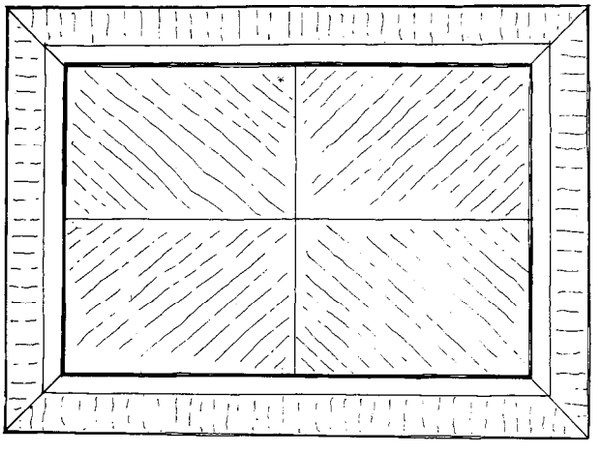
The tray core was a piece of 1/4-inch luan plywood. The bottom can be plain or fancy, as you wish. The top, core and bottom were laid at one time and were ready for finishing.

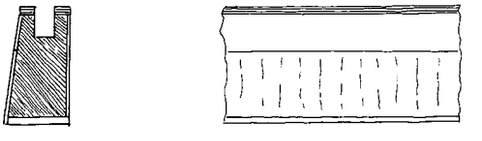
The molding was cut from a piece of 3/4-inch pine. The bevel is approximately six degrees, though again, it is a matter of taste. Top and bottom were veneered with very straight-grained sepele. The inside edge was made from glued up avodire/walnut/avodire, and the outside edge was a thin strip of zebrano that was just lying around waiting for this job. The rabbet was cut for a snug fit with the tray surface and the work on the molding was done.

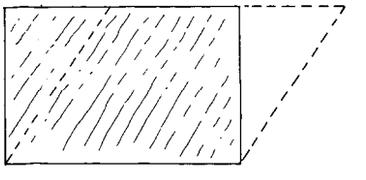
I recommend finishing (according to your own preferred schedule) before assembly. I finished with an alcohol-resistant urethane varnish. It is best to finish the molding in one or two long strips before cutting to size and mitering. This is similar to prefinished picture frame molding and assures accurate fit at corners.

With finishing completed, the whole is assembled with glue and a single nail (counter-sunk and filled) in each mitered corner. No glue in the rabbet to allow for expansion and contraction!









Dashed lines in bottom drawing show how veneer is cut to make a rectangle from a rhomboid. Middle drawings show cross section of edge, including layering of veneers.

Stamp Box

What happened when the old relic box reached America

by Stanley D. Saperstein

The 17th Century stamp box is a little known antique in America, but widely known in Europe as a "relic box" to house prized religious relics. It makes a beautiful desk ornament.

Because the relics were quite small, something was needed to house them, and small decorative boxes were carved out to serve the purpose.

When the first Catholics arrived in Lord Baltimore's Maryland colony, the relic box came along, but in America there were no relics to be sold and the pretty little boxes were soon being made by local craftsmen to house different types of colonial stamps. The stamp boxes seemed to disappear after the Revolution and very few survive.

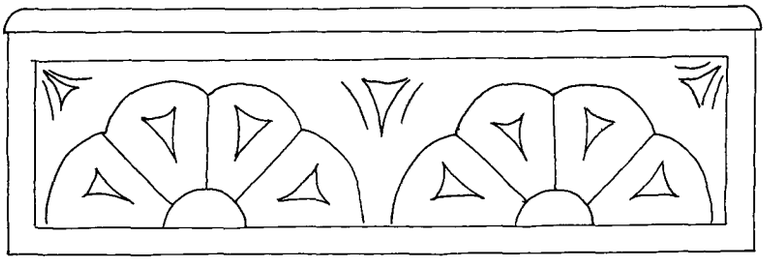
The boxes varied as to size and could be square or rectangular. The most common sizes were three inches square, four inches square and four by five.

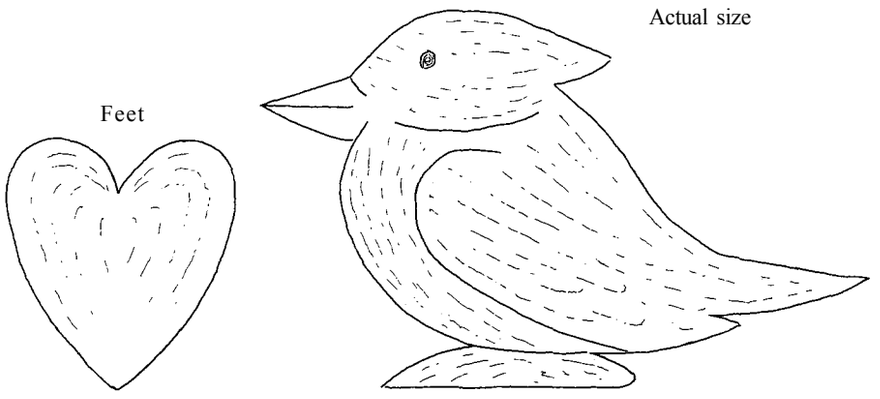
The best woods for this are walnut, mahogany and cherry. Pine may be used, but it tends to break easily. This one is made of walnut and the bird is a caricature of a tufted titmouse. Owls and titmice were considered good luck and were common on stamp boxes.

The box itself is made from one piece of wood (laminate if necessary) with the center scooped out. The easiest way to accomplish this is to honeycomb the center of the block with a drill. Remove the remaining wood with a gouge, and straighten the sides with a chisel.

Carve the outside of the box before you take the center out to avoid cracking the sides. If you wish, leave the sides plain. The 3/8-inch thick lid is rabbeted to fit into the center block.

To make the bird, use the pattern provided or preferably create your own —any small bird will do, in a caricature style. Don't paint the bird; give it a natural finish and fasten it to the lid with glue or a screw. The inside of the box is covered with leather or felt.





All in One

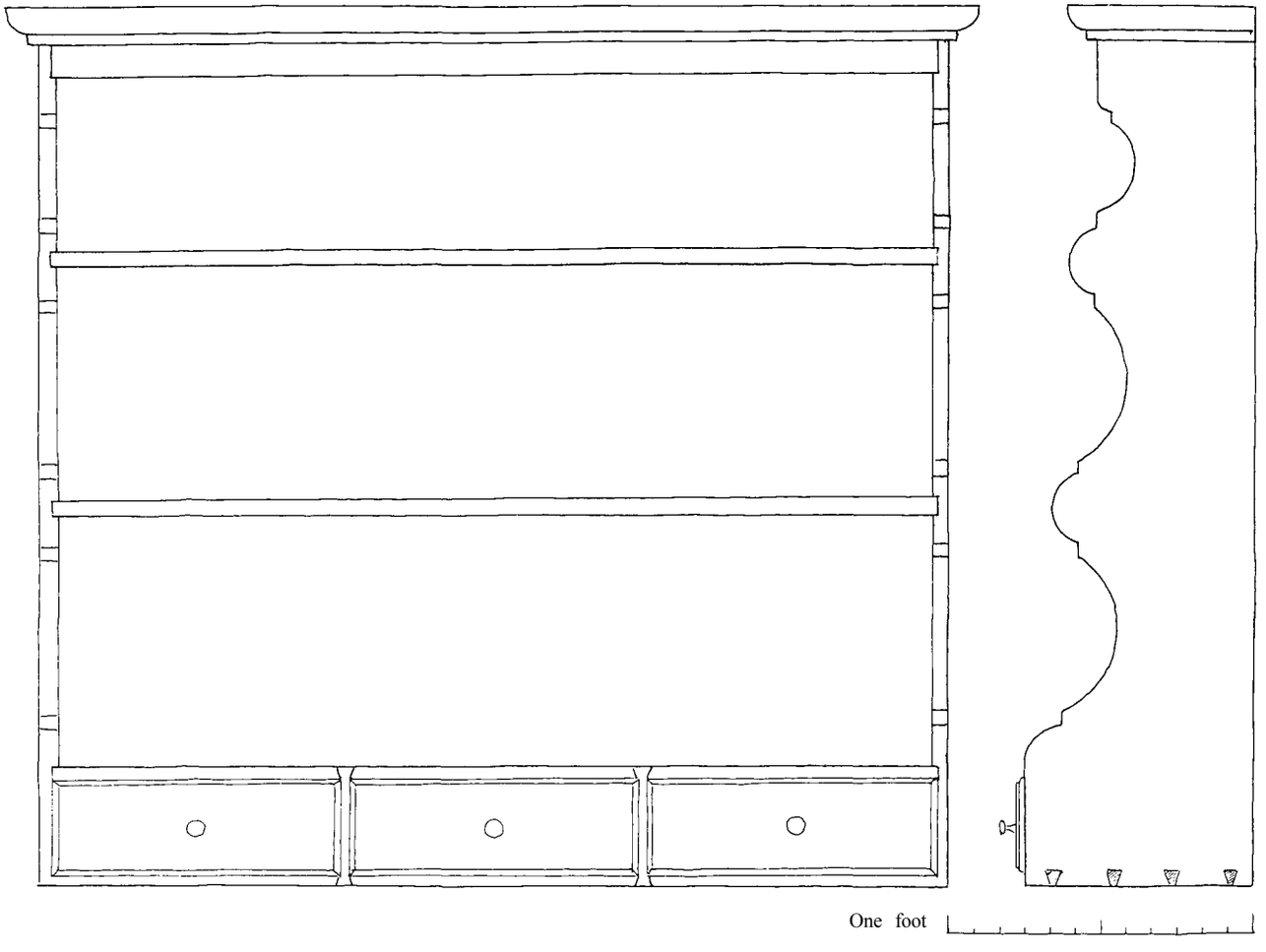
Putting together favorite features

by Brian Considine

This piece is a synthesis of the features of many pieces that I have liked—scalloped sides, a hutch top, library shelves with small drawers, etc. It's designed to be used either in a library-type setting for books and the like, or hung over a sideboard in a dining room.

The case is dovetailed together, top and bottom. But scallop the sides first and then cut dados for the shelves and the top facing piece. The molding is then mitered and nailed and glued on. Then the dividers are sized and dovetails are cut at either end and the case notched for them.

The drawers have a 1/4-inch thumbnail on the face. They are dovetailed in the front and shouldered on the back. The bottom fits into the grooves in the sides and the front, and is nailed to the back.



French Polishing

The disappearing art of getting a fine shellac finish

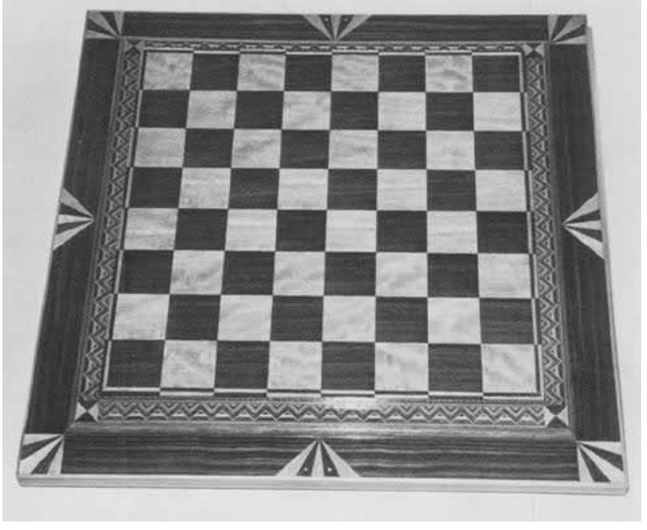
To many woodworkers the art of satin-gloss French polishing—the building up of a thin, fine shellac finish with a cloth pad—is a deservedly dying one. Not only does it take much skill and experience to produce that transparent, satin-gloss that it's famous for, but also much elbow grease.

As a result, in this day of seemingly instant, effortless activity, French polishing is given short shrift, rarely or briefly mentioned in books on wood finishing.

To Anthony Arlotta, a former cabinetmaker and now a professional finisher and refinisher for many years in New York City, this is a sad state of affairs. He can understand why French polishing for commercially made woodwork has become economically impractical except for the finest antiques. But for the amateur; craftsman, who has already spent dozens or even hundreds of hours making a piece of furniture or a marquetry panel, the extra several hours that French polishing takes, compared to the instant finishes, is well worth it. It gives a smooth, thin finish full of luster but without the thick high gloss associated with lacquer.

For refinishing work, it can be used over old shellac, but not over old varnish or lacquer because of the poor bond.

The advantages of French polishing over varnish and lacquer are not only its beauty, but also its relative practicality. That is, if the finish does get scratched or damaged, it's a relatively easy process to rebuild and blend in the new shellac buildup. In fact, Arlotta demonstrates this dramatically by putting some 150 or 180 grit sandpaper to a finished piece, and then, in a few minutes of rubbing, getting rid of the intentional scratches.



French polish gives chessboard by A. Miele a fine finish.

There are disadvantages, however. Shellac is water resistant but not waterproof as some varnishes are. And, of course, it is not alcohol resistant, since that is the solvent for shellac. But given these drawbacks, there's no reason why French polishing can't be used for any fine furniture that is properly cared for, especially where the beauty of the grain and figure of the wood is to be highlighted.

For French polishing, Arlotta uses age old techniques, such as mixing his own shellac. (He considers ready-made French polishes inferior, but he does use them—on the undersides of furniture where it doesn't show.) He takes orange shellac flakes or crushed orange shellac buttons, fills a jar about three-quarters full with the dry shellac, and then fills the jar with methyl or wood alcohol, or columbine spirits, as it is sometimes called.

It takes about a week for the flakes or chips to dissolve. Every day he gives the mixture a stir or two; after a week the flakes have dissolved into an orange syrupy mixture. He strains it through cheesecloth if necessary, especially if the buttons were used.

Arlotta doesn't use bleached or white shellac because he's never sure of the impurities in it, and if it's the least bit old, it doesn't dry. Atlotta says the orange shellac has an indefinite shelf life if a skim coat of alcohol is poured over the top and the jar is tightly sealed. The color is not a problem because the shellac is put on in such a thin coat.

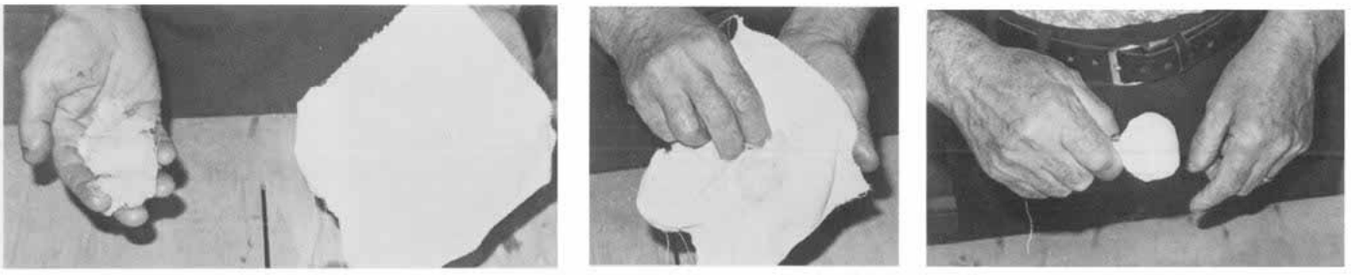
If the wood is to be stained before finishing, only *water-based* aniline dyes should be used. Otherwise the rubbing process of French polishing could lift up stains that have other base formulations.

In fact, to create a warmth and mellowness in the wood, Arlotta likes to stain all of his pieces (regardless of the wood), with a weak solution of yellow stain. If kept pale, the stain does not really turn the wood yellow, but does give it a warmth and depth that is hard to match.

(As always in the finishing process, it's best to do extensive experimenting beforehand, for instance trying various dilutions of the yellow stain on a spare piece of wood. And, of course, it's prudent to go through the whole French polishing sequence on scrap before trying it on a treasured piece.)

Water stain raises the grain, so wash with water, dry, and sand before you stain. After staining you should give it another light sanding with very fine sandpaper.

The first step in French polishing is to put on a very thin or light wash coat of shellac (two parts alcohol, one part shellac



Making up a pad and working in the white pumice sprinkled on the surface, which will fill pores.

stock). This is done with a pad made up of a small ball of cotton wool or cotton waste wrapped into a larger square of cotton or natural fiber cloth and twisted into a ball. The shellac should not be put on heavily as its main purpose is to serve as a binder for the subsequent filling step.

After the shellac dries, usually in a half hour or less, Arlotta goes immediately to the filling process, using 4F pumice stone as filler.

A new pad is made up, this time with more rugged linen or tight gabardine as the pad material (because pumice is a strong abrasive). He sprinkles some pumice lightly on the surface of the wood, the pad is dampened with alcohol, and the pumice is rubbed hard into the pores. As with all French polishing steps, the initial rubbing should be in tight moving circles, then looser figure eights, and finally long straight strokes with the grain. Don't let the pad stop its motion, but keep it moving constantly. Otherwise, you'll get cloth marks where the shellac hardens.

What the combination of the alcohol and the rubbing does is to soften the shellac undercoat and imbed the pumice in it.

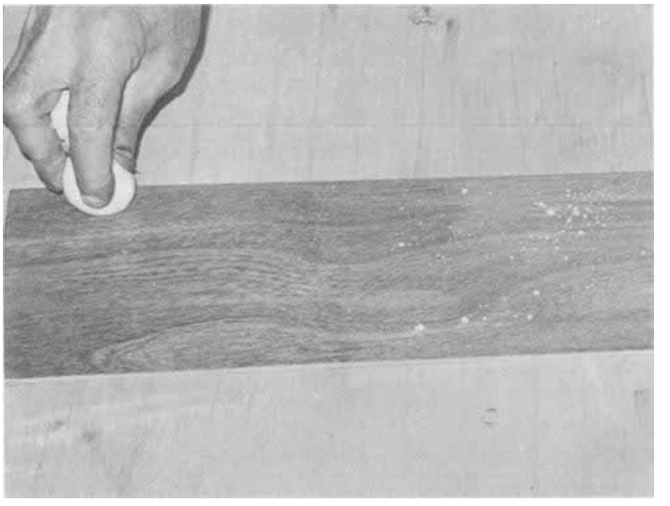
When the pumice has disappeared, sprinkle some more on, and add more alcohol to the pad. Keep on with this until the pores are completely filled, the surface seems absolutely flat, and the circular stroke marks have disappeared.

Then put it aside for a week. The shellac will dry completely and shrink slightly, exposing some of the pores again. Do another pumice filling sequence and again put it aside, this time for fewer days. When the surface stays completely flat, the wood is ready for the final polishing sequence.

(It's at this point, too, that any blemishes or defects in the wood would be fixed using wood powders.)

But assuming a blemish-free surface, a new cotton or wool pad is made up. Some shellac stock is poured onto the inside ball (the outer cloth then acts as a filter). The pad is squeezed to spread the shellac throughout, and flattened, and then just enough alcohol is put on it to make it lose some of its tacky feeling. A drop or two of lemon oil is touched here and there onto the wood surface (to act as a lubricant), and the padding process is begun.

Use the same small overlapping circles to put on the shellac. Glide the pad on and glide it off, but never stop its motion. Put enough pressure on the pad to rub the shellac in, but not so much that it takes off or "burns" the coat underneath. Recharge the pad with shellac and alcohol as needed. Add more lemon oil occasionally, and keep up the rubbing process, going from the circular strokes to the figure eights to the long straight strokes.



Repeat the process as often as you want, until you've built up the desired finish. You'll know that you've rubbed enough when the stroke marks disappear. The longer into the padding process, the lighter the pressure on the pad should be.

At the end, you'll want to apply alcohol alone to the surface to take up the lemon oil and give the final polish. Arlotta uses a new pad that is barely damp with alcohol and uses straight strokes with very light pressure. Stop when you've got the surface to where you want it.

That's the essence of French polishing. After the filling step you can build up the shellac finish as many times as you want—once or twice for a really spare finish, to several or many times for a heavier build up. There is no drying time between steps and you can pause or stop anywhere in the process (as long as you glide the pad off).

And if the finish itself does get damaged, you can sand the affected area with fine paper and rebuild it to match the overall piece, provided you have no deep dents or gouges.

Unlike lacquer and heavy varnishes, there's no solid film to crack or chip off. There's only a very thin coat of shellac that has been padded or polished on.

After the final polish, you should wait a few weeks before you put any protective coats of wax (like butcher's wax)—if you want to wax it. But it's really not necessary.

Good polishing! But remember, keep that pad moving!

[Note: If you are unable to find locally the materials mentioned, try H. Behlen and Bros., Inc., Box 698, Amsterdam, N.Y. 12010. They carry all the materials (both wholesale and retail). Minimum order is $25.00.]

Birch Plywood

A professional product due to go amateur

One noticeable difference between the average amateur and professional cabinetmaker is in the use of one material—solid birch plywood. The professional is likely to have several varieties of it in his shop, the amateur none. That's because it isn't found at most lumber yards; but there are signs that it will become increasingly available.

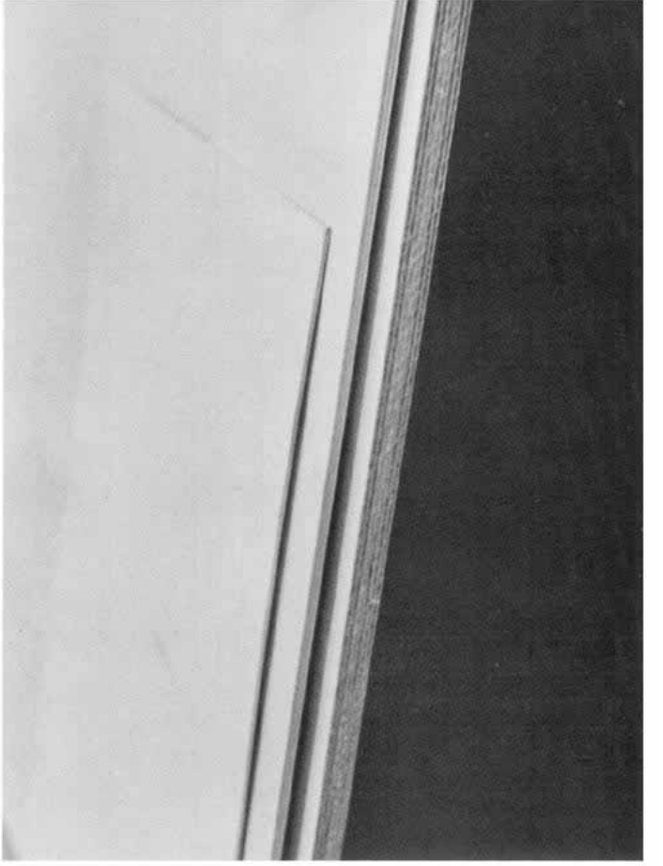
Actually, it's been in use here for decades. It's known variously as Finnish, Swedish, Baltic, Arctic, and white birch. There's also American and Japanese birch plywood, but it has a generally yellower, less regularly white finish.

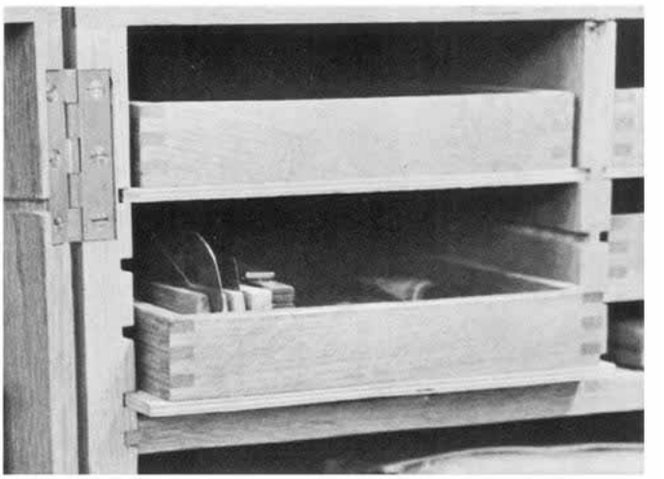
Cabinetmakers like it because it has so many uses. In its thinner varieties of 1/8 to 1/4 inch it can be bent, and built up and glued into curved laminations either to use alone or as a base for veneering. It's used for drawer bottoms, cabinet backs (and fronts), and even for turning (see p. 14). It combines the advantages of both plywoods and hardwoods, and unlike particle board, has edge gluing strength.

Birch plywood is easily recognized by its thin, evenly-spaced laminations, and the clear whiteness of its face. It comes in several grades and thicknesses (from 1/8 inch to well over an inch), and most commonly in the metric five-foot-square sheets. Depending on grade and source, it costs twice as much (and more) as fir plywood.

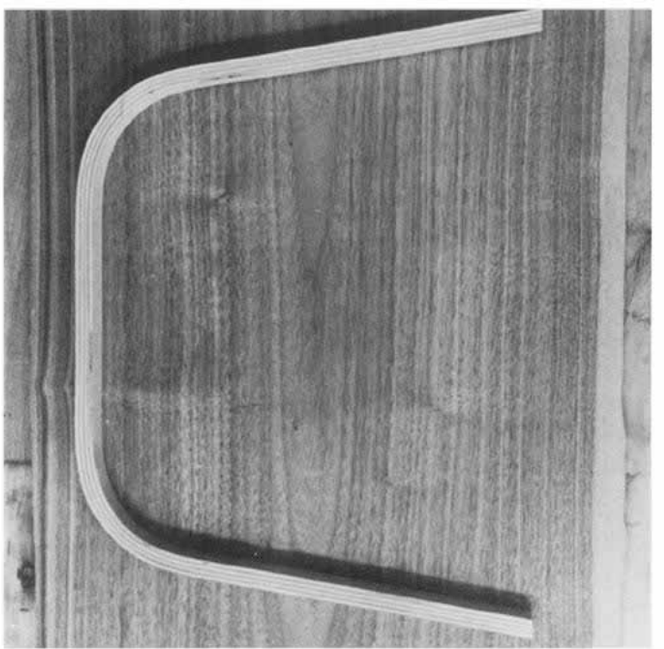
Finland has been the main supplier for many years. Now, some Russian birch is being imported under the Baltic Birch trademark.

For further information, including how to obtain it locally, write the Finnish Plywood Development Association at 210 East Broad Street, Falls Church, Va. 22046, or Allied International, Inc. Boston, Mass. 02129, which is importing the Russian birch.





A quick tour at the Rhode Island School of Design's woodworking shop shows birch plywood stacked against a wall, used as a combination drawer bottom and slide in a student's tool cabinet, as the curved base for veneer, and a cut-off from laminated furniture.



Bench Stones

The variables that produce the better edge

The woodworker planning to acquire new sharpening stones for chisels, plane irons, and the like has quite a variety to choose from, and might well ask about the differences among them.

A talk with Jack Heath, an amateur cabinetmaker, and also product manager of abrasive stones for the Norton Company, brings out the key differences.

As Heath sees it, the purpose of the bench stone in woodworking is to remove the ragged burr of metal resulting from the grinding process, and to leave the edge as smooth as possible. Butchers like the sharp, ragged burr because that's what makes a knife cut through meat best, but for woodworkers, the burr merely picks up heat, tears off and leaves an even worse edge. Looked at another way, for hardwoods the smoothness of the edge is more important than the so-called sharpness. Equally important, the finer the edge, the longer it will stay sharp.

So the key properties that a woodworker looks for in a bench stone are the fineness of the edge produced and the resistance of the stone itself to wear. A third property might be the speed with which material is removed—how fast the stone cuts.

These properties are the result of three variables: the size of the particles (or grit) that do the sharpening, the hardness of the particles, and the bonding strength of the stone, that is, how tightly the particles are held together. Particle hardness and bonding strength together determine the hardness of the stone.

Generally, the harder the stone, the slower it will cut, the slower it will wear, and the better edge it will produce, given the same grit size. Of course, the finer the grit size, the finer the edge produced, for a given stone hardness.

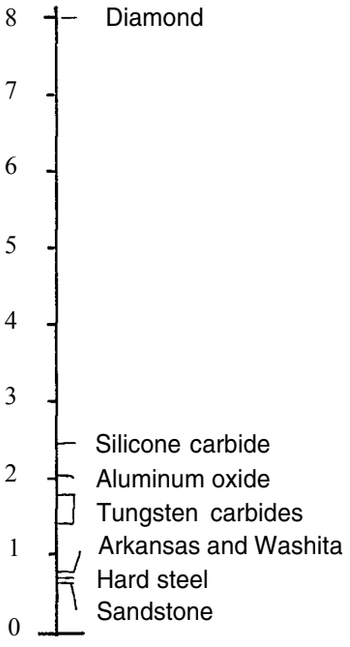
There are two broad categories of stones to choose from: first, natural ones like hard and soft Arkansas (pronounced Arkansas in the trade) and Washita, a coarser form of Arkansas; secondly, man-made ones of silicon carbide (a black stone sold under the trade names of Crystolon and Carborundum) and of aluminum oxide (a brown stone sold under the trade names of India and Aloxite).

The man-made stones have the hardest particles, but the natural silica stones have finer particles and a higher bonding strength. This combination of finer particles more densely compressed is the reason Arkansas stones produce the finer edge.

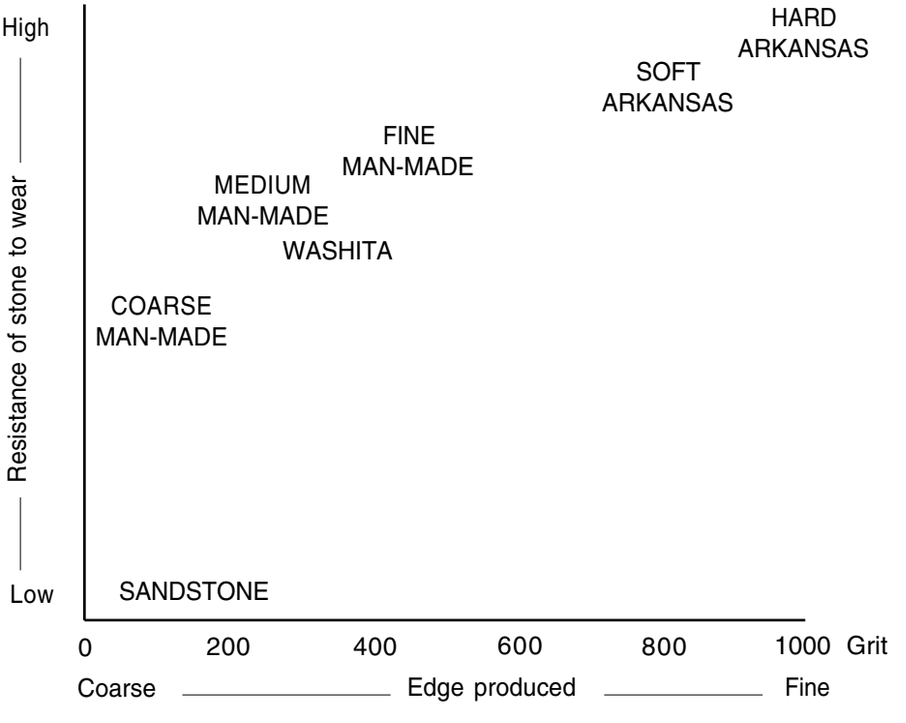
But the finest cutting stones are not the fastest cutting stones, and vice versa. That's why a compromise stone must be picked, or more commonly, two stones used consecutively.

To Heath, the best combination for a woodworker—if cost is somewhat of a factor—is a medium grit man-made stone and a soft Arkansas. If cost is not a factor, then he would use the hard rather than soft Arkansas. Heath

Relative Hardness of Particles



Tool Edge Versus Stone Wear



believes there is a marked difference between the edges produced by fine man-made stones and the natural ones, and would take a blindfold test on it. He can also differentiate between the hard and soft Arkansas just by feeling them. But he's not sure he could tell the difference in cutting ability of a chisel sharpened by a hard or a soft Arkansas. Where the difference would show up, Heath says, is in how long the chisel would stay sharp.

For the cost-conscious woodworker, Heath doesn't believe the relatively slight difference in edge produced between hard and soft Arkansas is worth the extra cost, not if the woodworker has other tools to buy. A hard Arkansas is two to three times the cost of a soft, and is more suited to surgical and engraving tools.

Heath says Arkansas stones are becoming harder to find and notes that the reason hard Arkansas is so expensive is the higher costs of shaping and the low yield from quarry to shipment—on the order of two percent (for soft it's maybe twice that, but still only four or five percent).

So Heath would recommend a natural stone for the final honing process if it can be afforded, but for initial honing he would go for a medium grade man-made.

As to the choice for woodworkers between silicon carbide and aluminum oxide, that's like "tweedledum and tweedledee", because both are standardized in grit size and bonding strength. Where it might make a difference is in particle hardness. The silicon carbide stone will also cut non-metals like glass and ceramics, and tungsten carbide as well. The aluminum oxide will cut these materials, but not as efficiently. So the silicon carbide stone could be more versatile-if that's important.

And of course, for the highly cost-conscious woodworker, who still has many other tools to buy, sticking to a man-made medium /fine combination (half the cost of a soft Arkansas) is the way to go. The main price you pay here is in how often you rehone—not a very great price in the eyes of many woodworkers.

A final note: Heath doesn't recommend a coarse stone at all for fine woodworking tools because he doesn't think anyone should let his edges go so long that they require it.

New Tools, Catalogs

A bench-top grinder with a slotted abrasive wheel that allows you to see the surface you are grinding while you are working on it is being imported into the U.S. by Leichtung, Inc.

The Stephan grinder consists of a horizontally rotating 8-inch wheel with a light shining through it to illuminate the workpiece, which is being ground on the underside of the wheel. With the wheel rotating at a rated 3200 rpm, slots and notches in the wheel make it in effect "invisible" (just as an airplane

propeller becomes invisible) for both surface and edge grinding and polishing.

The grinding wheels are metal with resin-bonded abrasive layers on both sides. They are available in four styles of abrasive and an assortment of grits. Polishing wheels come in a flint-hard felt in six and eight-inch diameters, and six-inch abrasive-impregnated reinforced-cotton wheels of 120, 180, and 320 grit.

For further information, write Leichtung, 5187 Mayfield Road, Cleveland, OH 44124.

Suppliers publish new catalogs

With the advent of fall and a new craft season, woodworking mail order supply firms have issued their latest catalogs which you can get directly from them. Working from west to east:

Minnesota Woodworkers Supply Company, Rogers, Minnesota 55374 has a new 82-page catalog that for the first time incorporates postpaid pricing to simplify ordering procedures for its customers. The company carries a broad line of woodworking supplies and tools, with heavy emphasis on hardware. Their catalog is available for 50 cents . .

Craftsmen Wood Service Company, 2727 South Mary Street, Chicago, Ill., 60608 is in its 46th year and continues to carry a broad line of hardwood lumber, veneers, tools, and other woodworking supplies. The 144-page catalog is available for 50 cents . . . **Leichtung, Inc.,** 5187 Mayfield Road, Cleveland, Ohio 44124 continues to expand their line of benches and tools . . . **Garrett Wade,** 302 Fifth Avenue, New York, NY 10001 now has a 48-page catalog with an expanded line of woodworking tools . . . **Constantine's,** 2050 Eastchester Rd., Bronx, NY 10461 continues their emphasis on veneering and other supplies and tools, and now offers a veneer assembly of the U.S. Seal. Catalog is available for $1.00 . . . **Woodcraft Supply Corp.,** 313 Montvale Ave., Woburn, Mass., 01801 has expanded their broad line to include Japanese woodworking tools, finishing products, and small brass measuring tools. Their 70-page catalog is available for 50 cents.

Swiss Inca brand to be sold in U.S.

The Swiss-made Inca brand of woodworking tools is now being marketed in the U.S. by Garrett Wade. Among the tools being imported are eight and 10-inch table saws, an 8-1/2 inch jointer-planer, and a 10-1/4 inch thicknesser-planer, and a 10-1/4 inch band saw.

The tools have features not usually found in American tools. The circular saws have mortising table attachments that allow the slot mortising technique that is popular in Europe because it produces a clean edge. The saws also have mitre guides that are slotted and extendible to allow repetitive dimensional cutting.

The jointer-planer can be converted into a thicknesser that will handle stock from 2-3/8 inches down to 1/40th inch.

Inca is the largest selling line of woodworking tools for amateur craftsmen in western Europe. About 75% of sales are to amateurs, 20% to professionals, and the remainder to schools. The Inca tools are made by Injecta, a 55-year old company with a thousand employees, specializing mostly in precision aluminum die castings. The woodworking tools represent about 25% of its business. They got into the business some 35 years ago when a customer ordered molds for a saw and then could not pay for them. They now sell throughout Europe and export to some 60 countries.

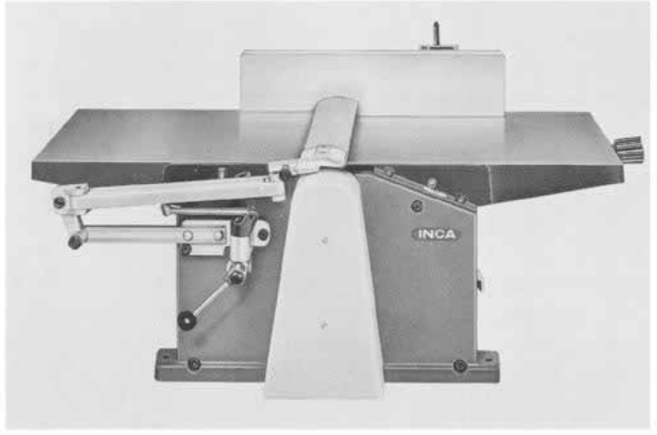
The company has just opened a new plant which gives it the capacity to enter the U.S. market now, and Canada in the near future.

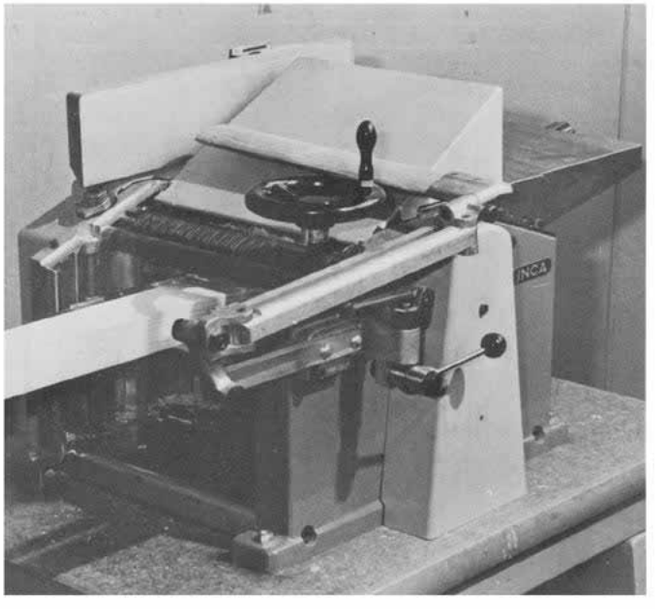
Garrett Wade will stock spare parts and accessories for all the tools it is importing. The motors will be American made and installed.

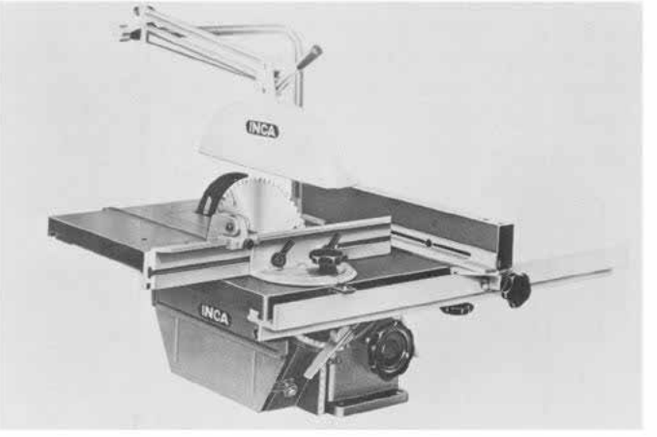
Wade is also stocking a complete line of saw blades that will accommodate the 20 mm arbor.

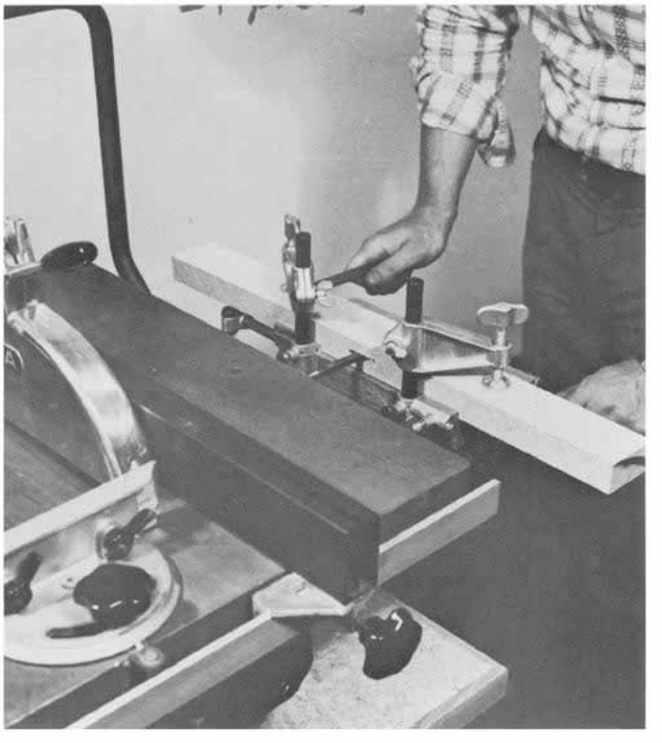
For further information on the machinery, write Garrett Wade, 302 Fifth Avenue, New York, NY 10001.

Ten-inch table saw alone and with the slot-mortising attachment in operation are shown at right. Below is the lo-inch thicknesser-planer in both the planing and thicknessing mode.









Using Found Wood

From log to lumber in your own backyard

by R. Bruce Hoadley

Wood for Wood-Carvers and Craftsmen by Robert L. Butler. *Illustrated, 122 pp., South Brunswick and New York: AS. Barnes and Co., 1974, $9.95.*

How many times have you wished you could harvest your own tree and follow through with all stages in converting the wood to a work of art or piece of fine furniture? Or perhaps tried, only to fail because of unexpected checking, warping or staining? Doubtless, you have also pondered the paradoxical scarcity or expense of fine woods, despite our apparent abundance of trees. Unfortunately, previous books for the craftsman advise him simply, "be sure to use properly seasoned wood". When the subject is treated in a chapter in books on carving or woodworking they are usually either incomplete or, even worse, misleading and inaccurate.

Straight-forward solutions to these dilemmas have been set forth in a recently published book, *Wood for Wood-Carvers and Craftsmen,* by Dr. Robert L. Butler, who has recognized that "a new era is dawning" in which "man's early organic relationships are being renewed". The author is the ideal and obvious person to have written this book, having a lifetime of experience and dedication seasoned with personal experimentation. He combines "a love for wood which verges on obsession" with the clear objectivity of a scientist. He wisely observes : "Wood evolves as tissues for support of the tree and conductance of food and water. Wood was not conceived for the purpose of man. To ignore this premise is to invite trouble." Realizing that "wood is not a product of technology," he meets head-on the complex subject of wood, seeking the facts and assembling sound guidelines, admitting the frontier of our knowledge-with the challenge : "Experimentation never ends with organic material. Join me in the search." The author's enthusiasm and affliction with the "wood carver—wood craftsman syndrome" is so infectious as to painlessly mask the wealth of scientific information he conveys. His sincerity and easy style transform complicated technology into pleasurable and logical information.

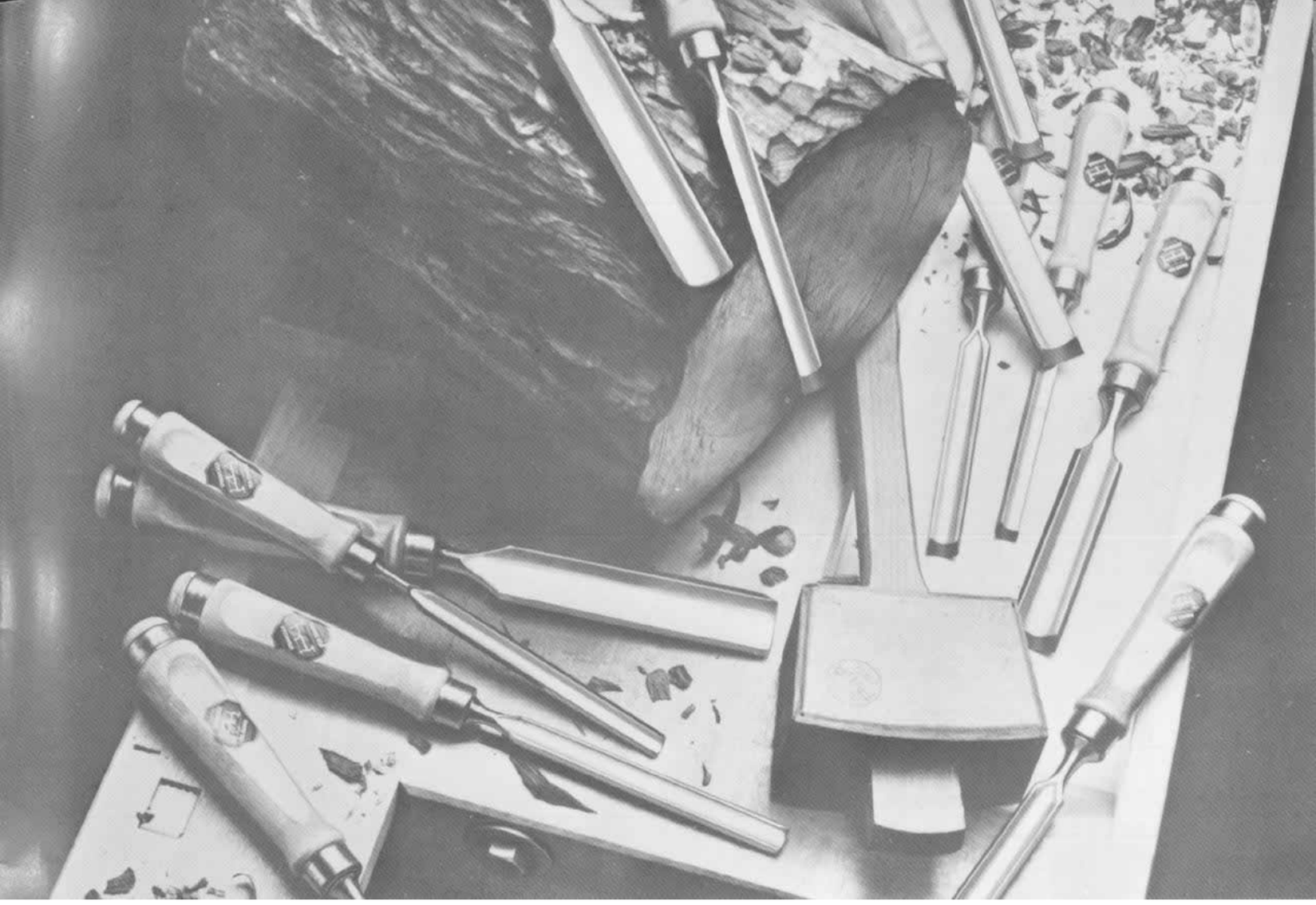
Butler with flitches marked with date and weight

Bob Butler knows that "man is rediscovering himself and the potential for his creativity in wood." In his introduction he summarizes the purpose of his book: "To remove the constraint of a limited wood supply and thereby provide a new potential for creativity." The book appropriately begins with the chapter, "Wood Is Where You Find It," which warns that a most unlikely place to find suitable wood is the lumber yard. However, he reveals and discusses a wide variety of sources from firewood piles, logging residues, shade trees and old orchards, to demolished buildings and junk furniture. Further chapters deal with tools and specific techniques for safely felling and limbing trees. Next, instructions are presented for cutting out blocks or "flitches" from the tree stem. Emphasis is on correct placement to exclude internal defects or to minimize drying problems. Correct sawing instruction is also given.

A separate chapter is wisely devoted to the critical "Preparation of the Flitch," where immediate attention and proper end coating are paramount. Subsequently, drying of the flitches is discussed in the thoroughness it deserves, with consideration of relative humidity-moisture content relationships, monitoring the drying process, and control of drying defects. Chapters dealing with log defects and proper storage of wood during and after drying are also presented.

A final chapter probes the elusive problems of design and placement of a potential carving in a flitch with due concern for developing optimum beauty in the piece while avoiding undesirable defects or weaknesses of the wood.

The book is suitably illustrated with numerous pictures, some in color. Although the subjects illustrated suggest that Bob Butler favors carving, the principles set forth in the book are invaluable to all wood workers whether "sculpturing or in creating fine furniture." This volume will fill that one empty space that has remained on the complete woodworker's bookshelf. However, it must be approached with Butler's own stern warning that "the reader who takes this book seriously will not escape the wood carver-craftsman syndrome."



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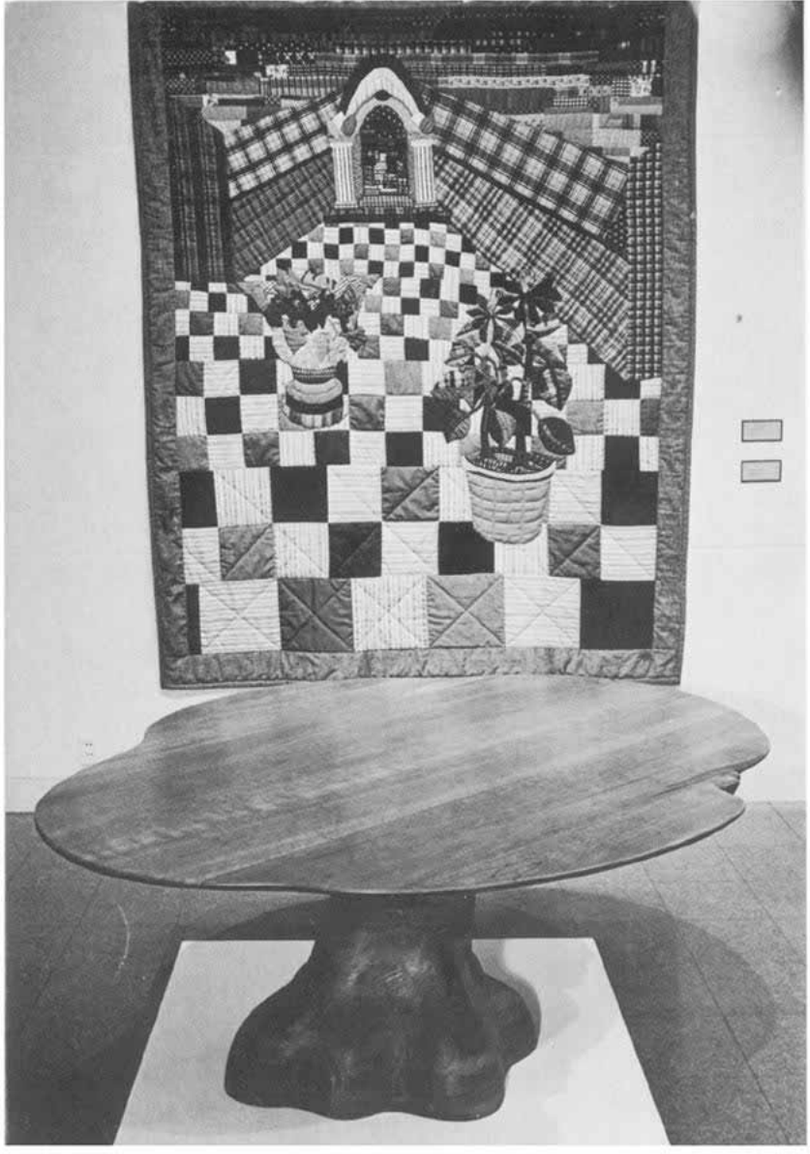

Dining Table above by Wendell Castle; quilt "Greek" by Molly Upton; at right, "Icara Flew Too Close to the Sun" by Andrew Willner; Coffee Table by Daniel Jackson; "Pie in the Sky" quilt by Eva Orsini.

Bed and Board

A winning combination

The deCordova Museum in Lincoln, Mass., is located in the heart of our revolutionary birthplace. Perched on a hill between Concord and Lexington, it was inescapable that the museum would celebrate the bicentennial anniversary with special exhibitions.

One of them was to be wood, to demonstrate, in the words of museum director Frederick P. Walkey, "that there is a continuity of craftsmanship from the earliest colonial days to the present—that the apparent need to make things and the abiding interest in excellent handskill persist . . . . The special relevance becomes clear," Walkey notes, "when one realizes the inherent limitations of the raw material—wood," which encourages the craftsmen "to adhere to more traditional ideas than one sees in the use of glass, silver, or clay or woven fibers. All those materials allow the craftsmen to extend the range of ideas far beyond that which is possible in wood."

Having chosen wood objects for the exhibition, it was then necessary to find a companion medium which (1) had to hang on a wall, (2) had to be colorful because most of the wood objects would have the same "somber tonality," and (3) wouldn't overwhelm the furniture and other wood objects.

The choice of quilts makes a happy combination. Judging by the near-record attendance to the "Bed and Board" show last summer (which closed in the fall), and the approving response of the participating craftsmen, we think it's a combination that should be repeated in community exhibitions across the country. Bed and board, anybody?